

THE CLEARING HOUSE FOR HEALTH OUTCOMES AND  
HEALTH TECHNOLOGY ASSESSMENT

Department of Public Health and General Practice  
Christchurch School of Medicine

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# Effectiveness of early interventions for preventing mental illness in young people

*A critical appraisal of the literature*

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## EXECUTIVE SUMMARY

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### **Objectives**

The systematic literature search and critical appraisal were performed to provide an evidence-based review of the effectiveness of early intervention programmes for youth mental health. Studies were considered if they aimed either (a) to *prevent the development* of mental health conditions relating to substance abuse, conduct disorder, mood, eating disorders and/or anxiety, or (b) to *intervene in the early stages* of a mental health condition to alter its development or pathway.

### **Data sources**

The literature was searched using the following databases: Medline, Embase, Cinahl, Healthstar, Current Contents, Eric, Psychlit, Sociological Abstracts, Social Work Abstracts, Social Science Index, Social Science Citation Index, Austrom, and Index New Zealand. Other electronic and bibliographic sources searched included: Cochrane Library, Database of Abstracts of Reviews of Effectiveness, Health Technology Assessment database, New Zealand Bibliographic Network, New Zealand Ministry of Health website and library, New Zealand university and medical library catalogues and the NZHTA in-house collection. Several Internet websites for New Zealand mental health services were also searched. "Grey" (unpublished) literature not accessed from the above sources was sought through personal contact with staff in the Health Funding Authority and researchers in the field including those at the Māori and Pacific Island research units. Material referenced in publications obtained in the course of research on the topic was identified. Searches were limited to English language material from 1995 onwards and were run between mid-May and mid-June 1999.

### **Study selection**

Studies were selected and appraised if they quantitatively evaluated the effectiveness of early interventions to affect the mental health outcomes for people aged 14-24 years, with some measure of outcome for the group to whom the intervention was offered. Studies reporting on participants outside the age range of 14-24 years were permitted if they met one of the following criteria:

- subgroups within this age range were reported separately
- the effect of age was investigated and was not found to be significant
- the sample's mean age was within the accepted range of 14-24 years.

Eligible study designs included meta-analyses, systematic reviews, randomised controlled trials, cohort studies, case control studies and before and after studies with a control or comparison group.

Criteria for exclusion from appraisal included:

- reporting a single case study
- evaluating interventions with participants who were diagnosed with mental disorder according to DSM-III or IV criteria (American Psychological Association 1994)
- evaluating interventions involving the individualised clinical management or treatment of a mental disorder
- having a primary outcome focus on suicide prevention, or on mental disorders relating to personality, schizophrenia/other psychoses, or dementia
- evaluating process of interventions rather than outcomes (e.g. uptake of programme)
- not clearly describing, or having significant discrepancies in describing, methods and results.

Thirty-five papers of 171 identified articles were eligible for selection after applying these criteria.

### **Data extraction**

Critical appraisal forms standardised by study design were used to extract and appraise the literature. These forms were designed for use at Puget Sound, Seattle, USA (Group Health Cooperative of Puget Sound 1996) and adopted by the New Zealand guidelines group.

Two reviewers conducted the appraisal of separate studies.

The level of evidence (which evaluates quality) was evaluated using a modification of the US Preventive Services Task Force Protocol (U.S. Preventive Services Task Force 1989) and is presented in the Methodology Section.

### ***Data synthesis***

Studies identified were reported separately according to the relevant mental disorder on which they sought to intervene.

### ***Summary***

This review appraised 35 studies that evaluated the effectiveness of early interventions for mental health conditions in people aged 14-24 years, and met the criteria for inclusion. Results are reported separately according to which mental disorder the interventions were directed.

#### **Substance abuse**

Sixteen of the 35 studies identified in this review related to early interventions for substance abuse. Three were systematic reviews and meta-analyses, one relating to marijuana use, one relating to alcohol misuse and the third to substance abuse.

Concerning marijuana use (Tobler et al. 1999), the meta-analysis demonstrated some evidence that smaller, more interactive programmes were most effective. The other meta-analyses on alcohol misuse interventions (Foxcroft et al. 1995) and health promotion for prevention of substance abuse (White and Pitts 1998) were inconclusive.

Foxcroft et al. (1995) found that there were no large negative effects of alcohol education. About a third of the studies showed significant but small effects on behaviour. While many papers reported short-term increases in knowledge about alcohol and attitudes to drinking, there was no link to clear behavioural change. There were no obvious differences between those that claimed success and those that did not, but social skills training was usually a part of those studies that reported positive behavioural effects. White and Pitts (1998) found that few studies evaluated long-term effectiveness and there was a need for more focused interventions, and for interventions with hard-to-reach groups.

Our review of studies was consistent with these conclusions. Most studies were school-based, though some also involved parent and community involvement. There is insufficient evidence from these studies to assess the impact of parent and community involvement. There is some evidence that school-based interventions for substance abuse have some effect in changing knowledge about drugs and alcohol. Fewer studies demonstrated effects on behavioural measures.

#### **Violence prevention**

Early intervention programmes for conduct disorders related to violence prevention rather than mental health. Of the eight studies identified, five of the interventions were in schools and three in the community. The studies were predominantly school-based curriculum-driven universal interventions, directed at the general school community.

Results indicated a very limited effect of these school programmes in altering outcomes such as attitudes to violence or levels of self-reported violence. However, follow-up was very short in all but one of these studies (Hausman et al. 1996). In this one, positive results were achieved after two years for only one of the three cohorts who received the intervention. Two community-based interventions for youth found generally encouraging results, though a parent-focussed intervention had limited success (Murray et al. 1998).

This field has attracted significant research interest in the USA where all the studies were based. There is recognition of the need for further evaluation of projects, long-term follow-up of programmes

through to adulthood and attention to the impact of developmental and contextual influences on violent behaviour (Tolan and Guerra 1996).

### Depression

The three studies investigating mood disorder prevention concerned young people at high-risk for major depression and provided school-based interventions. The improvements, regardless of condition, found over time in two studies could relate to a therapeutic effect of the screening interviews used to identify participants at risk for depression. Design weaknesses in two studies make it difficult to draw clear conclusions about the impact of the interventions. However, the well-designed RCT of Clarke et al. (1995) suggests that classroom-based skills-oriented interventions may have an effect on preventing depression in young people. The study is also important in demonstrating the effects of longer follow-up and of using different outcomes and analyses to investigate impact of an intervention. Further research is required, with larger samples and methodologically rigorous designs.

### Eating disorders

Only four eligible studies were identified relating to early interventions for restrictive eating disorders. Two focussed on university undergraduates, and the other two included high school students with sub-sample analyses of women at high-risk for eating disorders. Three interventions included lesson-based group discussions, and the other intervention involved software resources and an e-mail discussion list.

Overall, these studies reported limited and inconsistent levels of effectiveness for interventions involving female students in late adolescence. Body image attitudes were improved by the intervention in two studies. However, there were no effects on eating disordered behaviour. Interventions for students at high-risk for eating disorders reported mixed results. The improvement over time in two studies, regardless of condition, suggests a possible effect of altering attitudes through completing questionnaires.

While the studies reviewed here did not investigate the long-term impact of their programmes, no impact on eating behaviour was demonstrated despite some short-term changes on intermediary variables such as self-esteem and body dissatisfaction. One must be cautious about making conclusions given that the literature on primary prevention programmes in this area is very small.

### General mental health interventions

The four papers reported in this section are not directed at particular mental health conditions but take a more general approach. Studies reviewed here include interventions with juvenile offenders (Wilderness Programme), interventions with first-year university students (peer support), programmes with inner-city adolescents with chronic illness (communication and social skills training and work experience) and public health interventions across entire communities.

These papers report on quite disparate interventions. Only limited conclusions can be drawn from each paper, as further studies would need to be carried out to confirm the effectiveness (or lack of) reported here. However, they do provide indications of the possible gains to be made from such interventions.

### New Zealand-based studies

The vast majority of studies reviewed here were conducted in the USA ( $n=29$ , 83%), with two systematic reviews produced in the UK and the remaining four studies conducted in Canada, Switzerland, Italy and Sweden. Some formative and process evaluations have been conducted in New Zealand (e.g. Coggan and Disley 1996a, Central Health 1998, Coggan et al. 1996b). However, despite extensive consultation with researchers and programme providers, particularly with respect to Māori, we were unable to find any local studies that had completed outcome evaluations which met our inclusion criteria, though two initially excluded outcome evaluations were separately reviewed as they were of local significance.

## ***Conclusions and Recommendations***

This review of the literature of early interventions in youth mental health confirmed that, in line with mental health prevention generally (National Institute of Mental Health 1998), there has been little good quality research done on programme effectiveness (35 studies identified since 1995 meeting our inclusion criteria).

The lack of research may reflect a focus by programmes on intervening in middle childhood rather than in adolescence.

Reducing the suffering from mental illness in our young people has traditionally focussed on improving treatment and access to treatment for individuals. The move toward intervening with a group, before conditions develop to a clinical level, is well advanced in some mental health domains (e.g. substance abuse and conduct disorder) but in its infancy for disorders of mood, anxiety and eating. This discrepancy may reflect the more publicly disruptive nature of these disorders compared with the more hidden aspects of mood and eating disorders.

Given the paucity of work relating to internalising disorders and eating disorders, and the very different manifestations of these disorders, we cannot make conclusions that generalise across all conditions considered in this review.

The lack of clear consensus about the benefits of certain approaches (e.g. community-focused compared with classroom-based, skills training compared with social support) is possibly an artifact of the many other factors that effect the success or otherwise of a programme. It isn't always clear whether a programme that succeeded in one community failed in another. Potential influences on a programme's success may include:

- the “social capital” of the community (Baum 1999) in terms of its networks and cohesion
- the social-demographic make-up of the community (e.g. ethnicity, employment levels)
- the programme providers' motivation and commitment
- the resources available, including time, expertise, and financial support.

Given the lack of any rigorous outcome evaluations conducted since 1995 in New Zealand, it is not possible to make conclusions confidently about which of the many early intervention programmes available for youth mental health are demonstrably effective here. Moreover, given the variety of programmes, settings and mental health conditions considered internationally, and the early stage of primary prevention approaches, there is a lack of consensus about what approaches work best in what circumstances.

Only through rigorous outcome evaluation will we build the depth and quality of knowledge necessary to be confident as to which interventions will be effective in preventing and reducing the development of mental health conditions in our young people.

## RECOMMENDATIONS

1. That early intervention programme providers look to the work of others internationally and consider which **programme development strategies** would best meet their needs (e.g. to make a programme culturally appropriate).
2. That early intervention programme providers consider transferring **programmes already implemented** and evaluated elsewhere, bearing in mind features of their community, resources available and their mental health priorities.
3. That early intervention programmes are **pilot-tested** on a small scale, with rigorous process and outcome evaluation, to gauge the potential for success as well as to inform modifications which maximise chances of success.
4. That early intervention programmes involve **outcome evaluation** strategies, which are well-planned, realistically resourced and appropriately extended over time to measure short, medium and long term success of outcomes.
5. That early intervention programmes include **process evaluations**, which inform the fidelity of a programme and help interpret why outcome effects are found or not found.
6. That evaluations of early interventions include the **cost effectiveness** of conducting the programmes and of the effects of any changes in outcomes that occur.
7. That **workforce development and training** initiatives are instituted in the areas of early intervention programme development, implementation and evaluation.
8. That **advice and expertise** on planning and conducting evaluations of early intervention programmes (e.g. in the areas of study design, instrument development, statistical analysis) is available to providers from the early stages of developing their programme.

### ***MeSH Headings***

mental disorders, depression, adolescence, health promotion, preventive health services, health education, community health services, school health services, program evaluation, outcome assessment.

### ***Additional key words***

early intervention, youth, family, community, schools, primary prevention.



## LIST OF ABBREVIATIONS

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<b>AAS</b>	—	anabolic androgenic steroid
<b>ANOVA</b>	—	analysis of variance (statistical analysis, see Glossary)
<b>BSI</b>	—	Brief Symptom Inventory
<b>BSQ</b>	—	Body Shape Questionnaire
<b>CES-D</b>	—	Centre for Epidemiologic Studies-Depression Scale
<b>CI</b>	—	Confidence Interval
<b>DSM</b>	—	Diagnostic and Statistical Manual of Mental Disorders (versions include 3 <sup>rd</sup> edition (III), revised 3 <sup>rd</sup> edition (III-R), and fourth edition (IV) (American Psychological Association 1994)
<b>EAT</b>	—	Eating Attitudes Test
<b>EDI</b>	—	Eating Disorders Inventory
<b>EDE-Q</b>	—	Eating Disorder Examination-Questionnaire
<b>GAF</b>	—	Global Assessment of Functioning
<b>GSI</b>	—	General Severity Index
<b>HDRS</b>	—	Hamilton Depression Rating Scale
<b>HFA</b>	—	Health Funding Authority
<b>LSD</b>	—	Lysergic Acid Diethylamide
<b>MMPI-A</b>	—	Minnesota Multiphasic Personality Inventory – Adolescent Scale
<b>PSCL</b>	—	Physical Symptom Check List
<b>RADS</b>	—	Reynolds Adolescent Depression Scale
<b>RCT</b>	—	randomised controlled trial
<b>SD</b>	—	standard deviation

## GLOSSARY

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**Affective disorders** ~ Mental disorders, the essential feature of which is disturbance of mood manifested as a full or partial manic or depressive syndrome.

**Analysis of variance (ANOVA)** ~ A statistical analysis involving the comparison of variances reflecting different sources of variability.

**Before and after study** ~ A situation in which the investigator compares outcomes before and after the introduction of an intervention.

**Bias** ~ Deviation of results or inferences from the truth, or processes leading to such deviation.

**Blinded study** ~ A study in which observers and/or subjects are kept ignorant of the group to which they are assigned. When both observers and subjects are kept ignorant, the study is referred to as double blind.

**Cognitive behavioural therapy** ~ A form of therapy involving multiple treatment components in which the young person is taught to replace maladaptive thinking patterns with adaptive thoughts to increase levels of self-reinforcement and to explicitly schedule pleasurable activities.

**Cohort study** ~ The analytic method of epidemiologic study in which subsets of a defined population can be identified who are, have been, or in the future may be exposed or not exposed, or exposed in different degrees, to a factor or factors hypothesised to influence the probability of occurrence of a given disease or outcome.

**Confidence Interval** ~ A range of values assumed with a specified degree of confidence to include a population parameter.

**Cluster analysis** ~ Statistical technique for comparing groups which takes account of correlation between scores within groups.

**Comorbidity** ~ Dual occurrence of more than one disease, condition or state.

**Confounder** ~ A third variable that indirectly distorts the relationship between two other variables.

**Continuation high school** ~ An alternative high school system in the United States for students who are unable to remain in the regular/comprehensive school system for functional reasons, including substance abuse.

**Co-variance** ~ A measure of the joint variability of two variables.

**Datura** ~ A drug; a herb with anticholinergic properties (i.e. that block the passage of impulses through the parasympathetic nerves).

**Dependent group** ~ The response variable of an experiment (often referring to the predicted or outcome variable).

**Fidelity** ~ Quality of programme implementation, including such areas as standardisation of programme implementation training and process evaluation of training received and skills learnt.

**Gateway substance** ~ An addictive substance that is thought to lead to uptake of “harder” drugs (e.g. marijuana is considered a gateway drug for cocaine and crack).

**Generalisability** ~ Applicability of the results to other populations.

**Grey Literature** ~ That which is produced by all levels of government, academics, business and industry, in print and electronic formats, but which is not controlled by commercial publishers.

**Incidence** ~ The number of new events (cases or deaths) of a specific disease or disorder occurring during a certain period.

**Independent variable** ~ The variable manipulated by the experimenter (in this review, the main independent variable would be the condition (i.e. intervention or control).

**Interaction** ~ The outcome of an experiment in which the effects of one independent variable change at the different levels of a second independent variable. For example a condition by gender interaction could be represented by an effect for an intervention group compared to control being different for males compared to females.

**Mania** ~ Mania is featured by abnormally and persistently elevated, expansive or irritable mood lasting at least one week, with inflated self-esteem, decreased need for sleep, pressure to talk, racing thoughts, distractibility, increased levels of activity and excessive involvement in risky, pleasurable activities.

**Matching** ~ Selecting participants or groups (e.g. schools) possessing similar characteristics to serve in different conditions of a study; a method of reducing variability between groups to reduce experimental error.

**Mean** ~ A measure of central tendency; the arithmetic average.

**Meta-analysis** ~ Any systematic method that uses statistical analysis to integrate the data from a number of independent studies.

**Moderator** ~ A measured variable which effects or modifies the relationship between the variable manipulated by the researcher (independent variable) and outcome (dependent variable). For example, the effect of an intervention may be moderated by the social support accessible to a participant.

**Multi-variate analysis** ~ Analysis considering the relationship between more than two variables.

**Multiple regression analysis** ~ Statistical analysis which aims to find a relationship between an outcome (dependent) variable and several possible predictor (independent) variables.

**Oppositional disorder** ~ A childhood disorder consisting of pervasive disobedience, negativism and provocative opposition to authority figures.

**P value** ~ Statistical tests of significance are used to determine the probability that an association could have occurred by chance alone, if no association really exists. By convention, if the p value is less than 0.05 then the association is considered to be statistically significant.

**Prevalence** ~ The number of events in a given population at a designated time. This is more correctly known as point prevalence.

**Principal components analysis** ~ Statistical techniques applied to a single set of variables which aim to identify a subset of variables that are relatively independent of each other. Variables that are correlated with each other but largely independent of other subsets are combined into factors or components.

**Randomised controlled trial** ~ An epidemiologic experiment in which subjects in a population are randomly allocated into groups to receive or not receive an experimental preventive or therapeutic

procedure, manoeuvre or intervention. RCTs are generally regarded as the most scientifically rigorous method of hypothesis testing available in epidemiology.

**Rangatahi** ~ youth (in Māori)

**Recall bias** ~ Systematic bias due to differences in accuracy or completeness of recall to memory of past events or experiences.

**Repeated measures** ~ An experimental design where participants receive measures at repeated follow-up assessments over time.

**Selection bias** ~ Error due to systematic differences in characteristics between those who are selected for inclusion in a study and those who are not.

**Survival analysis** ~ Statistical assessment of time to onset of an outcome.

**Standard deviation (SD)** ~ A measure of variability; the square root of the variance. Expresses variability in terms of the original units of measure.

**Trend analysis** ~ The statistical assessment of linear and higher-order trends (e.g. quadratic, cubic).

**Type I error** ~ An error of statistical inference that occurs when the null hypothesis is true but is rejected. An error of “seeing too much in the data”.

**Type II error** ~ An error of statistical inference that occurs when the null hypothesis (that there is an absence of a relationship) is false, but is not rejected. An error of “not seeing enough in the data”.

**Variance** ~ A measure of the variation shown by a set of observations, defined by the sum of the squares of deviation from the mean, divided by the number of degrees of freedom in the set of observations.

This glossary was prepared with reference to Keppel and Saufley (1980), Ellis and Collings (1997), and Tabachnick and Fidell (1996).

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# Introduction

## REVIEW SCOPE

This review was developed as a result of a request from the Health Funding Authority (HFA) to undertake a systematic review of research on the effectiveness of early prevention interventions for mental illness involving youth. Meeting this objective will help the HFA to identify which existing and proposed intervention programmes or strategies in New Zealand are likely to be effective.

In addition, this review aims to encourage and inform the planning of rigorous evaluation of programmes supported in the future.

The HFA was particularly interested in reviews that considered culturally specific interventions, especially for Māori and Pacific Islander participants.

The scope of the review reflects the HFA's priorities for early intervention, the filling of information gaps (a good knowledge base existed for risk and protective factors, and interventions for suicide-risk), and efforts to make the review task manageable in the time allowed.

Given these considerations, the brief provided by the HFA included the following constraints:

### Mental health condition

This review does not cover all areas of mental health interventions. Priority mental health areas of the HFA for the purposes of this report were substance abuse disorders, conduct disorders, mood disorders, eating disorders and anxiety disorders. These are defined in the next section titled "subgroups of mental illnesses".

### Participants

This review is restricted to those studies that intervened on the mental health outcomes for people aged 14-24 years. Interventions reviewed were directed at young people who did not have an established diagnosis of a mental health condition (see "prevention" section below).

### Publication date

As this review was to update an earlier literature review (Raeburn and Sidaway 1995), the search was limited to studies produced from 1995 to June 1999.

### Intervention

Studies were considered if their interventions aimed either:

- *to prevent the development* of mental health conditions relating to substance abuse, conduct disorder, mood (including depression), eating disorders (anorexia and bulimia nervosa) and/or anxiety, or
- *to intervene in the early stages* of a mental health condition to alter its development or pathway (e.g. pathological eating behaviours not meeting diagnostic criteria for clinical disorder).

### Evaluation design

Studies were to quantitatively evaluate the effectiveness of early intervention programmes as measured by post-intervention outcomes (i.e. exclude evaluations of "process").

### Outcomes

Outcomes of interest were emotional, cognitive, behavioural/behavioural intention outcomes in at least one of the following categories:

- *knowledge and attitudes* about the mental health condition, its risk and protective factors, early signs and symptoms
- *risk factors* for the mental health condition (characteristics, variables or hazards that, if present for a given individual, make it more likely that this individual, rather than someone selected at random from the general population, will develop a disorder (Mrazek and Haggerty 1994))
- *protective factors* (i.e. associated with altering risk factors or reducing the severity of early signs of a condition) for the mental health condition
- *early signs/symptoms* of the mental health condition.

## STRUCTURE OF REPORT

This report first presents some background information about principles of prevention, subgroups of mental illness and prevalence of mental illness among young people in New Zealand. The methodology and limitations of the review are specified.

Following sections are specific to the mental disorder/condition at which the interventions are directed. These sections have two parts. The first briefly introduces the disorder, presents the study appraisals and a discussion of issues. The second part presents ta-

bles giving more detailed information about appraised studies.

These results are followed by an extended discussion of issues identified in the review, an overall summary, conclusion and recommendations.

## PREVENTION

### Definitions

There is little consensus concerning the conceptualisation of the term "prevention" (National Health and Medical Research Council 1997). Three levels of primary, secondary, and tertiary prevention are frequently used in the health promotion field (Caplan 1964).

- Primary prevention seeks to decrease the incidence or number of new occurrences.
- Secondary prevention seeks to lower the number of established cases within the population.
- Tertiary prevention seeks to minimise the disability or recurrence of an established disorder in an individual already diagnosed.

This review will focus on primary prevention. Strategies can be conceptualised as consisting of three levels (Mrazek and Haggerty 1994).

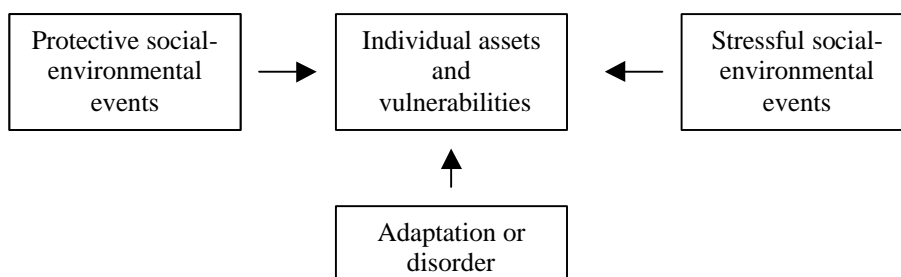
- universal interventions (for all the individuals in a particular group and that would lead to a reduction in risk of disorder)
- selective interventions (for persons or sub-groups of a population with increased risk of future disorder)
- indicated interventions (for persons or groups where early signs or symptoms exist but are not sufficient to warrant a diagnosis).

The term "early intervention" has been used in a variety of ways in mental health (Disley 1997). In this report we understood the term as any initiative directed at young people who do not have an established diagnosis of a mental health condition, and which is intended to have some impact on mental health outcomes for those people. Therefore, universal, selective and indicated interventions were considered.

### Early intervention framework

A theoretical framework for understanding the development, delay or avoidance of a mental health condition is described by Hodgson, Abassi and Clarkson (1996) (see **Figure 1**). This model, which is influenced by the seminal work of Michael Rutter (Rutter 1981, 1985, 1987) describes factors which can be targeted in early interventions for mental health.

Acting on an individual are a number of contextual factors – some are protective (e.g. social networks, having support of adults, involvement in the broader community) while others are stressful (e.g. unemployment of parents, lack of academic success). The individual also has particular personal assets and vulnerabilities that interact with these contextual factors, such as knowledge of health effects of disordered behaviour, self esteem, coping skills, and resistance to peer pressure.



**Figure 1: Theoretical framework for conceptualising factors which influence the development of mental disorders (Hodgson et al. 1996)**

Early interventions attempt to target these areas of potential impact (while accepting that some factors will be unmodifiable, such as gender).

Interventions may aim to minimise the potentially harmful effects of stress on the individual by diminishing risk factors, and/or enhancing protective factors, in the environment. Programmes may also seek to bolster the individual's internal assets that promote resilience so they can better respond to contextual stress. Resilience can be promoted through ameliorating a person's response to an environmental hazard (or risk situation) that predisposes to a maladaptive outcome (Rutter 1987).

An outlined review of common risk and protective factors associated with mental illness is presented in the following sections.

### **Risk factors**

Risk factors for mental illness may be considered generic to a given class of mental disorders (Raphael 1993). The overlap of risk factors, and comorbidity of mental illness, suggests that early prevention programmes aimed at reducing risk may be more effective if directed toward general mental health rather than focusing on specific disorders. Broad risk and protective factors for mental disorders are outlined below.

#### **Risk factors**

Risk factors for a range of mental disorders may be represented by the following categories (Costello and Angold 1995, Durlak 1998, Fergusson et al. 1997, Hawkins et al. 1992):

- **Social disadvantage** (e.g. low household income, limited parental education, poor living standards)
- **Family functioning** (e.g. marital discord, parental emotional problems, punitive child-rearing, abusive experiences, inadequate parental supervision or discipline, impaired parent-child relationships, death and bereavement in the family, risk behaviour of family (such as substance use))
- **Individual factors** (e.g. early onset of behavioural problems and difficulties, stress, personality (such as rebelliousness), attitudes (e.g. towards substance use), being female (e.g. for depression, anxiety and eating disorders))
- **Family history** (e.g. behavioural and genetic inheritance)
- **School factors** (e.g. cognitive delays in childhood, school culture, disciplinary practices, academic failure, low intelligence, low commitment to school)

- **Peer factors** (e.g. peer-group influences, values and norms, related to peer pressure, modelling, and rejection)
- **Community** (e.g. impoverished neighbourhood, high crime rate, ineffective social policies, laws and norms, availability of substances/weapons)
- **Media** (e.g. television violence, alcohol advertising and media presentations which normalise anti-social behaviours may increase risk, but are likely to make relatively minor contributions)

### **Protective factors**

The following factors are thought to protect from mental illness (Fergusson et al. 1997):

- **Intelligence and problem-solving abilities**
- **External interests and affiliations, social competence, good peer relationships**
- **Parental attachment and bonding**
- **Early temperament and behaviour**

These factors may express themselves through mediating psychological variables such as resiliency, coping skills and self-esteem (Rutter 1987). Evaluations of interventions may include these intermediary outcomes, which may be associated with reduced incidence of mental illness. In addition, wider contextual factors such as social policies and norms, and community and family resilience, may alter outcomes for individuals (Durlak 1998). Consequently, mediating psychological variables have also been examined in this review.

## **SUBGROUPS OF MENTAL ILLNESSES**

The mental health priorities for the HFA in this review include the following, as classified by DSM-IV (American Psychological Association 1994): substance related disorders, conduct disorders, mood disorders, anxiety disorders, and eating disorders.

These disorders can be further categorised as internalising or externalising (Disley 1997). While these categories are simplifications and disorders will generally involve characteristics of both processes, we have found them useful conceptually and refer to them here. We consider as externalising disorders those that may be externally directed and include those relating to substance abuse and conduct. We consider as internalising disorders those that are internally directed and include those of mood and anxiety. Classification is more contentious for eating disorders.

The disorders relevant to this review are broadly defined below (American Psychological Association 1994, Disley 1997).

### Substance abuse disorders

Substance abuse disorders are defined as maladaptive patterns of substance use (alcohol and other drugs) which lead to clinically significant impairment or distress, and are associated with increased tolerance of the substance and withdrawal symptoms when intake is reduced. Substance abuse involves continued use that interferes with social, occupational and recreational activities despite awareness of its detrimental or psychological impact.

### Conduct disorders

Conduct disorders are characterised by repetitive and persistent patterns of behaviour in which the basic rights of others and societal norms/rules are violated. Conduct disorders are characterised by aggression to others, destruction of property, deceitfulness or theft and serious violation of rules. This disturbance causes clinically significant impairment in social, academic or occupational functioning. Attention-deficit disorders are a sub-group of conduct disorders.

### Mood disorders

Mood disorders include major depressive, bipolar and unipolar mood disorders. Major depression is characterised by depressed mood, change in appetite, insomnia or hypersomnia, fatigue, poor concentration, feelings of worthlessness and suicidal thinking. Bipolar mood disorder is characterised by both depressive and manic episodes. Unipolar disorder consists of either recurrent depressive or recurrent manic episodes.

### Anxiety disorders

Anxiety disorders include obsessive-compulsive disorders (characterised by rituals), post-traumatic stress disorder (pattern of severe anxiety after witnessing a catastrophic event), panic disorder (sudden intense, brief fearful spell), phobia (unreasonable and intense fear that leads to avoidance, including agoraphobia, social phobia, and specific phobia) generalised anxiety disorder (persistent and excessive anxiety), acute stress disorder, and anxiety secondary to a medical condition or to substance abuse.

### Eating disorders

Eating disorders include anorexia nervosa and bulimia nervosa. Anorexia nervosa is characterised by refusal to maintain minimal body weight, intense fear of becoming obese, disturbance of body image and, in women, amenorrhoea. Bulimia nervosa is characterised by binge eating, self-induced vomiting and purging, and depressed mood after binges. There is no extreme weight loss in people suffering from bulimia nervosa as contrasted with those with anorexia nervosa.

## HOW PREVALENT IS MENTAL ILLNESS IN NEW ZEALAND'S YOUTH?

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Data on the prevalence of mental illness in young people in New Zealand is provided by two major longitudinal studies conducted in two South Island cities: Dunedin (Anderson et al. 1987, Feehan et al. 1994, McGee et al. 1990) and Christchurch (Fergusson et al. 1993). These studies provide rates of mental disorder using standardised interviews and diagnostic criteria.

Given the lower population of Māori and Pacific Islanders within the South Island, these figures may not reflect the prevalence of mental health disorders in different ethnic groups. Māori and Pacific Island populations as a whole do have a higher rate of presentation to crisis, acute and forensic services, and are more likely to suffer from drug and alcohol disorder (Mental Health Commission 1998). Although Māori, Pacific and recent migrants are somewhat under-represented, Fergusson (1997) argues that similar prevalence in other countries suggests that the findings are generalisable beyond the South Island.

Prevalence data of major disorders for 15 and 18-year-olds are presented in Table 1 (See p. 5). Broadly similar prevalence estimates are evident across these studies.

**Table 1. Prevalence estimates of common mental disorders in young people in Dunedin and Christchurch**

	<b>Prevalence at age 15 (%)</b>	<b>Prevalence at age 18 (%)</b>
<b>DUNEDIN STUDY</b>		
Anxiety disorders	10.7	19.7
Mood disorders	4.2	18.0
Conduct disorders <sup>1</sup>	9.0	5.5
Attention-deficit disorders	2.1	*
Substance abuse <sup>2</sup>	*	12.2
Any disorder	22.0	36.6
<b>CHRISTCHURCH STUDY</b>		
Anxiety disorders	13.1	17.1
Mood disorders	6.6	22.1
Conduct disorders <sup>1</sup>	10.8	4.8
Attention-deficit disorders	4.8	*
Substance abuse <sup>2</sup>	*	8.6
Any disorder	24.0	35.0

<sup>1</sup> Estimate does not include oppositional disorder which is included at age 15

<sup>2</sup> Excludes nicotine use

\* Estimate not available

Source: Table compiled by Fergusson, Horwood and Lynsky (1997)

At 15 years of age, about a quarter of the participants had a psychiatric disorder, and at 18 years the prevalence of any disorder increased to over a third. While prevalence increases between the ages of 15 and 18, it is worth noting that the Dunedin study found 18% of 11-year-olds had at least one of the major disorders investigated.

These high proportions include conditions of widely ranging severity and are best considered as upper limits for psychiatric disorder (Fergusson et al. 1997). The most common disorders were those of anxiety, mood and conduct. There was also strong evidence for co-morbidity of disorders (e.g. anxiety with mood disorders, conduct with substance use disorders). Prevalence rates were not obtained for less common illnesses such as obsessive-compulsive disorders and eating disorders.

The Christchurch and Dunedin studies also demonstrated rates of disorders for females at 15 years or older which were 1.2 to 1.7 times higher than that found for young males (Fergusson et al. 1997), which could be due to increased rates of depression and anxiety among young women.

Fergusson et al. (1997) discuss differences in prevalence of mental disorders between Māori and non-Māori youth. While the Christchurch study found that prevalence of any disorder in Māori youth at age 18 was 49.5% compared to 33.1% in non-Māori youth, these differences may relate to the lower socio-economic status of the Māori population. Fergusson et al. (1997) concluded that further research was required with representative samples in order to have a greater understanding of ethnic differences in mental health in New Zealand.

# Methodology

A systematic method of literature searching, grading and appraising was employed in the preparation of this report.

## LITERATURE SEARCH

The following data-bases were searched using the search strategy outlined in **Appendix 1**:

- Medline
- Embase
- Cinahl
- Healthstar
- Current Contents
- Eric
- Psychlit
- Sociological Abstracts
- Social Work Abstracts
- Social Science Index
- Social Science Citation Index
- Austrom
- Index New Zealand

Searches were limited to English language material from 1995 onwards and were run between mid-May and mid-June 1999.

A number of other electronic and bibliographic sources were also searched. These included:

- Cochrane Library
- Database of Abstracts of Reviews of Effectiveness
- Health Technology Assessment database
- New Zealand Bibliographic Network
- New Zealand Ministry of Health website and library
- New Zealand university and medical library catalogues
- NZHTA in-house collection
- Internet sites, particularly in New Zealand (see **Appendix 2**)

Material referenced in publications obtained in the course of research on the topic was identified.

Personal contact was made with staff in the Health Funding Authority, researchers in the field and other individuals to whom we were referred. In addition, researchers at the Māori and Pacific Island research units in Dunedin, Wellington, Palmerston North and Auckland were contacted for advice on “grey” literature (unpublished literature) which may not have been located in the above sources (**Appendix 3**).

## INCLUSION AND EXCLUSION CRITERIA

Reviewed studies are included in the references section. Excluded studies are presented in **Appendix 4**.

### *Inclusion criteria*

#### Publication date

Studies were included for review if they were produced during or beyond 1995.

#### Mental disorders

Programmes needed to intervene for substance abuse disorders, conduct disorders, mood disorders, eating disorders and anxiety disorders.

#### Interventions

Studies were considered if they aimed either:

- *To prevent the development* of mental health conditions relating to substance abuse, conduct disorders, mood disorders (including depression), eating disorders (anorexia and bulimia nervosa) and/or anxiety, or
- *To intervene in the early stages* of a mental health condition with the aim of altering its development or pathway (e.g. pathological eating behaviours not meeting diagnostic criteria for clinical disorder).

#### Age range

Studies were included if they involved and reported results for:

- young people/rangatahi within the age group of 14-24 years (in the USA, this excludes youth in Grades 7 or below, unless the intervention was completed in later grades).

Also included were studies that were not restricted to participants within this age range, but met any of the following criteria:

- Results were reported separately on a subgroup of participants between 14-24 years-of-age.
- The effect of age in the sample was investigated and was not significant (e.g. data was pooled across the age range but no age effect was evident).
- The mean age for the sample was within the allowed age range of 14-24 years.

#### Outcomes

Outcomes of interest were emotional, cognitive and behavioural or behavioural intention outcomes in at least one of the following categories:

- *knowledge, and attitudes* about the mental health condition, its risk and protective factors, early signs and symptoms
- *risk factors* for the mental health condition
- *protective factors* (i.e. associated with altering risk factors or reducing the severity of early signs of a condition) for the mental health condition
- *early signs/symptoms* of the mental health condition

#### Study design

Studies were to quantitatively evaluate the effectiveness of early intervention programmes as measured by post-intervention outcomes (i.e. exclude evaluations of “process”). This review assessed papers which used one of the following designs:

- meta-analysis
- systematic review
- randomised controlled trial
- cohort study
- case control study
- before and after study, with a control or comparison group

It is important to emphasise that papers omitted because they did not meet the design inclusion criteria (e.g. descriptive cross-sectional studies, process evaluations and studies without a comparison group) still have an essential role in research in terms of programme development and refinement, improving programme fidelity, generating hypotheses, interpreting relationships between variables and providing qualitative data that can support and enlighten other research findings.

### *Exclusion criteria*

Reports were excluded for assessment if:

- they reported a single case study
- they evaluated interventions with participants who were diagnosed with mental disorder according to DSM-III or IV criteria (American Psychological Association 1994)
- their interventions involved the individualised clinical management or treatment of a mental disorder
- their primary outcome focused on suicide prevention or related to mental disorders relating to personality, schizophrenia/other psychoses or dementia
- they evaluated process of interventions rather than outcomes (e.g. uptake of programme)
- their methods and results were not clearly described, or had significant discrepancies
- they were not published in English.



## APPRAISAL METHODOLOGY

### ***Selection and appraisal***

Two reviewers applied the inclusion and exclusion criteria to identify 33 of 171 articles as eligible for selection and appraised the studies.

Critical appraisal forms standardised by study design were used to extract and appraise the literature. These forms were designed for use at Puget Sound, Seattle, USA (Group Health Cooperative of Puget Sound 1996) and adopted by the New Zealand guidelines group.

### ***Levels of evidence***

The levels of evidence (which evaluates quality) was assigned using a modification of the US Preventive Services Task Force Protocol (US Preventive Services Task Force 1989) and is presented in tables of reviewed studies. Note that studies representing some of these levels are omitted based on inclusion and exclusion criteria specified earlier. Within these levels studies may be carried out with greater or lesser care.

- |       |   |
|-------|---|
| Ia    | evidence obtained from at least one randomised controlled trial (with randomisation of individuals)                                   |
| Ib    | evidence obtained from randomised controlled trials (with randomisation of groups)  |
| II-1a | evidence obtained from before and after studies with non-randomised matched concurrent comparison group                               |
| II-1b | evidence obtained from before and after studies with non-randomised non-matched comparison group                                      |
| II-2  | evidence obtained from cohort or case-control analytic studies, preferably from more than one centre or research group                |
| II-3  | evidence obtained from multiple time series with or without intervention  |
| III   | descriptive cross-sectional studies, opinions of respected authorities based on clinical experience, and reports of expert committees |

## LIMITATIONS OF THE REVIEW

This study has used a structured approach to review the literature. However, there are some inherent limitations with this approach.

Publications included in this review were limited to January 1995 – May/June 1999.

This review has been limited by the need to restrict the analysis to English language studies and references presented in the database or suggested by the individuals and organisations we contacted.

The nature of the search strategy undertaken and the research questions asked means some informative and related areas of research have not been included. This includes studies relating mainly to students aged less than 14 years. For instance, we identified meta-analyses (Durlak and Wells 1997, Durlak 1998, Hoag and Burlingame 1997) that included some evidence about early mental health interventions for young people aged 14 years or over. However, there were only a few studies for our age of interest included in these meta-analyses, and there was no sub-analysis for people over 13 years. Therefore, it is not clear to what extent the findings of these reports are transferable to interventions with young people aged 14 years or over.

The development and expression of various mental health conditions is greatly influenced by developmental stage. However, as the incidence of some mental health conditions appears to be increasing for younger age groups, evidence from interventions with younger children may provide potentially effective approaches for older youth.

Also excluded were studies that were not focused on mental health. This means, for example, that research targeting unemployment, though a risk factor for mental illness, would not be reviewed if the search strategy did not identify any reference to a mental health outcome.

Although this review has greatly benefited from advice provided by the consultant, it has not been exposed to wide peer review.

The studies included in this review were conducted outside New Zealand, in particular the United States. It is not known whether early intervention programmes are transferable to the New Zealand population and context, and particularly Māori populations.

However, many studies reviewed involved participants from indigenous, ethnic and socio-economically deprived communities which present

strategies to make such programmes culturally and socially appropriate. These may provide insights and issues to consider in developing interventions in New Zealand (see “Discussion” section for further comment on these issues).

For a detailed description of interventions and evaluation methods and results used in the studies appraised, the reader is referred to the original papers cited.

# Substance abuse prevention

## INTRODUCTION

Substance abuse embraces both the harmful use of alcohol and the use or misuse of licit and illicit drugs such as cannabis, cocaine, opioids, tranquilisers and prescription drugs.

New Zealand ranks sixteenth among OECD countries in terms of alcohol consumption. Young men aged 18-24 years experience the most problems with drinking, while women in the same age group are the heaviest drinkers among women and report the most problems (Stewart 1997).

There is evidence that drug dependence is more common in younger than older people, with a prevalence of 3.8% among those aged 18-24 compared with 1.4% among those aged 25-44 and 0% among 45-64-year-olds (Chetwynd 1997).

The 16 substance abuse prevention interventions identified in this review are all from the USA. Most (n=11) are school-based, although other components such as involvement of parents and community components are included in some interventions. This reflects the American circumstances and the expectation there that school programmes will address drug and alcohol issues.

Two studies work with female-only groups - one with high-risk females in an unspecified context but using a 16-week curriculum intervention, and the other with girls in a community programme. Three studies are community based. Of the three systematic reviews or meta-analyses, two are from the UK, and the other from the USA.

### ***Systematic reviews and meta-analyses***

Three systematic reviews or meta-analyses in this field have been published since 1995 (see Table 2, p. 16).

Foxcroft et al. (1995) completed a "Review of effectiveness of health promotion interventions: young people and alcohol misuse" in 1995 as part of the work programme for the NHS Centre for Reviews and Dissemination. This was also published as a Journal article (Foxcroft et al. 1997).

This review systematically searched an extensive range of databases, and examined studies that evaluated interventions designed to arrest onset of alcohol use or to minimise alcohol misuse among people aged 8-25 years. They identified only 33 studies that met their criteria for quality.

Results from these studies were inconclusive. There were no large negative effects of alcohol education, and about a third of the studies showed significant but small effects on behaviour. One had evidence of a long-term (small) effect of reducing drinking behaviour although it had no immediate impact on drinking behaviour.

Many papers reported short-term increases in knowledge about alcohol and attitudes to drinking, but there was no link to clear behavioural change.

There were no obvious differences between those that claimed success and those that did not, but social skills training was usually a part of those studies that reported positive effects.

Tobler et al. (1999) reviewed the evidence for effectiveness of school-based drug prevention programmes for marijuana implemented in American schools in grades 6 to 12 (aged 12-18 years) and directed at all ethnic groups. To be included, studies had to include measures of behaviour and not only of attitude or belief. Programmes for addicted youth were excluded. The authors searched unspecified data bases, dissertations, literature reviews and bibliographies, and made direct contact with drug abuse programme directors and research grant recipients.

Thirty-seven studies were identified, and meta-analysis carried out on the effectiveness of the programmes, and of non-interactive and interactive programmes. Interactive school programmes appear to be the most effective (Weighted mean effect size (WES) 0.17 (95%CI 0.14, 0.20)) while non-interactive programmes had a negative effect (WES -0.05 (95%CI -0.10, -0.01)).

The second most important factor after interactivity of programme was the size of the intervention group. Smaller studies appeared more effective, but the authors point out that in larger programmes the course may not be fully implemented or have sufficient staff involved to ensure full participation from students.

Only five studies independently reported results for students in grades 9-12 (aged 15-18 years).

White et al. (1998) examined studies directed to the prevention of substance abuse with young people. They identified 62 studies examining 53 separate

programmes, 47 of which were school-based interventions.

They identified no conclusive results from this material other than that there is insufficient evidence to assess the effectiveness of the range of approaches to drugs education, and that few evaluations have been carried out adequately. Their work included only 11 studies of interest to this review, as they examined interventions for the wider age range of 8-25 years.

### **Other studies**

In his 1995 review, Foxcroft et al. commented that there were few quality studies evaluating the effectiveness of drug and alcohol interventions. This situation has changed little. This report identified 15 studies that met our criteria for inclusion. Of these, 11 reported on changes in behaviour, and five on attitudes, beliefs, knowledge and/or skills to deal with opportunities for drug and alcohol use. Studies appraised for review relevant to substance abuse are described in **Table 3 (p. 18)**.

#### **Anabolic steroid use**

Goldberg et al. (1996a, 1996b) reported on two studies (one the pilot for the other) investigating prevention of use of anabolic steroids (AAS). Both were interventions with high school football teams.

The first involved eight weekly sessions with coaches and peers, plus eight gym sessions plus homework (with parents). The programme addressed risk factors of AAS use, strength training, sports' nutrition and refusal skills for AAS use.

The sample was small but there is evidence that the programme was effective in changing knowledge and attitudes about AAS, some intentions, and beliefs about media messages. Other beliefs and attitudes (such as peer tolerance) did not change and there was no increase in resistance skills.

The second intervention reported by Goldberg et al. was one week shorter, with a much larger sample and a longer follow-up of 12 months. This study reported reductions in intent to use, increases in knowledge, and changes in a number of beliefs about media, sources of reliable knowledge, and self-image and esteem. Behavioural measures were not drug use per se, but behaviours thought to be associated with AAS use – nutrition and use of school or private gyms. These behaviours were more favourable in the intervention group. Most improvements persisted over the follow-up period of one year, with only some reduction in the size of effect.

#### **Alcohol and other substance use**

Botvin et al's (1995) study evaluated two versions of a classroom intervention in each of 7<sup>th</sup>, 8<sup>th</sup> and 9<sup>th</sup> grade (age range 13-15 years). Follow-up was six years from baseline measurement. There was no significant impact on marijuana or alcohol use for the entire sample other than a reduction in prevalence of reported drunkenness in both intervention groups. However, for those students who had completed more than 60% of the programme (n=2752), those in both intervention groups had a statistically significantly lowered prevalence of weekly drinking, heavy drinking, drunkenness and weekly marijuana use. Thus, this study identified that fidelity to the programme is important to its effectiveness.

Kisker and Brown (1996) investigated the effect of having a school-based health centre on reported recent alcohol and marijuana use (and other health related outcomes) in students followed up at 12<sup>th</sup> grade (aged 18 years) after 2-3 years in high school. The design was limited by not having a randomised control group. Instead, a national sample of urban youths was contacted, though it is likely that their schools provided intervention programmes and health curricula also. The pre-intervention data was collected after the end of the first year at high school and so did not represent a true baseline. While the study found no effect of having a school-based health centre on substance abuse, the design problems limit any robust conclusions from being drawn.

Klepp et al. (1995) nested a cohort study within a wider Heart Health Programme. Students were followed from 6<sup>th</sup> grade (12 years), and an intervention, "Shifting Gears", occurred in 9<sup>th</sup> grade (15 years). The intervention for alcohol and marijuana use was a skills training unit of six classroom sessions, designed to enable students to resist pressure for drugs and associated hazardous behaviour.

Students in the intervention group reported significantly lower levels of drinking, and drinking and driving, immediately after the intervention than the control group. These lower levels of drinking and drinking and driving remained in the intervention group until 11<sup>th</sup> grade, but were not significant. No significant differences were reported in marijuana use.

It is difficult to attach significance to the results as no baseline data on alcohol and drug use was collected prior to the intervention. Although comparable at 6<sup>th</sup> grade when the larger study started, the two groups were likely to be different at the time of this programme given that the intervention group had had a major intervention from 6<sup>th</sup> grade, de-

signed to alter health behaviours associated with behaviours of interest in this study.

Shope et al. (1996b) followed four cohorts of students (5-6<sup>th</sup> grade, 6-7<sup>th</sup> grade, 7-8<sup>th</sup> grade and 8-9<sup>th</sup> grade) who had a two-year intervention of seven classroom sessions for each of 6<sup>th</sup> and 7<sup>th</sup> grade, and eight sessions with 7<sup>th</sup> and 8<sup>th</sup> grade. Sessions were designed to provide social pressure resistance training.

Differences in sample size for the different cohorts make it difficult to draw any conclusions on the effect of the intervention for the age group of interest in this review. However, there did seem to be a significant effect for the 8-9<sup>th</sup> grade cohort on the use of cigarettes, smokeless tobacco and marijuana use (although this difference did not persist to the second post-test after one year).

On total knowledge, knowledge of effects, and knowledge of pressures, students in the programme scored higher than controls. No other results were reported for this group.

Shope et al. (1996a) carried out a classroom intervention with 10<sup>th</sup> grade students (16 years) of five sessions designed to increase student knowledge and to provide social resistance training. Compared with the control group, there were some significant increases in knowledge of alcohol issues, with limited evidence of some reduction in alcohol misuse in intervention. There was a high attrition rate that may have affected the results – those who completed the study had different measures at pre-test compared with those who dropped out of the study.

Set in a continuation school, Sussman et al's (1998) study investigated the impact of two interventions on substance abuse in a large controlled study of 21 schools randomly allocated to a condition. The interventions included classroom-based curriculum and social and coping skills training, with additional out-of-school events for students in one condition.

The interventions had no effect on marijuana use at the 12-month follow-up, which the authors suggest may relate to health effects being less immediate. The interventions reduced hard drug use and reduced alcohol use for higher baseline users, but not lower baseline users. (This may be because the higher users were already at greater risk, therefore any effective intervention is likely to have a greater observed effect than for those who are at low risk).

In general, the extra out-of-school events appeared to add little to the curriculum-based preventive effects though only 20% of students attended such

events and attendance was not investigated as a moderating effect. It is important to note that a third of students were lost to follow-up due to "chronic absenteeism" which reduced the proportion of students at high-risk for substance abuse.

Williams et al. (1999) report on the continuing effects of Project Northland, an on-going prevention trial that involves a multi-year behavioural curricula (grades 6-8), components with intensive parental involvement, multiple peer leadership opportunities and community changes through formation of task forces.

Results are reported for students who had been in the trial from 6<sup>th</sup> grade. Participants completed a questionnaire that evaluated proneness to, and acknowledgment of, alcohol and drug problems, adolescent-family problems, adolescent-school problems, adolescent low aspirations and validity indicators. Drinking behaviour was reported for the last week and the last month.

Results indicated the greatest effects were for those who were non-users of alcohol at baseline, and that the intervention was of most benefit in reducing self-reported drinking in the last month (though not the last week) for those that were at "low risk" (based on elevated scores on MMPI-A scales).

The effectiveness of a multi-component intervention was evaluated in the study by Werch et al. (1996). Students in the intervention group were provided with a self-instructional module and corresponding audio tape, health consultation with doctor or nurse, and follow-up consultation with trained peer health model two weeks after the first post-test data collection.

There were a number of significant differences between intervention and control groups. The participation group had greater learning about preventing alcohol problems than controls, female students at follow-up reported less intention to use alcohol in future than comparison students, and there was a significant reduction in 30-day quantity of alcohol use and 30-day frequency of alcohol use. There was no significant effect on other measures of drug use. However, follow-up was short (10 weeks from initiation of interventions).

Valentine et al. (1998a) report on an intervention where rigorous efforts in design and statistical analysis were made to control for the possible differences between intervention and control groups, and to evaluate the effect of duration and frequency of treatment on the intervention group. Although their intervention had very limited impact on the students, their paper does illustrate and emphasise the challenges of controlling for bias and evaluating

the differing impact of a programme on students at different levels of risk.

While the majority of studies were universal interventions in schools, two projects worked with high-risk groups in non-school settings.

Cheadle et al. (1995) focused their preventive efforts on a reservation community, which included American Indians, an economically disadvantaged population at high-risk for substance use problems. This study was limited in not having a randomised control sample but instead recruited rural communities not on the reservation, which included some American Indians. Furthermore, data collection was repeated on same year levels but with different students two and four years after multi-component community interventions began. This introduces other sources of variability.

This study found a general reduction over time in substance abuse across all participants regardless of intervention, and no intervention effects for reservation American Indians although the number involved was relatively small. While no effects were found, the weak study design permitted only low power to pick up effects and the control communities may well have had their own strategies in place for reducing substance abuse which contributed to the general improvement found across the whole sample.

A group of female youth (14-19 years) who were either pregnant, parenting or at risk for drug abuse were involved in an RCT involving a curriculum-based course with or without an additional social and life skills training programme (Palinkas et al. 1996).

While using only a short three-month follow-up period, there was no significant reduction in the odds of using drugs at follow-up for the students receiving the extra skills training. Baseline drug takers reported reduced drug use at follow-up regardless of whether skills training was provided. This suggests that the Facts of Life curriculum had some effect and that skills training had no additional benefit.

Moreover, results indicated that there was increased marijuana use for the participants receiving skills training, especially for those not taking drugs at baseline. Possible explanations for the increase in marijuana use include that the groups of high-risk youths provided networks and peer pressure for drug taking. In this culturally mixed sample, programme providers also noted that some social skills taught were not consistent with culturally determined values and norms.

Johnson et al. (1998) reported on a community-based intervention directed at increasing family resilience as a means to delay the onset and reduce the frequency of drug and alcohol use. The focus of the intervention was with the parents of youth aged 12-14 years. The study provided some evidence for the effectiveness of the programme in increasing the resiliency in the families of these youth, but gives no direct evidence of effect on actual drug and alcohol use.

Weiss (1998) reported on an intervention with young girls that sought to reduce their use of alcohol. This study was initiated within the organisation "Girls Incorporated". An out-of-school programme was offered in four sites, although in only one of the four sites was the evaluation programme completed with sufficient fidelity for results to be meaningful.

The intervention consisted of 14 hour-long sessions of hands-on interactive and enjoyable activities, where participants learnt about short and long term effects of substance abuse, ways to manage stress, and skills for responsible decision making about licit and illicit drugs. They also prepared to be peer leaders and to implement eight to 10 half-hour sessions about substance abuse with children aged six to 10 years. The participants were aged 11 to 14, and results analysed for the different years of age. Results were reported to significance level of  $p < 0.10$ , at which there was evidence of impact on younger but not older girls. Numbers were small, so there was limited power in the study.

## **Discussion**

Sixteen of the 35 studies identified in this review related to early interventions for substance abuse. Three were meta-analyses, one relating to marijuana use, one to alcohol misuse and the other to substance abuse.

Concerning marijuana use (Tobler et al. 1999), the meta-analysis demonstrated some evidence that smaller, more interactive programmes were most effective.

The other meta-analyses on alcohol (Foxcroft et al. 1995) and substance misuse (White and Pitts 1998) interventions were inconclusive. Foxcroft et al. (1995) concluded that there were no large negative effects of alcohol education, and about a third of the studies showed significant but small effects on behaviour. Many papers reported short-term increases in knowledge about alcohol and attitudes to drinking, but there was no link to clear behavioural change. There were no obvious differences between those that claimed success and those that did not,

but social skills training was usually a part of those studies that reported positive effects.

Our review of 11 studies was consistent with these conclusions.

Most studies were school-based, though some also involved parent and community involvement.

There is insufficient evidence from these studies to assess the impact of parent and community involvement as an added feature of school-based programmes. There is some evidence that school-based interventions for substance abuse have some effect in changing knowledge about drugs and alcohol. Fewer studies demonstrated effects on behavioural measures.

There are some common methodological difficulties in these studies. School interventions are directed to entire cohorts, and there was an insufficient evidence base to know whether these programmes are of more or less effect with individuals who are at different risk, or from different cultures. Follow-up periods were brief, and therefore it was not possible to evaluate whether the interventions had a long-term effect, possibly even in the absence of short-term changes in substance abuse.

These issues are explored further in the Discussion section.

**Table 2. Meta-analyses and systematic reviews appraised - relevant to substance abuse**

Study	Search method	Criteria of inclusion/exclusion	Results	Comments
<b>Foxcroft et al. 1995</b> <sup>1</sup> <i>Focus of review:</i> Health promotion interventions: young people and alcohol misuse. <i>Country:</i> UK	Search of selected databases, (project CORK, BIDS ISI, PSYCHLIT, ERIC (Australia, Canada, UK), ERIC (USA), ASSIA, MEDLINE, Family Resources database, and Health Periodicals database, plus hand searching of last 5 years of preventive medicine, J. of Alcohol and Drug Education, Health Education Research, Theory and Practice, and Health Education Quarterly.	Studies that reported evaluation of interventions that were primary prevention measures designed to arrest onset of alcohol use or secondary prevention measures designed to minimise alcohol misuse among young drinkers, for young people 8-25 years.  <i>Outcomes of interest:</i> Changes in self-reported drinking behaviours, alcohol related incidents such as accidents and crime, attitudes about alcohol, knowledge about alcohol, actual drinking behaviour.  <i>Design:</i> Experimental or quasi-experimental, with pre and post intervention measures, and some type of control group.	<i>Number of studies:</i> 33; 30/33 school-based, 2/33 young offenders' institutions, 1/33 in boys/girls club.  About a third of the studies showed significant short-term effects on behaviour, but effects were small. Only one had evidence on long term (small) effect of reducing drinking behaviour although it had no early impact.  No large harmful effects of alcohol education.  Many papers reported short-term increases in knowledge about alcohol and attitudes to drinking, but there was no link to clear behavioural change.  It is possible that some programmes were effective but did not reach statistical significance for a number of reasons (small size, lack of control for some factor).  All studies reporting positive effects (reduced drinking) contained some social skills training and usually a knowledge component.	Very few high quality studies evaluating effectiveness of alcohol interventions.  Results inconclusive; no obvious difference between those that claimed success and those that did not.  Studies reported cover a wide range of ages, and are not restricted to, or stratified for, age of intervention.
<b>White and Pitts 1998</b> <i>Focus of review:</i> Health promotion with young people for the prevention of substance abuse. <i>Country:</i> UK	Search of selected databases: MEDLINE, PsychLIT, Current Contents, Institute for the Study of Drug Dependence, HEA's and King's Fund Unicorn database.	Studies that reported on effectiveness of different interventions intended to prevent the onset or reduce the prevalence or incidence of the use of illicit substances, and targeting young people aged 8-25 years, or substances commonly used by young people.  Experimental studies that included control groups, or comparison of groups experiencing different interventions, and a design that included both baseline and outcome measures.  Excluded therapeutic interventions involving individuals or small group therapy or counselling.	<i>Number of studies reviewed:</i> 62 studies examining 53 separate programmes; 47 of the programmes are school-based interventions.  11 of the studies included a component that involved people 14 years and over.  Few studies examine long-term programme effectiveness. Those that do suggest that programme gains dissipate rapidly.  At present there is insufficient evidence to assess the effectiveness of the range of approaches to drugs education. Evaluations have not been carried out adequately.	Studies reported cover a wide range of ages, and are not restricted to, or stratified for, age of intervention.

<sup>1</sup> This review is also reported by Foxcroft et al. (1997)



**Table 2. Meta-analyses and systematic reviews appraised - relevant to substance abuse (continued)**

Study	Search method	Criteria of inclusion/exclusion	Results	Comments
<b>Tobler et al. 1999</b> <i>Focus of review:</i> School-based drug prevention programmes for marijuana use. <i>Country:</i> USA	Searched (unspecified) computer databases, purchased dissertations, literature reviews and bibliographies, letters to national drug abuse programme directors and research grant applicants, and telephone inquiries.	Studies of universal school-based interventions, grades 6-12 <sup>2</sup> , which included measures of marijuana use. Experimental studies, including programmes with non-randomly assigned comparison groups with pre and post test results. Excluded treatment programmes for addicted youth.	<i>Number of studies:</i> 37 programmes <i>Effectiveness</i> Weighted mean effect size (WES) of programmes = 0.09 (95%CI 0.07, 0.12). WES of non-interactive programmes = -0.05 (95%CI -0.10, -0.01). WES interactive programmes = 0.17 (95%CI 0.14, 0.20). <i>Attitudes and behaviour</i> Non-interactive programmes: no significant change in attitude: WES = 0.04 (-0.01, 0.09), but change in marijuana use: WES= 0.09 (0.04, 0.14). Interactive programmes: change in attitude WES = 0.27 (0.21, 0.34), change in use: WES = 0.29 (0.22, 0.35). <i>Type of programme by sample size:</i> Smaller programmes more effective than larger ones – most important factor <i>other than</i> interactivity. <i>Type of programme leaders:</i> (analysed only for interactive programme). Suggestion that peer leaders and mental health counsellors more effective leaders.	Carefully executed search and analysis indicating that interactive school interventions are the most effective in reducing marijuana use. While smaller programmes appear to be more effective, authors point out that in larger programmes the course may not be fully implemented, or may have fewer programme leaders present in the classrooms ensuring that all students have the opportunities to participate. Effective programmes had similar results for alcohol use (but these findings cannot be generalised to students in 9 <sup>th</sup> to 12 <sup>th</sup> grade as only five studies independently reported marijuana use).

<sup>2</sup> Estimated ages at different grade levels: 6<sup>th</sup> grade = 12 years, 7<sup>th</sup> grade 13 years, 8<sup>th</sup> grade = 14 years, 9<sup>th</sup> grade = 15 years, 10<sup>th</sup> grade = 16 years, 11<sup>th</sup> grade = 17 years, 12<sup>th</sup> grade = 18 years

**Table 3. Studies appraised relevant to substance abuse**

Study	Sample attributes	Intervention	Method	Results	Comments/limitations
<b>Goldberg et al. 1996a</b> <i>Programme:</i> Anabolic androgenic steroid (AAS) prevention intervention. <i>Subgroup/setting:</i> Urban school <i>Country:</i> USA <i>Level of evidence:</i> II-1b	n= 80 (intervention= 56, control= 24) <i>Age:</i> Mean= 16 years <i>Males:</i> 100%	<i>Conditions:</i> A. AAS teaching. Eight weekly one hour classroom sessions (coach and peer led), plus eight weekly sessions in school gym room, plus parent involvement in home work and one parent meeting. Sessions focused on sports nutrition and proper training techniques, refusal skills for AAS use (taught and practised). Students prepared anti-AAS media messages. B. Control <i>Primary staff:</i> Coach and peer leaders (trained by research staff), plus researchers.	<i>Design:</i> Before and after study with non-randomised concurrent control. <i>Follow-up:</i> Not specified – appears to be at end of intervention. <i>Response rate:</i> 69% <i>Attrition:</i> 33% No data on differences between those who completed and those who did not. <i>Outcome measures:</i> Measures of knowledge about AAS, attitudes, intentions, body image, norms of AAS use, resistance skills and beliefs about various aspects of AAS use.	After controlling for differences in groups at baseline, those in the programme compared with controls had a significant improvement in some aspects of knowledge (of AAS and alternatives to AAS use), attitudes (to winning at all cost, drugs and body image), intention to use AAS to reach a goal and beliefs about media messages. No significant difference on peer tolerance of use of drugs, resistance skills, beliefs about penalties for AAS use and parent attitudes.	Small sample but some statistically significant results, implying that the programme is effective in changing knowledge about AAS and some attitudinal factors. However, no data to indicate any changes in behaviour, or of improved skills to resist drug use.
<b>Goldberg et al. 1996b</b> <i>Programme:</i> Anabolic androgenic steroid (AAS) prevention intervention. <i>Subgroup/setting:</i> School football players <i>Country:</i> USA <i>Level of evidence:</i> Ib	n= 1506 from 31 school football teams <i>Age:</i> mean= 16 years <i>Males:</i> 100%	<i>Conditions:</i> A. Comprehensive intervention including: (i) seven classroom session during football season; (ii) seven weight room sessions during same period; (iii) parents' evening. Sessions addressed risk factors of AAS use, strength training and sports nutrition. Skills to refuse offers of AAS and other drugs were practised. B. Control provided with anti-steroid informational pamphlet. <i>Primary staff:</i> Coaching staff and peer leaders.	<i>Design:</i> Before – after controlled study with randomised schools matched on demographic parameters. <i>Follow-up:</i> 12 months <i>Attrition:</i> 19.6% from pre to first post test (fewer retained in experimental group) and 29.2% lost before second post-test (No significant differences in retention between two groups at this stage). <i>Outcome measures:</i> Thirty-one programme effects covering intent, behaviour, knowledge of AAS, peer and non-peer influences, individual factors and attitudes. Results controlled for pre and post test differences in experimental and control groups.	Attitudes and knowledge improved in experimental group relative to control group, and most persisted over time. Intervention group reported improved sports nutrition behaviours and greater use of school rather than private gyms. Some evidence of short term reduction in new users. Study does report reductions in intent to use, increases in knowledge and changes in a number of beliefs about media, sources of reliable knowledge, and self-image and esteem. Most improvements persisted over time of follow-up, but with some reduction in effect size.	Behavioural measures were not 'drug use' per se, but associated behaviours such as nutrition behaviour and use of public and school gyms.

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**Table 3. Studies appraised relevant to substance abuse** (*continued*)

Study	Sample attributes	Intervention	Method	Results	Comments/limitations
<b>Botvin et al. 1995</b> <i>Programme:</i> Alcohol and marijuana abuse prevention. <i>Subgroup/setting:</i> School <i>Country:</i> USA <i>Level of evidence:</i> Ib	n= 3597 <i>Age:</i> Students recruited in 7 <sup>th</sup> grade <sup>3</sup> with subsequent session in 8 <sup>th</sup> and 9 <sup>th</sup> grades. <i>Males:</i> 52% 91% white, middle-class suburban and rural.	<i>Conditions:</i> A. Curriculum plus training workshop: teaching information and skills for resisting social influences, plus personal and social skills associated with decreased risk of drug use, plus training workshop for staff, plus implementation feedback. Initial intervention of 15 class periods, then 10 more in 8 <sup>th</sup> grade and five in 9 <sup>th</sup> grade. B. Above programme plus videotape training for staff. C. Control <i>Primary staff:</i> teachers	<i>Design:</i> Before and after study with randomisation of groups (by school district) with two intervention groups and control. <i>Follow-up:</i> Six years from baseline using school, telephone and mailed surveys. <i>Attrition:</i> 40% <i>Outcome measures:</i> Prevalence of drinking and marijuana use.	For entire sample: No significant impact on marijuana or alcohol use other than a reduction in prevalence of reported drunkenness in both intervention groups. For the 'high fidelity' sample: (n= 2752, who had completed more than 60% of programme) both intervention groups had statistically significantly lowered prevalence of weekly drinking, heavy drinking, drunkenness and weekly marijuana use. Those in the second intervention group also had lower rates for monthly drinking and marijuana use, and those in the first intervention group had lower monthly marijuana use.	Impact of intervention greatly affected by fidelity to the programme. Extended follow-up.

<sup>3</sup> Estimated ages at different grade levels: 6<sup>th</sup> grade = 12 years, 7<sup>th</sup> grade 13 years, 8<sup>th</sup> grade = 14 years, 9<sup>th</sup> grade = 15 years, 10<sup>th</sup> grade = 16 years, 11<sup>th</sup> grade = 17 years, 12<sup>th</sup> grade = 18 years

**Table 3. Studies appraised relevant to substance abuse** (*continued*)

Study	Sample attributes	Intervention	Method	Results	Comments/limitations
<b>Kisker and Brown 1996</b> <i>Programme:</i> Substance abuse embedded in broader programme concerning health knowledge, access to health services, and risky behaviours. <i>Subgroup/setting:</i> 19 school-based health centres. <i>Country:</i> USA <i>Level of evidence:</i> II-1b	n= 8092 (6781 in intervention group, 1311 in comparison sample). <i>Age:</i> 9 <sup>th</sup> or 10 <sup>th</sup> grades <i>Males:</i> Not specified	<i>Conditions:</i> A. School-based health centres, attendance at schools with these centres. B. Control national sample of youths from other urban centres, controlling for observed differences between the two groups, accessed from a random sample of 18 cities through random digit dialling. C. Primary staff: health centre staff.	<i>Design:</i> Before and after study with non-randomised concurrent comparison sample (not matched). <i>Follow-up:</i> 12 <sup>th</sup> grade (2-3 years post baseline). Self-administered in small groups at school or for school leavers, by telephone or in person. <i>Response rate:</i> 91% <i>Attrition:</i> 21% in intervention, 13% in control. <i>Outcome measures:</i> self-report of alcohol and marijuana use. Strength of health centre intervention (strong or weak) assessed by site visitor and included following indices: staff-student ratio, staff turnover, atmosphere quality, health education, and relationships with school leaders.	No difference in levels of recent alcohol use, or marijuana use, by health centre group participants compared to urban national sample (other health outcome data collected not directly relevant to this review). Weighted data to correct attrition bias.	There was no randomised comparison group as funders did not permit this design. Using the national urban sample as a comparison group is problematic especially as we know little about health-related curriculum and substance prevention programmes offered. Baseline data collected at end of first year and authors assume that health centres would have no effect in this year, an assumption supported by lack of baseline differences by condition. However, possible that an existing initial difference was removed by influence of health centres in the first year. Varying data collection methods.

**Table 3. Studies appraised relevant to substance abuse** (*continued*)

Study	Sample attributes	Intervention	Method	Results	Comments/limitations
<b>Klepp et al. 1995</b> <i>Programme:</i> Alcohol and marijuana use prevention. <i>Subgroup/setting:</i> School <i>Country:</i> USA <i>Level of evidence:</i> II-1a	n= 2376 <i>Age:</i> 9 <sup>th</sup> grade <i>Males:</i> Not reported Nested study within Minnesota Heart Health Programme, which focused on eating, smoking, hypertension medication and physical exercise. School interventions started with 6 <sup>th</sup> grade.	<i>Conditions:</i> A. Skills training: Six classroom sessions building social skills to enable students to resist pressures for drugs and hazardous behaviours such as drinking and driving, and teaching students how to critique and create mass media messages. B. Control <i>Primary staff:</i> Teachers supported by peer leaders.	<i>Design:</i> Before and after controlled study (nested in larger public Heart Health cohort) with non-randomised concurrent groups (two communities) matched for population size, socio-economic make-up and distance from city. <i>Attrition:</i> 35%. Some significant differences in those lost to follow-up in 10 <sup>th</sup> grade. <i>Outcome measures:</i> Self-reported alcohol consumption, drinking and driving behaviour, marijuana use, collected annually following the intervention. Data from the intervention and control groups prior to the intervention surveyed information relating to the wider study.	Students in the intervention group reported significantly lower levels of drinking, and drinking and driving, immediately after the intervention than the control group. The point differences remained lower in the intervention group until 11 <sup>th</sup> grade, but were not significant. No significant differences in reported marijuana use.	Difficult to attach significance to the results: No baseline data on alcohol and drug use was collected prior to the intervention. Although comparable at 6 <sup>th</sup> grade when the larger study started, the two groups were likely to be different at the time of this programme given that the intervention group had had a major intervention from 6 <sup>th</sup> grade, designed to alter behaviours associated with behaviours of interest in this study.
<b>Shope et al. 1996b</b> <i>Programme:</i> Alcohol and drugs <i>Subgroup/setting:</i> Public school <i>Country:</i> USA <i>Level of evidence:</i> II-1b	n= 1911, of whom 605 (58 in intervention) were in grade 8. <i>Age:</i> Recruited in Grades 5-8, follow-up after 2 years when in Grade 7-10. <i>Males:</i> 50% Data on age and sex not specified for age group of interest. No data on race or ethnicity.	<i>Conditions:</i> A. Social pressure resistance training: Two-year programme. Seven lessons for each of 6 <sup>th</sup> and 7 <sup>th</sup> grade (on tobacco and then alcohol), or eight lessons for each of 7 <sup>th</sup> and 8 <sup>th</sup> grade on alcohol (on tobacco, alcohol, marijuana, and cocaine). B. Control <i>Primary staff:</i> Regular classroom teachers, following one day training programme.	<i>Design:</i> Before – after study with concurrent control, randomisation not achieved. <i>Follow-up:</i> Post-test taken at one and two years from baseline. Data analysed after two years of the programme although 8 <sup>th</sup> graders received only one year of programme. <i>Attrition:</i> 37% those students not retained reported higher substance use at baseline than retained students. <i>Outcome measures:</i> Alcohol, marijuana and cocaine use, other drug use, knowledge of effects, pressures, skills, and total knowledge.	For 7-8 <sup>th</sup> grade cohort, only significant effect was on cigarette use. 8-9 <sup>th</sup> grade cohort significant effect on knowledge, and a significant effect on use of cigarettes, smokeless tobacco and marijuana – effect not sustained to second post-test.	Difficulties in randomisation. Size of comparison groups limited in older age group, and they had only had one year of the programme. Little detailed data for students aged 14 years or over, with low statistical power to detect potential condition effects.

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**Table 3. Studies appraised relevant to substance abuse** (*continued*)

Study	Sample attributes	Intervention	Method	Results	Comments/limitations
<b>Shope et al. 1996a</b> <i>Programme:</i> Alcohol abuse prevention <i>Subgroup/setting:</i> School alcohol abuse prevention. <i>Country:</i> USA <i>Level of evidence:</i> II-1b	n= 1041 <i>Age:</i> 10 <sup>th</sup> graders, non- metropolitan southeastern Michigan. <i>Males:</i> Not reported No socio-economic, ethnicity or race data reported.	<i>Conditions:</i> A. Alcohol knowledge and skills for dealing with situations of potential alcohol misuse. Five sessions, designed to increase students' awareness of the short term effects of alcohol, risks of misuse, situations and pressures for alcohol misuse, and to develop, practise, and observe others using resistance skills. B. Control <i>Primary staff:</i> Specifically trained teachers.	<i>Design:</i> Before and after study with concurrent control and some attempts at randomisation. <i>Follow-up:</i> Two months later and in 12 <sup>th</sup> grade. <i>Attrition:</i> 48% <i>Outcome measures:</i> Knowledge, refusal skills, alcohol misuse, drinking after driving.	Some significant increases in knowledge of alcohol issues, with limited evidence of some reduction in alcohol misuse in intervention compared to control group.	High attrition may have affected the results – the population that completed the study had fewer Black students, higher knowledge scores, less alcohol use, less alcohol misuse and less drinking after driving. Randomisation not entirely successful.



**Table 3. Studies appraised relevant to substance abuse** (*continued*)

Study	Sample attributes	Intervention	Method	Results	Comments/limitations
<b>Sussman et al. 1998</b> <i>Programme:</i> Substance use prevention <i>Subgroup/setting:</i> Continuation school/community <i>Country:</i> USA <i>Level of evidence:</i> Ib	n= 1074 followed from original access to 2863 students. <i>Age:</i> 14-19 years, Mean= 16.7, SD= 0.8 <i>Males:</i> 62% 37% white, 46% Latino, 4% Asian American, 8% African American, 3% native American, 2% other. 54% living with one parent.	Twenty-one schools randomly assigned from 3 blocks of schools (determined by drug use prevalence, ethnic composition, size, achievement scores): <i>Conditions:</i> <i>A. Classroom programme:</i> Nine lessons of health-motivation and listening skills, social and coping skills, decision-making curriculum. <i>B. Classroom as above, plus SAC:</i> Semester long School-As-Community (out of school events, student body meetings) Note that only 20% of students attended events. <i>C. Controls:</i> Standard care <i>Primary staff:</i> Trained project staff for classroom intervention.	<i>Design:</i> Before and after study with randomisation of groups (school) with two interventions and control conditions. <i>Follow-up:</i> 1 year <i>Attrition:</i> 33% <i>Outcome measures:</i> Use of alcohol, marijuana, hard drugs (scale) in the last month.	No pre-post reduction in marijuana use. For alcohol use there was a significant interaction between baseline levels and programme effect. There was no effect of condition on low baseline alcohol users, but for higher baseline alcohol users there was lower alcohol use by those in the classroom only condition compared to control. However, there were no differences between the two intervention groups. There was an effect for hard drug use across interventions. Students receiving the classroom-only intervention condition showed nearly half-hard drug use post intervention compared to control ( $p=0.04$ ); this change did not differ from those receiving classroom and school SAC intervention. No gender or ethnicity effects.	Interventions had little effect on marijuana use (arguably because marijuana is seen as having less short-term impacts) but had some impact on hard drug use, and on high alcohol users at baseline (arguably because lower in prevalence and more immediately serious). The extra out-of-school events added little to the curriculum based preventive effects. Telephone interviewing may have caused under-reporting of drug use in intervention groups though lack of an effect for marijuana argues against this. Initial access to 75% of school rolls. Lack of access to some students due to participation in another study, competing final credits, not taking core subjects within programmes accessed, inability of data collectors to serve school and timing problems. Chronic absenteeism at pretest reduced the number of participants at higher risk from the sample.

**Table 3. Studies appraised relevant to substance abuse** (*continued*)

Study	Sample attributes	Intervention	Method	Results	Comments/limitations
<b>Williams et al. 1999</b> <i>Programme:</i> Alcohol use prevention <i>Subgroup/setting:</i> School and rural/small town community programme. <i>Country:</i> USA <i>Level of evidence:</i> Ib	n= 2351 <i>Age:</i> Initial intervention in 6 <sup>th</sup> grade followed by further interventions in 7 <sup>th</sup> and 8 <sup>th</sup> grade with final follow-up at end of 8 <sup>th</sup> grade. <i>Males:</i> 51.3% 94% white, 5.5% native Americans of Ojibway tribe. Rural and small town Minnesota.	<i>Conditions:</i> <i>A. Comprehensive interventions</i> aimed at the entire community, included behavioural curricula in schools, peer leadership programmes, parental involvement and community initiatives, with the cohort chosen in 6 <sup>th</sup> grade and followed through to 8 <sup>th</sup> grade with multi-level programme. <i>B. Control</i> <i>Primary staff:</i> Unspecified, but appeared to be the researchers themselves.	<i>Design:</i> Before and after controlled study with randomisation of groups (school district). <i>Follow-up:</i> Students surveyed at baseline, end of 6 <sup>th</sup> , 7 <sup>th</sup> and 8 <sup>th</sup> grade. <i>Attrition:</i> 19% No significant difference in baseline reporting of alcohol use. <i>Outcome measures:</i> Five MMPI-A (Minnesota Multiphasic Personality Inventory- Adolescent) scales for alcohol/drug problems, alcohol/drug problem acknowledgment, adolescent-family problems, adolescent-school problems, and adolescent-low aspirations. Also self-reported drinking in last week/month. Results controlled for race and gender, and stratified for baseline user/users/all and higher/lower risk on basis of drinking in last week or month.	Greatest effects for baseline non-users. Statistically significant changes on several scales. No statistically significant results for users at baseline. Significant reduction in alcohol use in the last month (but not for use in last week) for those at 'low risk' (based on elevated scores on MMPI-A scales).	Complex, multi-level, multi-component intervention. Design does not permit evaluation of the impact of the various components, but only of programme in its entirety. Greatest impact of this programme was with those who had not begun drinking at baseline (i.e. with the intervention working as a primary rather than secondary prevention programme).

**Table 3.** Studies appraised relevant to substance abuse (*continued*)

Study	Sample attributes	Intervention	Method	Results	Comments/limitations
<b>Werch et al. 1996</b> <i>Programme:</i> Alcohol prevention <i>Subgroup/setting:</i> Inner city public school. <i>Country:</i> USA <i>Level of evidence:</i> Ia	n= 104 Age: Mean= 13.8 years (SD= 0.87) Males: 44% 88% African American, 10% white, 2% "other".	<i>Conditions:</i> <i>A. 3 phase prevention intervention programme:</i> Self-instructional module and corresponding audio tape; health consultation with doctor or nurse; follow-up consultation with trained peer health-model two weeks later. <i>B. Control:</i> Commercial alcohol education booklet, plus tapes of popular rap music. <i>Primary staff:</i> Primary physicians and nurses, plus peer leaders.	<i>Design:</i> Randomised controlled trial (RCT). <i>Follow-up:</i> One month post initial intervention/baseline, 10 weeks post baseline (i.e. one month post peer consultation). <i>Attrition:</i> Not reported. <i>Outcome measures:</i> Questionnaire; alcohol, cigarette, smokeless tobacco, marijuana and cocaine acquisition in last four months, lifetime, annual. Monthly and weekly use of alcohol and drugs; social, cognitive and behavioural risk factors believed to mediate alcohol consumption.	Participation group had greater learning about preventing alcohol problems than control, with physician or nurse consultation judged by participants as more useful than self-instructional module. Female students at follow-up reported less intention to use alcohol in future than comparison students. Significant reduction in 30-day quantity of alcohol use, and 30-day frequency of alcohol use, but no significant effect on other measures of drug use. 8 <sup>th</sup> graders in intervention compared to control reported significantly fewer peer expectations to use alcohol, less intention to use alcohol in the future, less intention to try alcohol, and predicted less use in the future.	Follow-up short, but indicates that primary health care interventions can be useful in increasing knowledge of alcohol issues, and may have an impact on future intent to use alcohol.

Table 3. Studies appraised relevant to substance abuse (continued)

Study	Sample attributes	Intervention	Method	Results	Comments/limitations
<b>Valentine et al. 1998b</b> <i>Programme:</i> Substance abuse prevention <i>Setting:</i> Urban school <i>Country:</i> USA <i>Level of evidence:</i> 1b	<p>n= 417 (intervention group= 109; control group= 308).</p> <p>Age: Mean= 16.1 years (in grades 9, 10, 11, 12).</p> <p>Males: 48% (62% treatment, 43% comparison).</p> <p>31% African American, 4% Asian, 42% Hispanic, 5% white, 15% other.</p> <p>(study included a younger sample with mean age below 14 not discussed here).</p>	<p><i>Conditions:</i></p> <p>A. <i>Comprehensive programme</i> provided counseling (individual, paired, and group), mentoring, and academic support, referred by teachers based on a risk profile, though opportunity for self-referral later in the programme. Average of 16.4 visits per participant (range: 1-72, SD= 12.6); time spent in programme averaged 9.9 months per participant (range: 0.03 – 31.7 months, SD= 8.0).</p> <p>B. Control: Two classrooms at each grade level chosen at random as comparison group).</p> <p><i>Primary staff:</i> Counsellors were graduate student interns enrolled in a Masters in educational psychology.</p>	<p><i>Design:</i> Before and after study with randomised (by class) concurrent control group.</p> <p><i>Follow-up:</i> Every six months over three years (though high variation in time spent in intervention).</p> <p><i>Attrition:</i> 52%. No baseline differences in risk status or demographic variables, however those retained tended have received less of the intervention than those not retained.</p> <p><i>Outcome measures:</i> Ultimate outcomes: self-reported 30 day use of alcohol, tobacco, and other drugs.</p> <p>Intermediate variables: Interpersonal violence (weapon carrying, physical fighting, and gang membership, using items from the Center for Disease Control's Youth Risk Behavior Survey);</p> <p>Psychosocial measures (Children's Depression Inventory, suicide ideation, Hare Self-Esteem Scale, social coping using the Shorkey Whiteman Rationality Inventory);</p> <p>School involvement (grades, consider dropping out, hope to finish college, and school suspension).</p> <p>Service dosage: Measured as moderating variable: number of service visits and duration of time in intervention used to code participants as high or low exposure to intervention compared to other students in treatment</p>	<p>Intervention group at baseline had more male students than comparison group (62% vs. 43%), were worse of on several outcomes (self esteem, and aspects of substance use, risk behaviours, and school involvement), and had a longer time-lag between baseline and follow-up than comparison group. Multi-variate analyses (logistic regression) controlled for these differences.</p> <p>After adjustment of these factors, few significant differences were found.</p> <p>Of six measures of substance use, there were condition effects for two such that the students in the intervention group reported greater 30-day wine and marijuana use than the comparison group.</p> <p>There were no condition effects found for three measures of interpersonal violence, or for any of four psychosocial measures.</p> <p>Students in the intervention group had poorer grades, but were more likely to "hope to finish college", with no condition effects for whether students had considered dropping out, or had been suspended. Those highly exposed to the programme were particularly likely to report these effects, and to report using marijuana.</p>	<p>Efforts made to control statistically for selection bias and to test the strength of the association between utilisation of programme services and client outcomes. However, sub-group sample sizes were not reported for analyses comparing intervention groups with different levels of exposure to the programme, and may have been quite small (with the N for the intervention group of 109).</p> <p>Results where p values were less than 0.1 (and greater than 0.05) were reported as "marginally significant" in the table and then represented as significant in the Discussion (when conventionally p values of greater than 0.05 are considered non-significant, especially with samples of this size).</p> <p>The Discussion also is misleading in presenting the results as suggesting programme benefit when results suggest that there were few condition effects, and most of those found were detrimental for the intervention group.</p>

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**Table 3. Studies appraised relevant to substance abuse (continued)**

Study	Sample attributes	Intervention	Method	Results	Comments/limitations
<b>Cheadle et al. 1995</b> <i>Programme:</i> Substance use <i>Subgroup/setting:</i> American Indians on a reservation (school-based). <i>Country:</i> USA <i>Level of evidence:</i> II-1b	N for grades 9 and Grades 12 assessed in 1988, 1990, 1992 respectively for total sample: n(9 <sup>th</sup> )= 3,073, 3,048, 3,514 n(12 <sup>th</sup> )= 2,905, 2,590, 2,821 For reservation-based American Indians: (9 <sup>th</sup> ): 80, 97, 94 (12 <sup>th</sup> ): 69, 66, 57 For American Indians in rural comparison group: (9 <sup>th</sup> ): 23, 32, 29 (12 <sup>th</sup> ): 17, 43, 31 Age: Grades 9, and 12 Males: not reported	<i>Conditions</i> <i>A. Multi-components intervention group:</i> Five schools, three American Indian, on reservation, two near reservation and 80% white. <i>B. Control group:</i> Two suburban, three rural communities not on reservation, including some American Indians. <i>Primary staff:</i> School and community members.	<i>Design:</i> Before and after study with non-randomised concurrent comparison sample (not matched). <u>Not</u> repeated measures for same individuals. <i>Follow-up:</i> Repeated in grades 9 and 12 in 1988, 1990, 1992. <i>Attrition:</i> Not applicable <i>Outcome measures:</i> Alcohol (drank in last month, binge last two weeks, drunk before 9 <sup>th</sup> grade, in car with drinking driver); use of marijuana in last month; cocaine or crack in last year; inhalants in last month.	Reports changes in drug use outcomes between baseline and four years later, age and sex adjusted. No statistical tests reported but general reduction in drug use over time suggested across <u>all</u> study participants. No significant differences in time trends for drug use outcomes for reservation American Indians compared with all control participants, rural American Indians or with reservation area whites.	Not within subject analyses therefore potential for variability between “baseline” and “follow-up” groups. Control group had few rural American Indians and none living on the reservation. Control groups may have programmes of their own. Small sample size for American Indians, reservation and rural. Data not collected from students dropping out of school, reported as “typically high substance abusers”, who may have been affected differentially by programmes. No randomisation to comparison groups. The multifaceted programme had broad range of events (including programmes for toddlers) which would not be expected to lead to changes in the assessed group in the follow-up period.

**Table 3. Studies appraised relevant to substance abuse (continued)**

Study	Sample attributes	Intervention	Method	Results	Comments/limitations
<b>Palinkas et al. 1996</b> <i>Programme:</i> PALS social skills training <i>Subgroup/setting:</i> Female youth pregnant or parenting or at risk of drug abuse. <i>Country:</i> USA <i>Level of evidence:</i> Ia	n= 296 <i>Age:</i> 14-19 years; mean= 16.0 years (SD= 1.40) All female 38% African Americans, 46% Mexican Americans, 9% non-Hispanic whites, 7% Asians and Pacific Islanders, Native Americans, and others. 41% single parent households	<i>Conditions:</i> <i>A. Positive Adolescent Life Skills (PALS) Training and Facts of Life curriculum.</i> Combination of cognitive and behavioural techniques to improve social skills and restructure teen's social network. Sixteen weeks Facts of Life curriculum. <i>B. Facts of Life curriculum.</i> 16-week course, no skills training. NB: 50% attended less than 12 weeks of the intervention. <i>Primary staff:</i> Master's level social workers and health educators.	<i>Design:</i> Randomised controlled trial (RCT) (with comparison rather than control group). <i>Follow-up:</i> Immediate post, three months intervention. <i>Response rate:</i> Not reported <i>Attrition:</i> 22% More non-completers were pregnant or parenting and were institutional referrals. <i>Outcome measures:</i> From interviews: drug use (Personal Experience Inventory), drug-taking in past three months (alcohol, marijuana, other illicit drugs, any drug; urine toxicology test.	No difference between groups at baseline. No significant reduction in odds of using drugs at three-month post intervention for PALS condition after adjusting for baseline factors. At three-months post intervention, marijuana intake was worse for PALS condition, and 3 times worse for those not drug taking at baseline. For those reporting drug use at baseline, drug use declined for both groups (i.e. no condition effect).	Only half of participants reported having used drugs in last three months suggesting that the screening measure not successful. Level of attendance in sessions not explored as a moderating factor. Intervention was ineffective for reducing drug use, and possibly counter-productive for marijuana use, in high-risk adolescents. However, possible that the Facts of Life course in itself had an impact and the PALS training added nothing further. Possible explanations: (1) groups of high-risk youth provided networks of drug-taking activity; (2) social skills taught may not have conformed to culturally determined values and expectations governing family interaction. Under-reporting unlikely; toxicology tests found 5% false negatives across study.

**Table 3. Studies appraised relevant to substance abuse** (*continued*)

Study	Sample attributes	Intervention	Method	Results	Comments/limitations
<b>Johnson 1998</b> <i>Programme:</i> Alcohol and drug prevention <i>Setting:</i> Community <i>Country:</i> USA <i>Level of evidence:</i> 1b	n= 12-14 years, 143 parents, 183 youths from five communities. <i>Males:</i> 62% 16% African-American 60% change school at least once, 23% indicated access to marijuana.	<i>Conditions:</i> <i>A. Comprehensive programme</i> , with three training modules with parents (the third including youth), in substance abuse knowledge and issues, family enrichment training and communications training, plus early intervention services and follow-up management services. <i>B. Control</i> <i>Primary staff:</i> Professional staff	<i>Design:</i> Before and after controlled study with randomisation of groups (by community). <i>Follow-up:</i> Six to seven months, and one year. <i>Attrition:</i> 32% and 34% for parents and youth respectively. <i>Outcome measures:</i> Family dynamics, alcohol and other drug use. Data collected through parent and child interview and youth questionnaire.	No data for actual drug and alcohol use. Some short-term gains: in involvement by parents of youth in drug and alcohol use rule-setting; in drug and alcohol use knowledge. Statistically significant sustained gains in use of community services, but no effect on family management practice of involving youth in drug and alcohol use rule-setting, or positive effects on family participation in community activities. No direct effects on drug and alcohol use, but evidence to support moderating effect of family-level resilience on drug and alcohol use among youth including parent's knowledge of drug and alcohol use, and bonding with mother.	Some evidence of positive direct effects on family resilience of a community based intervention. Intervention and controls in the same community – behaviour of families not in the trial may have been influenced by contact with, or knowledge of, the intervention group.



**Table 3. Studies appraised relevant to substance abuse** (*continued*)

Study	Sample attributes	Intervention	Method	Results	Comments/limitations
<b>Weiss and Nicholson 1998</b> <i>Programme:</i> Substance use prevention <i>Setting:</i> Youth group <i>Country:</i> USA <i>Level of evidence:</i> Ia	n= 127 (In site that had sufficient evaluation fidelity) <i>Age:</i> 11-14 years (grade 6-8). 100% female 88% African-American non Latina, 1% European descent, 8% Latina, 2% Native American, 1% not reported.	<i>Conditions:</i> A. Phase one: 14 hour-long sessions of hands-on interactive and enjoyable activities, where participants learn about short and long term effects of substance abuse, ways to manage stress and skills for responsible decision making about licit and illicit drugs. Also prepare to be peer leaders. Phase two: prepare and implement eight to ten half hour sessions about substance abuse with children aged six to ten years. B. Control: Delayed intervention (from autumn to spring). <i>Primary staff:</i> Trained adult leaders.	<i>Design:</i> Before and after controlled study with randomisation of individuals who had completed pre-programme survey. <i>Follow-up:</i> Eight months from baseline, three months from completion of second phase. <i>Attrition:</i> 93% provided 'enough data' to be included in evaluation. <i>Outcome measures:</i> Self-reported behaviour including smoking, drug and alcohol use. Four questionnaires – pre and post, plus two intermediary questionnaires – the first when the autumn group had completed training and the second when they had taught the younger group, but the delayed control had not yet begun the programme.	Intervention happened in four sites. Due to difficulties with implementation only one site produced results from which any conclusion could be drawn. The intervention was most effective in delaying initial or repeat substance abuse among the younger participants (ages 11-12). For younger girls: at first post-programme questionnaire 22% (vs.34% control) reported substance abuse, with no increase in use among treatment group at second post-programme test (compared with 40% control) ( $p < .10$ ). For older groups there was no difference at first and second post-programme questionnaires.	Frank reporting of the difficulties of implementation of evaluation programme. Limited statistical analysis reported, with p value of $< 0.10$ . Larger sample needed to give study more power. Randomisation occurred after completion of baseline.

# Conduct disorder/violence prevention

## INTRODUCTION

Conduct disorder is generally accepted as representing a constellation of anti-social behaviours characterised by repetitive and persistent violation of major age-related social norms and the basic rights of others, and part of a range of disruptive behaviour disorders that include attention-deficit/hyperactivity disorder and oppositional defiant disorder (McGeorge 1997). It is distinct from delinquent or simply defiant behaviour.

Prevalence of conduct disorder ranges from 9-11% in 15-year-olds and is around 5% in 18-year-olds, according to longitudinal studies in two New Zealand cities in the South Island cities: Dunedin (Anderson et al. 1987, Feehan et al. 1994, McGee et al. 1990) and Christchurch (Fergusson et al. 1993) respectively.

However, no studies were identified that evaluated early intervention programmes for conduct disorders *as a mental health issue*. The interventions that were identified are framed as "public health" interventions rather than mental health ones. Their concerns were to reduce the level of violence to which students were exposed or in which they participated, rather than to lower the incidence of a mental health condition or alter the development of the condition.

We did not search for interventions that addressed crime, but are aware that crime prevention may also address issues of violence and are attempting early interventions (e.g. Australian National Crime Prevention, 1999).

Violence prevention programmes identified in our search were all carried out in the USA, where there are numerous concerns at the increasing rate of violence among youth (Kellerman et al. 1998).

Of the eight studies, five of the interventions were in schools, and three in the community. Five reported on changes in behaviour (measured in various ways) and five on changes in attitudes.

Studies appraised for review relevant to conduct disorder are described in **Table 4 (p. 34)**.

## ***School-based interventions***

Avery-Leaf et al. (1997) focused their study on the prevention of dating violence. Classes were randomly allocated to intervention or control group within the one school, and five classroom sessions were implemented following a training session with teachers.

Follow-up was only one week later, and identified no significant differences in rates of aggression and injury, but students in the treatment group did show significant changes in the direction desired by the researchers - in attitudes justifying male-to-female and female-to-male dating aggression.

Hausman et al. (1996) carried out a classroom intervention on sophomore students (grade 10, aged 16 years) for each of three years (1986-7). Students were followed for three years to monitor the effect of the intervention on suspension behaviour. (Although only 50% of school suspensions in this school are directly related to violent behaviour, many other reasons for suspension were also seen as indicative of high-risk for violence.)

The intervention was a classroom curriculum delivered over ten 40-minute sessions by regular school staff and (unspecified) community volunteers.

The study provided very limited evidence for effectiveness of the school-wide exposure intervention with statistically significant results only reported for students in one of the three years. In the class-specific intervention in one of the three years, those students not exposed to any intervention were 3.71 (95%CI 1.2, 10.0) times more likely to be suspended in the junior year than the in-class exposed group. No results are reported on this for the other two years.

The success of the programme in one but not the other years raises questions as to whether it was the programme that effected the change, or whether other unrecognised aspects of the wider curriculum or wider community activities may have been responsible for these results.

Marshall (1996) conducted a controlled trial on the effectiveness of a health unit on attitudes to child abuse among potential parents. The unit was taught in school by faculty and staff from an academic school of nursing and evaluated its effectiveness in altering short-term attitudes to child abuse. Follow-up was short (one week) and measured attitudes (empathy, expectations, punishment, role reversal), as measured on Adult-Adolescent Parenting Inventory scale. No significant differences were identified between intervention and control groups as a whole, although some significant gains were identified in

two (167 of the 585 participants) of the four schools in the study.

O'Donnell et al. (1999) carried out their study in two "large" matched urban schools, both with minority student bodies (predominantly African American and Latino) with high-risk health and academic profiles. The control group received no intervention. There were two intervention groups. One received a violence prevention curriculum as part of a wider health unit, and the other the violence prevention unit plus three hours per week in community service.

There was evidence (after six months) that the community service programme had some effect in reducing self-reported violence, but no evidence of a significant effect of the curriculum itself. There are two possible interpretations of this result. Either the school curriculum is ineffective in changing behaviour in these groups, or the school curriculum is insufficient *in itself* in effecting the desired change. It may be that the classroom component, when combined with the community intervention, was a significant or necessary contributor to the observed change.

Cirillo et al.'s (1998) study was of a curriculum intervention (ten weekly session of two hours) with students in grades 9-12 (15-18 years) perceived by teachers as at risk of violence, carried out in a high school by a licensed counsellor and with community leaders in a mentoring role. Violence avoidance beliefs were measured with a questionnaire three months after the intervention. No significant differences were identified between intervention and control groups.

The evidence is very limited that school-based curriculum interventions are effective in changing patterns of violent behaviour. Attitudes on dating violence altered in Avery-Leaf's study, but attitudes and beliefs did not alter in Marshall or Cirillo's studies. There was limited evidence of some change in behaviour in Hausman's work, and O'Donnell's study indicated beneficial changes in behaviour when the curriculum was associated with a community service programme but not with the classroom intervention by itself.

### **Community interventions**

Baker et al. (1995) reported on a community intervention - an after-school youth centre in a neighbourhood that is "home to the chronically unemployed". The study is somewhat incomplete in its reporting of details such as age of participants (although discussed the transition from adolescence to adulthood) and length of follow-up (about six months).

The intervention is the offering of an informal socialisation programme within the Youth Centre (n=68), with controls (n=132) drawn from the general community in the same area. There is evidence of improved outcomes for participants who, compared with controls, have less high-risk behaviour, less alcohol use, less drug use, less self-reported serious and minor delinquency. On no measure did the comparison sample do better than the intervention group.

Hines' (1998) study is an example of a study that has made strenuous efforts to design an intervention based on theoretical analysis, cultural relevance and pilot studies. This project was with very high-risk males and involved an intervention of 12 two-hour modules over six weeks followed by booster sessions three months later. The modules involved didactic presentations, videos, games, interactive exercises, group discussions, brainstorming, modelling, role-plays and behavioural rehearsal. There were difficulties with retention of research subjects, due to poor attendance, transfers in residence and schooling, and, at the detention centre, court appearances and transfers to other facilities. These are difficulties associated with research with such a group.

There was evidence of improved self-control, of aggressive impulse, and perpetuated harm in the intervention versus control group. However, other aspects of violence were unaltered e.g. anxiety or fear of victimisation, attitudes toward weapons, susceptibility to social pressure, belief in ability to avoid violence, or in a separate analysis, for ethnic identity, drug or substance abuse, or parental affiliation. These results are hardly surprising as they related to beliefs about the context, and this intervention did not attempt to change the context of young people's lives.

Murray et al. (1999) reported on an intervention with parents of 8<sup>th</sup> grade students (estimated age of 14 years) that is a component of a wider "Students for Peace" programme. This intervention with Hispanic parents was designed to increase parental monitoring of students through the publication of a low-cost newsletter that incorporated role model stories. The intervention was informed by evidence that parental monitoring suppresses health risk behaviours of anti-social behaviour, drug and tobacco use and sexual activity.

The publication of the newsletter was a practical and affordable intervention, but the only significant change detected was a shift in the norms of monitoring for those parents with lower expectations of monitoring at baseline. The authors proposed that a larger sample would have sufficient power to detect any other changes.

## Discussion

The focus of the studies reported here is to change attitudes and behaviour around violent behaviour. The studies are not concerned with mental health *per se*, but with patterns of violence as expressed in the lives of American high school students.

The orientation of the studies is towards public health. Nevertheless, it is possible that interventions that can lower the levels of violence with which young people live (as perpetrator or victim) and may reduce the risk of the development of mental health conditions.

The studies are predominantly school-based curriculum-driven universal interventions, directed at the general school community. Results indicated a limited effect of these programmes, but follow-up was very short in all but one of these studies (Hausman et al. 1996). It is possible that the programmes may be more effective over a longer evaluation period. Further studies are required to see if this is so.

One school-based universal intervention (Hausman et al. 1996) did follow-up groups for two years, with positive results for one of the three cohorts who received the intervention. Why the intervention was effective for one group but not the other is not clear. It is possible that other aspects of their wider school programme, or activities in the community, may contribute to the apparent success of the programme in that year. Such results emphasise the need to interpret other evaluations mindful that factors outside the intervention programme itself (e.g. community activities or leadership, changing employment patterns) may be influencing the measured outcomes.

School-based interventions may in fact exclude young people at increased risk of violent behaviour, as those who have dropped out of school or have left at the youngest possible age are less likely to be exposed to the intervention. One study (Cirillo et al. 1998) did address the needs of those at increased risk of violent behaviour. Unfortunately the sample size is small, and the follow-up short (three months), making it difficult to draw clear conclusions from the results.

One study reported on a community intervention with young people with encouraging results (Baker et al. 1995). Students in the intervention group developed better active cognitive coping skills and indulged in less high-risk behaviour. This was a study that provided little in the way of structured learning opportunities about violence and how to deal with it (and in fact, had dropped those aspects from its programme as it proceeded). Instead, in a community with high levels of social disruption, it provided an alternative and additional informal site for the so-

cialisation of young people as they make a transition from adolescence to adulthood.

It is also notable that the school intervention which included a community service element (O'Donnell et al. 1999) found positive results for those in that arm of the study. Although the evidence is not robust, there are indications that programmes which offer something other than knowledge about violence - i.e. which include opportunities to relate to others in additional contexts to those that are usually available to them - may be the most effective in changing patterns of violent behaviour.

Murray et al. (1999) reported on an intervention with parents who sought to change a risk factor (parental monitoring) for antisocial behaviour, drug and tobacco use and sexual activity. The intervention was a practical and low cost one, but produced very limited results within a very short time span.

This is an active field of research in the USA. There is a recognition that the quality of the research needs to be improved, and more sophisticated analysis applied.

Issues associated with this research are broadly canvassed in a supplement to *American Journal of Preventive Medicine*, vol 12, 1996. In conclusion to that issue, Tolan and Guerra (1996) argue that the way forward requires further evaluation of projects; long-term follow-up of programmes; and attention to the impact of developmental and contextual concerns and how they can shift individual tendencies to violent behaviour.

**Table 4. Studies appraised relevant to conduct disorder**

Study	Sample attributes	Intervention	Method	Results	Comments/limitations
<b>Avery-Leaf et al. 1997</b> <i>Programme:</i> Dating violence prevention <i>Subgroup/setting:</i> School health class <i>Country:</i> USA <i>Level of evidence:</i> 1b	n= 193 <i>Age:</i> grades 9-12 <sup>4</sup> <i>Males:</i> 55% 79.8% White, 11.1 % Hispanic, 3.8% Black, 1.4% Asian.	<i>Conditions</i> A. Intervention: 5 classroom sessions, implemented after an 8-hour training session of teachers by authors, which promoted equity in dating relationships, challenged individual and societal attitudes to violence as a means to resolve conflict, identified constructive communication skills, and supported resources for victims of aggression. B. Control <i>Primary staff:</i> School teachers trained by researchers.	<i>Design:</i> Before and after study with concurrent control, randomised by school class within one school. <i>Follow-up:</i> 1 week <i>Attrition:</i> Not reported <i>Outcome measures:</i> Various scales (with some limited details of prior validation) used to measure physical aggression and victimisation, dating violence attitudes, justification of dating jealousy and violence, and social desirability.	Rates of aggression, victimisation and injury did not differ significantly between treatment and control groups at baseline. Significantly more girls than boys reported being aggressive in a dating relationship in year prior to assessment. Students in treatment group showed significant pre-to-post programme changes in attitudes justifying male-to-female and female-to-male dating aggression.	Very short follow-up period, and no measures of actual behaviour.

<sup>4</sup> Estimated ages at different grade levels: 6<sup>th</sup> grade = 12 years, 7<sup>th</sup> grade 13 years, 8<sup>th</sup> grade = 14 years, 9<sup>th</sup> grade = 15 years, 10<sup>th</sup> grade = 16 years, 11<sup>th</sup> grade = 17 years, 12<sup>th</sup> grade = 18 years

**Table 4. Studies appraised relevant to conduct disorder (continued)**

Study	Sample attributes	Intervention	Method	Results	Comments/limitations
<b>Hausman et al. 1996</b> <i>Programme:</i> Violence prevention education <i>Subgroup/setting:</i> School <i>Country:</i> USA <i>Level of evidence:</i> II-1b	n= 1523 <i>Age:</i> 15.9 to 16.6 years <i>Males:</i> 39.9% to 53.7% in the various groups in each of the interventions and each of the three years.	<i>Conditions:</i> A. Class-specific comprehensive intervention, within larger project that had emphasis on community-building and included extensive contact with families. Involved "Violence Prevention Curriculum for Adolescents" – 10 40-minute sessions over 10-week period; factual information with situational and cost-benefit analyses of violent behaviour. B. From same school as group A, but no curriculum intervention. C. Intervention in school already involved in community-based violence prevention programme with a variety of other wide violence prevention activities. D. School with no intervention, nor involvement in community-based violence prevention programme (In 1987 cohort sophomore students exposed to some violence prevention education later in year). <i>Primary staff:</i> School teachers and other community providers.	<i>Design:</i> Controlled trial with non-randomised comparison groups (in each of three years, 1985-7) from three schools. <i>Follow-up:</i> 2 years <i>Attrition:</i> Unspecified. Analysis restricted to students who stayed in the one school for the period of the study. <i>Outcome measures:</i> Change in suspension status from junior to sophomore years. Results controlled for gender, race, suspension in sophomore year and absenteeism.	Class-specific exposure; in the 1986 cohort exposed group compared to non-exposed group in same school showed 71% reduction in suspension rates (RR= 0.286, CI 0.12, 0.66). No significant results for other years. School-wide exposure; no statistically significant differences.	Limited evidence of effectiveness of curriculum- positive result with class intervention in one of the three years; may be due to other (unreported) aspects of their wider programme to activities in the community. "Approximately 50% of suspension categories specific to violence – but other categories indicative of high-risk". Design precluded ability to study effects on reducing number of suspensions per student. Categories B and D combined in statistical analysis.

**Table 4. Studies appraised relevant to conduct disorder (continued)**

Study	Sample attributes	Intervention	Method	Results	Comments/limitations
<b>Marshall et al. 1996</b> <i>Programme:</i> Child abuse prevention with future parents <i>Subgroup/setting:</i> School health class <i>Country:</i> USA <i>Level of evidence:</i> II-1b	n= 585 (number of controls unspecified), in 4 schools. <i>Age:</i> 15 years (SD= 1.1), range 13-19 years. 58% Black, 39%White, 3% other races.	<i>Conditions:</i> A. Health unit conducted in one-week period. B. Controls are students enrolled in health course in same schools in a different semester without this unit of work. <i>Primary staff:</i> Faculty and staff of school of nursing.	<i>Design:</i> Before and after study, method of allocation to control or intervention not specified. <i>Follow-up:</i> 1 week <i>Attrition:</i> Unspecified but "high rate" (almost one third) in one of 4 schools – those lost to attrition scored lower at pre-test than those who completed study. <i>Outcome measures:</i> Attitudes (expectations, empathy, punishment and role reversal ) measured on Adult-Adolescent Parenting Inventory scale (both reliability coefficients and ambiguities of the tool are reported).	Both intervention and control group increased scores without any statistically significant differences. When analysed by type of school there were some significant gains in 2 of the 4 schools (these were small samples, n= 60 and n= 107).	Compatibility of control and experimental groups variable. Comparison group not concurrent. Very limited evidence of effectiveness of this intervention in altering short-term attitudes to child abuse.

**Table 4. Studies appraised relevant to conduct disorder (continued)**

Study	Sample attributes	Intervention	Method	Results	Comments/limitations
<b>O'Donnell et al. 1999</b> <i>Programme:</i> Violence prevention <i>Subgroup/setting:</i> Two urban schools and community service. <i>Country:</i> USA <i>Level of evidence:</i> II-1a	n= 972 <i>Age:</i> Grades 7 and 8 <i>Males:</i> 45.8%	<i>Conditions:</i> A. Reach for Health (RFH) only programme- 35 lessons in 4 units, promoting skill development around drug and alcohol use, violence (10 lesson unit) and sexual behaviour. B. RFH plus Community Youth Service (CYS) three hours/week of the school year at a community site performing a variety of tasks. C. Control school <i>Primary staff:</i> Regular teachers with 5 days' training.	<i>Design:</i> Before and after study with non-randomised concurrent groups (two schools) matched for size, predominantly minority student body, high-risk health and academic profile and limited access to resources. <i>Follow-up:</i> 6 months <i>Attrition:</i> 7.9% <i>Outcome measures:</i> Self-reported questionnaire for demographic information, also items on various indices of violence, social desirability.	8 <sup>th</sup> grade students in CYS reported less violence at follow-up than students in control school.  No significant difference for students in 7 <sup>th</sup> grade, nor between participation in RFH curriculum-only versus controls for 7 <sup>th</sup> or 8 <sup>th</sup> grade.	Some evidence that community service programmes have some effect in reducing self-reported violence.  Results controlled for difference baseline differences in violence, gender, ethnicity, grade and social desirability.  Some concerns expressed by authors that the curriculum was not delivered with great fidelity in all classes and that this may contribute to the lack of effectiveness of the programme.



**Table 4. Studies appraised relevant to conduct disorder (continued)**

Study	Sample attributes	Intervention	Method	Results	Comments/limitations
<b>Cirillo et al. 1998</b> <i>Programme:</i> Violence intervention <i>Subgroup/setting:</i> School <i>Country:</i> USA <i>Level of evidence:</i> 1a	n= 43 <i>Age:</i> 15-17 years, grades 9-12, at risk of violent behaviours as assessed by classroom teachers. <i>Male:</i> 50% 44% white, 30% black, 23% Hispanic, 2% other	<i>Conditions:</i> A. <i>Problem solving:</i> 10 weekly sessions of two hours, involving group and individual problem solving, cognitive re-structuring and social skills training. B. Control <i>Primary staff:</i> Licensed counsellor with adult community leaders as mentors.	<i>Design:</i> Randomised controlled trial. <i>Follow-up:</i> Three months <i>Attrition:</i> Three in experimental and four in control group dropped out. Outcome measures: Violence avoidance beliefs, based on questionnaire before, following and three months after intervention.	No significant difference between experimental and control groups in means scores on violence avoidance beliefs.	Authors acknowledge difficulties in interpreting results; sample chosen on environmental risk factors with no measure of protective factors; programme may not have matched intellectual level of participants; other factors not addressed in this intervention may influence violence avoidance beliefs; changes measured may be too subtle to detect with this methodology – anecdotal evidence indicated some positive changes for the individuals. No description of randomisation process. Small sample.

**Table 4. Studies appraised relevant to conduct disorder (continued)**

Study	Sample attributes	Intervention	Method	Results	Comments/limitations
<b>Baker et al. 1995</b> <i>Programme:</i> Violence prevention <i>Subgroup/setting:</i> Youth centre <i>Country:</i> USA <i>Level of evidence:</i> II-1b	n= 200 <i>Age:</i> Not specified, other than 'youth' but implication of those moving from youth to adulthood. <i>Intervention group:</i> Self-selected, youth who attended the after school youth centre in community with high levels of social disruption.	<i>Conditions:</i> A. Informal socialisation within community youth centre. After-school youth centre with programme led and organised by youth supported by paid staff. B. Control Three sources: (i) students participating in summer career awareness programme, (ii) youth found at outdoor recreation area, (iii) youth found at local 'hang out' establishments.  <i>Primary staff:</i> Adult youth centre staff and Youth centre attendees.	<i>Design:</i> Before and after study with non-randomised concurrent control. <i>Follow-up:</i> Not specified, but around three years. <i>Attrition:</i> 35% <i>Outcome measures:</i> Fifteen variables around peer culture, high-risk behaviour, drinking, minor delinquency, pro-social behaviour – measured via questionnaire. Multiple regression analysis employed.	Evidence of improved outcomes. Programme participants, compared with comparisons, had better active cognitive coping, less high-risk behaviour, less alcohol use, less drug use, less self-reported serious and minor delinquency.  On no measure did comparison sample do better than the participants.	Method of analysis separates confounding from other time-related variables. No analysis for age, but concerned with transition from youth to adulthood. Lacking sufficient detail for study to be reproduced. Authors argue for their approach as an alternative to either the medical/psychotherapeutic model or the social system model. A programme that offers an alternative informal site for socialisation.

**Table 4. Studies appraised relevant to conduct disorder** (*continued*)

Study	Sample attributes	Intervention	Method	Results	Comments/limitations
<b>Hines et al. 1998</b> <i>Programme:</i> Violence prevention <i>Subgroup/setting:</i> Inner city African American youth (in same neighbourhood of north-east US) <i>Country:</i> USA <i>Level of evidence:</i> II-1b	n= 309 Age: 15-21 years 70% male 83% African American, 8% Latino/Hispanic, 2% Caribbean. Recruitment areas: 35% youth detention centre, 21% organisation for high school drop-outs, 30% alternative high school for behaviourally disordered youth, 8% classified youth, 6% mainstream high school. High incidence of violence in sample, 63% been in a fight, 52% injured someone, 30% carried a gun in last three months.	<i>Conditions:</i> A. <i>SANKOFA violence prevention training.</i> Twelve two-hour modules over six weeks with three-month post booster training consisting of three one hour modules. Consisted of didactic presentations, videos, games, interactive exercises, group discussions, brainstorming, modelling, role-plays, and behavioural rehearsal. Groups of 10-12 participants. B. Control <i>Primary staff:</i> Extensive training of facilitators who were also observed by trainers in conducting module.	<i>Design:</i> Before and after study with non-randomised concurrent comparison sample at same sites (not matched). <i>Follow-up:</i> Post intervention timing not specified. <i>Attrition:</i> Not reported but said to be “high” due to poor attendance, transfers in residence and schooling, and at the detention centre, court appearances and transfers to other facilities. <i>Outcome measures:</i> Violence survey, and knowledge, attitudes, behavioural intentions regarding violence.	Reports preliminary findings. Four multiple analyses of variance employed. Participants in the intervention group improved over time relative to controls on self reported control of aggressive impulse and perpetrated harm, but not weapon carrying. In the separate analysis, intervention participants reported being less witness to violence, though there was no condition effect for anxiety or fear of victimisation. There were no condition effects found for attitudes toward weapons, susceptibility to social pressure, and belief in ability to avoid violence, or in a separate analysis, for ethnic identity, drug or substance abuse, or parental affiliation. These results were evident at four sites with sufficient sample sizes.	Plan to randomise condition allocation abandoned due to delays in programme implementation until adequate recruitment. While some encouraging evidence of behaviour change, the study reports only “preliminary findings”. It is not clear when the post-test was conducted. Longer-term follow-up is highly desirable. This study has made exceptional efforts to plan the intervention carefully based on theoretical and literature-review input, cultural relevance, and piloting and revision. There was also evidence of significant efforts at community partnership, training, recruitment and retention, and programme fidelity. The study made laudable attempts to involve difficult-to-reach youth with high-violence history.

**Table 4. Studies appraised relevant to conduct disorder (continued)**

Study	Sample attributes	Intervention	Method	Results	Comments/limitations
<b>Murray et al. 1999</b> <i>Programme:</i> Parent education intervention to prevent violence, within three-year project "Students for Peace". <i>Subgroup/setting:</i> Hispanic parents <i>Country:</i> USA <i>Level of evidence:</i> Ia	n= 142 parents approached, 94 enrolled. Hispanic Parents of Grade 8 students (estimated age 14 years), and their grade 8 children.	<i>Conditions:</i> A. Posted four bilingual newsletters over two week intervals, incorporating role model stories derived to increase parental monitoring by Hispanic parents. B. Control	<i>Design:</i> Randomised controlled trial <i>Follow-up:</i> 10-12 weeks from baseline, one week from final newsletter. <i>Attrition:</i> 82% of parents. 97.9% of students completed pre-test survey, and 97% the post-test survey. <i>Outcome measures:</i> Monitoring behaviours (amount of time spend asking children about plans, number of child's friends telephone numbers parents have, number of times they call child's friend's parents, and number of times visited school) and psychosocial determinants of parental monitoring. Psychosocial determinants of parental monitoring included self-efficacy, outcome expectancies, knowledge, beliefs and norms. No report of use of validated questionnaires. Parental data collected by telephone interviews. Student measures (assessed through paper and pencil surveys at school) of their parent's monitoring behaviours.	A small shift in experimental group compared with control in agreeing at post-test that friends know their children's friends or whereabouts. No other significant results for self-efficacy, outcome expectations, beliefs and knowledge. No difference between parents in experimental and control groups that were lost to follow-up, but children of parents lost to follow-up did score significantly higher on aggression at pre-test.	Authors argue that small sample size reduces power to detect differences and argue for sample size of 300. Pre and post test may have served as an intervention in its own right offering parents an opportunity to reflect on their own behaviour. Very short follow-up from completion of study.



# Mood disorder prevention

## INTRODUCTION

Mood disorders include major depressive, bipolar and unipolar mood disorders. Major depression is characterised by depressed mood, change in appetite, insomnia or hypersomnia, fatigue, poor concentration, feelings of worthlessness, and suicidal thinking. Bipolar mood disorder is characterised by both depressive and manic episodes. Unipolar disorder consists of either recurrent depressive or recurrent manic episodes.

Prevalence of mood disorder in youth is very high, ranging from 18-22% in 18-year-olds in studies in New Zealand's South Island cities of Dunedin (Anderson et al. 1987, Feehan et al. 1994, McGee et al. 1990) and Christchurch (Fergusson et al. 1993) respectively. Older adolescents (aged 15-19) are at greater risk of suffering depression than younger adolescents. (National Health and Medical Research Council 1997).

Three studies investigating mood disorder prevention were reviewed. All concerned young people (mean age 15-16 years) at high-risk for major depression or suicide (with depression as an outcome variable) and provided school-based interventions.

Studies appraised for review relevant to mood disorder prevention are described in **Table 5 (p. 45)**.

### **Intervention studies reviewed**

A randomised controlled trial (Clarke et al. 1995) screened students for high-risk of depression through a clinical interview and the intervention participants were offered 15 sessions of after-school training in coping techniques.

There was some evidence of reduced depression shortly after the intervention, which disappeared by the one-year follow-up assessment. However, using survival analysis, the study did demonstrate that there was lower incidence of depressive disorder in the intervention group after one year.

Eggert et al. (1995) screened students through a two-hour assessment interview and identified those at high-risk for suicide. Students were not randomised and interventions were one or two semesters of curriculum, plus a control. This lack of randomisation is likely to have introduced significant biases.

Most risk and protective factors improved in the desired direction over time regardless of condition. Personal control increased for the two intervention groups over time compared to the control. Some short-term differences between intervention groups are difficult to interpret, as follow-up periods were at the end of the first semester (identical for two intervention groups). The second assessment took place immediately after the second semester of classes, hence providing no real follow-up for this intervention group.

Finally, a randomised controlled trial of students screened for depressive symptomatology and suicide ideation (Lamb et al. 1998) investigated the effect of an eight-session school-based coping skills intervention two months later. Depressive symptomatology decreased over time regardless of condition. Female students receiving the coping skills training had more decreased depressive symptomatology compared with females in the control group. However, outcomes were assessed immediately following after the intervention and may represent measures of process more than outcome.

**Discussion**

The dearth of research into early prevention for mood disorders is in contrast to an extensive literature concerning clinical, individualised interventions and treatment research for diagnosed youth, (Kaslow and Thompson 1998, National Health and Medical Research Council 1997). This imbalance may reflect the present uncertainty about the benefits of early prevention for mood disorders.

### **Discussion**

Two studies found improvements over time regardless of condition, i.e. equally for intervention and control groups (Eggert et al. 1995, Lamb et al. 1998). This could relate to a therapeutic effect of the screening interviews. However, screening is important to obtain a high-risk sample and identify those with mental illnesses that require treatment rather than preventive efforts. Design flaws in these studies (Eggert et al. 1995, Lamb et al. 1998) make it difficult to draw clear conclusions about the impact of the interventions.

The well-designed RCT of Clarke et al. (1995) suggests that classroom-based skills-oriented interventions may have an effect on preventing depression in young people. The study is also important in demonstrating the effects of longer follow-up and of using different outcomes and analyses to investigate the impact of an intervention. It may be argued that differences in the incidence of disorder is more significant a finding than differences in symptom level.

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However, it is unlikely that levels of incidence would be high enough to determine differences between conditions unless involving high-risk participants with a reasonable follow-up period.

Further research with larger samples, longer follow-up periods, a range of outcome measures and rigorous designs are required.

**Table 5. Studies appraised relevant to mood disorder**

Study	Sample attributes	Intervention	Method	Results	Comments/limitations
<b>Clarke et al. 1995</b> <i>Programme:</i> Unipolar depression prevention <i>Subgroup/setting:</i> School students screened as being at high-risk for depression (though not diagnostic status). However, sample included 19% of people who had diagnostic levels of non-affective mental illnesses. <i>Country:</i> USA <i>Level of evidence:</i> Ia	n= 150 <i>Age:</i> Mean= 15.3 years (SD= 1.1) <i>Males:</i> 30% 92% non-Hispanic white	<i>Conditions:</i> A. After-school cognitive group intervention – 15 sessions designed to teach new and strengthen existing coping techniques to build immunity to developing mental disorders. Attendance ranged 13% - 100% (mean= 72%), 66% completed at least some assigned homework. Structured protocol adherence ranged from 78-100% according to manuals, mean= 94%. B. Control NOTE: All received a semi-structured clinical interview as part of a two stage screening process. All were allowed to continue pre-existing treatment (25% did, mainly psychotherapy, with no effects on outcomes by type of treatment). <i>Primary staff:</i> Trained school psychologists and counsellors.	<i>Design:</i> Randomised controlled trial <i>Follow-up:</i> Post, six, 12 months <i>Attrition:</i> 27%. Not retained participants were less depressed ( $p < .01$ ), and more likely to come from the intervention condition. This would bias intervention group toward being more depressed than control at baseline, which would affect results conservatively. <i>Outcome measures:</i> Onset and incidence of (I) depressive disorder, and (II) non-affective disorder by clinical assessment. Depressive symptomatology: Centre for Epidemiologic Studies-Depression Scale (CES-D), and Hamilton Depression Rating Scale (HRDS). Global Assessment of Functioning (GAF).	No baseline differences between conditions except more females in control than intervention (78% compared with 66% respectively). Used survival analyses to measure time to onset of psychiatric disorder. Incidence of depressive disorder in the intervention group was significantly less over the 12 month follow-up period: half that of control. No effect of condition on onset of non-affective disorder (excluding 22 so affected at baseline). Using repeated measures multivariate analysis immediately at post-intervention, intervention group had reduced depression on CES-D but not HDRS, and improved functioning, immediately post-intervention. However, no difference at 12-month follow-up for any measure.	Study shows importance of using a variety of statistics. While there was a lower incidence of depressive disorder in intervention group, there was no “condition effect” for the “snapshot” measures of depression and functioning at 12-month follow-up. Longer follow-up desirable (and planned for 30 months). Variability in course attendance not investigated as effect moderator.



**Table 5. Studies appraised relevant to mood disorder (continued)**

Study	Sample attributes	Intervention	Method	Results	Comments/limitations
<b>Eggert et al. 1995</b> <i>Programme:</i> Reducing depression (and suicide potential) <i>Subgroup/setting:</i> Urban school students screened as at high-risk for suicide using High School Questionnaire. <i>Country:</i> USA <i>Level of evidence:</i> IIb	n= 105 <i>Age:</i> Mean= 15.9 years (Grades 9-12). <i>Males:</i> 42% 28% non-white	<i>Conditions:</i> A. One semester Personal Growth Class (PGC). Each school day for five months group work and social support; activities targeting mood management, school performance, drug involvement; life skills training and interpersonal communication including attitudes toward suicide. B. Two semester Personal Growth Class (PGC). Each school day for 10 months, as above but emphasised broader school involvement, real life practice at home and school of skills training, and promotion of recreational and social activities. C. Control All received two-hour assessment interview from trained counsellor or nurse specialist. In addition, normative control of 202 students not deemed 'at risk' over time period. <i>Primary staff:</i> Trained school personnel.	<i>Design:</i> Before and after study with non-randomised concurrent comparison sample (not matched). No follow-up of same individuals as data collected for each grade level over three years. <i>Follow-up:</i> Immediately after PGC for conditions A and B respectively (which represents five and 10 month post baseline assessments) <i>Attrition:</i> Ranged 12.5% - 29% across three conditions. No difference in attrition. However, non-retained tended to be older and more disenfranchised with school than retained though no difference generally on risk or protective factors. <i>Outcome measures:</i> Risk factors: Centre for Epidemiologic Studies-Depression Scale (CES-D), hopelessness, stress (perceived), anger. Protective factors: personal control, Rosenberg's Self-Esteem Scale, social support (perceived).	Some differences at baseline between conditions. Group A students were slightly older, and had less social support than Group C but not Group B. No gender differences. Used trend analyses: Anger decreased over time. Condition effect: reduction in anger greatest for Groups A and C compared with Group B, and at Time 3 there were no differences between Groups A and B. Overall, depression, stress and hopelessness decreased over time, and self-esteem and social network support increased over time, but no effect of condition. However, for hopelessness, Group A females had relatively greatest decrease after their semester of classes, but then exhibited a slight increase after a further five months (without classes). Personal control effect - Groups A and B increased over time, Group C did not.	The PGC interventions appear to have had no additional preventive value to diagnostic assessment. A true control is needed but difficult as screening is important to assign risk. The PGC participants showed increased perceived control compared to the control group. However, increases in perceived control were not concomitant with changes in other outcomes for the control group so it is not clear whether perceived control is an important protective factor on its own. No randomisation due to school policy. Students could choose one or two semesters.

**Table 5. Studies appraised relevant to mood disorder** (*continued*)

Study	Sample attributes	Intervention	Method	Results	Comments/limitations
<b>Lamb et al. 1998</b> <i>Programme:</i> Coping with depression <i>Subgroup/setting:</i> Rural school students with depressive symptomatology or suicide ideation (not at clinical level). <i>Country:</i> USA <i>Levels of evidence:</i> Ia	n= 46 Age: Mean= 15.8 years (SD= 1.4) 14-19 years Males: 44% 95% Caucasian, 5% Hispanic	<i>Conditions:</i> A. Nurse-led, school-based cognitive skills group intervention (eight sessions). Designed to promote use of coping skills and reduce depressive symptoms. Two grades of 10-12 members split by grade level. B. Control <i>Primary staff:</i> Psychiatric mental health nurse.	<i>Design:</i> Randomised controlled trial <i>Follow-up:</i> Immediately after eight-week intervention session. <i>Attrition:</i> 11% <i>Outcome measures:</i> Jalowiec Coping Scale (JCS), Reynolds Adolescent Depression Scale (RADS), Life Events Checklist (LECL) measuring positive and negative life change.	Regardless of condition, depressive symptomatology was reduced between baseline and post-test. However, there was a condition by gender interaction ( $p < .032$ ); intervention females had less depressive symptomatology compared to control females whose symptomatology increased. No difference by condition in number of life events. After intervention, life events became more peer- and school- focused rather than family-focused. Condition by coping style effect such that intervention students used greater supportive coping than control studies.	Samples included some clinically diagnosed people for non-depressive disorders. No time-lag between end of intervention and follow-up. Discusses trends in differences in use of coping styles, which go beyond the data. Do not discuss gender differences demonstrated in the effect of the intervention.



# Eating disorder prevention

## INTRODUCTION

Eating disorders predominantly affect women, and the peak age of onset is in adolescence (Bushnell 1997). Lifetime prevalence for females of anorexia nervosa is about 0.3% and for bulimia nervosa is 1.9% (4.5% for women aged 18-24 years) (Bushnell 1997).

While rates for these clinically identified mental disorders (according to DSM-IV (American Psychological Association 1994)) are relatively small, they represent only one extreme of a broad spectrum of "disturbed" (i.e. dysfunctional) eating. These include frequent and pathological dieting, recurrent binge eating, use of extreme weight control measures, depressed mood and self depreciating thoughts after bingeing, which carry their own psychological and physiological morbidity and can commonly progress to clinically characterised levels (Rosen and Neumark-Sztainer 1998, Bushnell, 1997).

Such eating disturbances and eating disorders represent the third leading chronic illness among female youth in developed countries (Fisher et al. 1995). Such high prevalence is supported by New Zealand data from the Christchurch Psychiatric Epidemiology Study (see Bushnell 1997 for references).

The rates of incidence, associated morbidity and mortality, and expense and length of treatment demonstrate the importance of this area for prevention programmes involving young people.

Studies appraised for review relevant to eating disorders are described in **Table 6 (p. 52)**.

## Intervention studies reviewed

### Overview

Only four eligible studies were identified relating to early interventions for restrictive eating disorders. Two focused on university undergraduates, and the other two included 16-year-old students with subsample analyses of women at high-risk for eating disorders. Only one study included male participants<sup>5</sup>. Three interventions included between one

and three lesson-based group discussions, including one led by recovered peers. Another intervention involved software resources and an e-mail discussion list. All studies involved before and after designs with randomisation by group, or in one case, by participant, and used standardised scales. Follow-up periods ranged from three to 12 months post intervention. Outcome measures of these studies included eating disordered symptoms (n=3), eating attitudes (n=3), body satisfaction attitudes (n=2), self-esteem (n=1), general knowledge about weight regulation (n=1), psychological impairment (n=1) and physical health (n=1).

### University undergraduates

A study of first year undergraduates in the USA (Mann et al. 1997) investigated the impact of a single group session providing information and personal stories about eating disorders and recovery led by two recovered peers.

There was no effect found for students completing the one-and three-month follow-up assessments, though the sample was small. Further exploratory within-assessment analyses suggested a possible negative effect of the intervention on eating disorder symptoms at one-month follow-up (only).

Though the intervention was brief and follow-up short, the study indicated that the intervention was broadly representative of similar programmes widely employed. The lack of any positive effect (and possible detrimental effect) is suggested as possibly related to conflicting aims of primary and secondary prevention. By reducing stigma of eating disorders (to encourage accessing support), the intervention may have normalised disordered eating behaviours as shown by higher perceived peer prevalence, which vastly overestimate actual incidence even in those not in the intervention.

Another study involving undergraduates in the USA (Winzelberg et al. 1998) investigated the impact of a multi-media programme, which provided software and a moderated e-mail support group.

Results indicated that there was overall improvement in knowledge, attitudes and behavioural outcomes regardless of condition, suggesting that the questionnaires themselves may have sensitised students to the issues.

While there was an improvement in body image for the intervention group compared with control, there was no other effects on outcomes. Within the intervention group there was some suggestion that the extent of use of different sections of the programme was related to isolated improvements though statistical power was weak to make broad conclusions.

<sup>5</sup> Research relating to anabolic steroid use, which accounts for most male disordered eating behaviour, is included in the substance abuse section (Goldberg et al. 1996a; Goldberg et al. 1996b).

While well designed, the study had few participants ( $n=57$ ) and the low use of the software due to practical problems suggested low programme fidelity. Furthermore, participants mainly used the e-mail group for self-disclosure rather than problem solving or attitude change.

#### High school students

In Italy, Santonastaso and colleagues (1999) investigated the effect of a brief four-session class-based curriculum/discussion group intervention on eating and body-related attitudes one year later. Randomisation was by class.

The study found that the intervention had no effect on high-risk students (9% of sample) compared to control group. However, low-risk students in the intervention group reported reduced body dissatisfaction and bulimic attitudes compared to the control at follow-up. The limited effects of this brief intervention for the low-risk group may not transfer to changes in incidence of eating disorders.

Only one study included a focus on classes identified as including a higher proportion of students at high-risk of developing an eating disorder (Buddeberg-Fischer et al. 1998). This Swiss study was also notable for including males as participants in a comprehensive school-based intervention designed to cover a range of health behaviours, and social and coping skills. The intervention was also notable for including activities such as a group picnic.

Outcomes improved regardless of condition over time, which may relate to the impact of data collection on sensitising students to the issues. There were no condition effects for the sample as a whole. However, within a relatively small sub-sample of female students at high-risk for eating disorder, intervention participants improved over time in physical health relative to control participants. Whether these differences would be evident for a larger group of at-risk women needs to be explored over a longer follow-up period.

### Discussion

Overall, these studies reported limited and inconsistent levels of effectiveness for interventions involving female students aged in late adolescence. Body image attitudes were improved by the intervention in two studies, one by an information-based software resource (Winzelberg et al. 1998) and one for students at low-risk for eating disorder after four class discussions (Santonastaso et al. 1999).

However, there were no effects on eating-disordered behaviour.

Students at high-risk for eating disorder reported relatively improved physical health outcomes after receiving health promotion classes combined with social activities in the Swiss study (Buddeberg-Fischer et al. 1998). However, there were no effects found for other outcomes or for high-risk students in a study offering a class-based intervention (Santonastaso et al. 1999).

The improvement over time in two studies (Buddeberg-Fischer et al. 1998, Winzelberg et al. 1998) regardless of condition suggests a possible effect of altering attitudes through completing questionnaires. While the studies reviewed here did not investigate the long-term impact of their programmes, no impact on eating behaviour was demonstrated despite some short-term changes on intermediary variables such as self-esteem and body dissatisfaction.

### Future research directions

One must be very cautious about making conclusions given that the literature on primary prevention programmes (reviewed here and prior to 1995 (Rosen and Neumark-Sztainer 1998)) is very small. However, methodological and theoretical issues can be raised.

In a recent discussion paper, Rosen and Neumark-Sztainer (1998) argued that explanatory models of disordered eating are still incomplete, largely speculative and unproven. In particular, more research is needed into protective factors, about which virtually nothing is known (Rosen and Neumark-Sztainer 1998).

The clinical importance of intermediary outcomes, and the size of effects required on them, needs to be demonstrated. This is especially important for participants at low risk of developing disturbed eating behaviour.

Further work is required to develop and test theoretically based explanatory models, and longer-term follow-up needs to be conducted to determine whether effects are significant and lasting.

The danger of inadvertently increasing eating disorder-related attitudes and behaviour is also a legitimate concern (Carter et al. 1997) and may relate to conflicting aims of primary and secondary prevention (Mann et al. 1997).

From their analysis, Rosen and Neumark-Sztainer (1998) concluded that efforts should be developmentally and culturally appropriate, aimed at males and females, be engaging to youth, and address the spectrum of disordered eating.

While our review is limited to adolescents aged over 13, the increasingly early age of incidence of eating disorders (Dorian and Garfinkel 1999) suggests that younger adolescents are also important for primary prevention research (Franko and Orosan-Weine 1998).

While females are at substantially higher risk of developing eating disorders than males, eating disturbances are thought to be on the increase in males with regard to anabolic steroid use (Hough 1990) and the needs of young males should also be addressed.

Few studies have focused on high-risk groups and results from the two studies reviewed which analysed effects by risk status gave mixed results. At-risk populations such as ballet schools, women's athletic clubs, and gym and fitness club users are potential target groups for further work.

Most research in this area is school-based, which takes advantage of peer interaction and the context of a learning environment, though comprehensive programmes could potentially be enhanced by outreach to the broader community (Neumark-Sztainer 1996, Rosen and Neumark-Sztainer 1998).

Table 6. Studies appraised relevant to eating disorders

Study	Sample attributes	Intervention	Method	Results	Comments/limitations
<b>Mann et al. 1997</b> <i>Programme:</i> Eating disorder prevention <i>Subgroup/setting:</i> University students <i>Country:</i> USA <i>Levels of evidence:</i> Ib	n= 597 Age: Mean= 18 years (17-20 years) All female Caucasian= 49%, Asian/Pacific Islander= 24%, other= 11%; Latina= 10%, African-American= 5%, Native American= 1%.	<i>Conditions:</i> A. Group-based discussion with two students recovered from diagnosed eating disorders (panel). Ninety-minute sessions in two parts: (i) information about eating disorders, symptoms, prevalence, treatment, who to contact for help; and (ii) personal stories from the panel about the course of their illness and recovery. <i>Note:</i> A randomised sample of college prevention programmes were contacted to ascertain that this intervention was relatively representative in combining primary and secondary prevention strategies, involving a recovered peer to tell stories, and focusing on providing information rather than teaching skills. B. Control <i>Primary staff:</i> Students on panel were effective speakers with high profile positions on campus. Sessions were videotaped and confirmed all components were included in the presentation.	<i>Design:</i> Before and after controlled study with randomisation of groups (by dorm). Solomon Four Group Design such that additional students (n= 88) in intervention and control groups did not complete baseline questions about eating disorder symptoms, or body self-esteem (to control for pre-test sensitisation). <i>Follow-up:</i> One month and three months. <i>Attrition:</i> 444 completed final follow-up, but only 113 completed all three assessments. No difference in rates of attrition, or baseline data across conditions or between those participating in intervention and those not participating. <i>Outcome measures:</i> Three composite variables (from principal components analysis): eating disorder symptoms, body weight satisfaction and self-esteem.	Using only those completing all assessments (n= 133), no change over time overall, and no condition effect over time. Exploratory analyses included all participants within each assessment. No difference at baseline by condition. At one-month follow-up, intervention group had more eating disorder symptoms than control, but no significant differences found for body satisfaction or self esteem. No effects at three-month follow-up. No effect of completing baseline on outcomes. Three high-risk participants sought help. Estimated prevalence in peers overall was overestimated by a factor of five, and overestimated more in intervention than control groups.	Study found no effect of intervention on eating disordered behaviour, attitudes or help seeking. In exploratory analyses intervention may have had a slightly detrimental effect at one-month follow-up. Short follow-up. While high rates of non-attendance (due to reduced attendance at dorm meetings), little evidence of attrition bias. Combining primary and secondary prevention may conflict. The attractive and articulate speakers may have made eating disorders appear less serious and easy to recover from. Eating disorders may not need to be normalised as prevalence overestimated.

**Table 6. Studies appraised relevant to eating disorders** (*continued*)

Study	Sample attributes	Intervention	Method	Results	Comments/limitations
<b>Winzelberg et al. 1998</b> <i>Programme:</i> Eating disorder prevention <i>Subgroup/setting:</i> Undergraduate women <i>Country:</i> USA	n= 57 Age: M= 19.7 years All female 54% Caucasian, 20% Asian-American, 10% African-American, 9% Hispanic, 7% other Excluded women already bulimic or anorexic.	<i>Conditions:</i> A. Multi-media programme modelled on self-help eating disorder treatment programmes. Software aimed to reduce negative attitudes and behaviours associated with eating disorders, decrease negative feelings about bodies. Sections on eating disorders, healthy weight regulation, nutrition, exercise. Included email support group moderated by clinical psychologist with anonymous participation. B. Control: Delayed intervention <i>Primary staff:</i> Clinical psychologist as email group moderator.	<i>Design:</i> Randomised controlled trial. <i>Follow-up:</i> Three and six months. <i>Attrition:</i> 21%, no difference at baseline between retained and not retained women. <i>Outcome measures:</i> Eating Disorders Inventory (Drive for Thinness and Bulimia). Eating Disorder Examination-Questionnaire (EDE-Q) (Weight and Shape). Body Shape Questionnaire (BSQ) Weight regulation knowledge quiz. Email messages coded into themes, software use was monitored.	At baseline, intervention participants had greater weight and shape concerns than control participants. Overall improvement over time across conditions. Intervention group improved in body image over time compared to control (effect size= 0.03). No other condition effects. Knowledge high at baseline and increased over time, across condition. No effect of level of software use. However, completion of weight regulation section related to improvement on drive for thinness and bulimia. Participants had difficulty using software due to concerns of privacy and lack of guidelines. Email was used mainly for self-disclosure.	Small sample. Low adherence to the programme suggests that programme fidelity was compromised. Baseline differences not discussed. Within the intervention group, extent of use of different sections related to specific improvements in one outcome, but the number of tests used was not provided and risk of Type 1 error presented (see Glossary). Improvement regardless of condition may be related to sensitisation caused by completing questionnaires or other external influences not measured by the study (e.g., changes with increasing age, experience at university).



**Table 6.** Studies appraised relevant to eating disorders (*continued*)

Study	Sample attributes	Intervention	Method	Results	Comments/limitations
<b>Santonastaso et al. 1999</b> <i>Programme:</i> Eating disorder prevention <i>Subgroup/setting:</i> Vocational training schools <i>Country:</i> Italy <i>Levels of evidence:</i> Ib	n= 308 <i>Age:</i> Mean= 16.1 years (SD 2.4) All female	<i>Conditions</i> A. Lessons and group discussion in class - covered general adolescent problems and eating disorders. Four two-hour group sessions over a month, one per week. B. Control <i>Primary staff:</i> Psychiatrist and psychologist blind to student's risk status.	<i>Design:</i> Before and after controlled study with randomisation of groups (school class). <i>Follow-up:</i> 1 year <i>Attrition</i> = 14% (mainly due to absenteeism, or having left school). No baseline difference between those retained and those not. <i>Outcome measures:</i> Weight (body mass index). Eating Attitudes Test (EAT) which distinguished high and low risk students. Eating Disorders Inventory (EDI).	At baseline, no differences between groups. 9% of the sample regarded as high-risk at baseline. Low-risk students reported reduced EDI body dissatisfaction (compared to control which remained stable) and reduced bulimic attitudes (compared to control which increased). No differences between condition for high-risk participants. Body mass index used as a covariate.	Some modest positive impact of intervention compared to control for low-risk but not high-risk participants. Intervention was very brief. The changes in outcomes for low risk groups may not transfer to reduced incidence of eating disorders. Need a larger sample of high-risk women.

**Table 6. Studies appraised relevant to eating disorders** (*continued*)

Study	Sample attributes	Intervention	Method	Results	Comments/limitations
<b>Buddeberg-Fischer et al. 1998</b> <i>Programme:</i> Eating disorder prevention <i>Subgroup/setting:</i> Student classes at relatively high-risk for development of eating disorder (screened from larger epidemiological study). <i>Country:</i> Switzerland <i>Levels of evidence:</i> Ib	n= 314 Age: mean 16.1 years (SD= 1.8) Males: 35% 85% Swiss, 13% non-German speaking origin, 2% German or Austrian, 18% lived in single parent or blended families.	<i>Conditions</i> A. Health promotion classes: Three-monthly 90-minute lessons on: awareness of eating behaviour, body image, physical and mental well being, social and psychological problems. Included dancing to funk music, a group picnic, being “emotionally influenced” by a videotape about a teenager developing an eating disorder, its consequences and her difficult rehabilitation. B. Control: No intervention <i>Primary staff:</i> Child psychiatric staff	<i>Design:</i> Before and after controlled study with randomisation of groups (20 classes) matched by school type, grade level, distribution of urban/rural areas and sex distribution. <i>Follow-up:</i> Three-month post completion of intervention/six months post baseline. <i>Attrition:</i> No data <i>Outcome Measures:</i> Eating Attitudes Test (EAT). Physical health: Physical Symptom Check List (PSCL). Psychological impairment: General Symptom Index (GSI-68).	No difference at baseline by condition. All outcomes reduced in desired direction across condition. No condition effect. Analyses repeated for females at high-risk of developing eating disorder (n= 63 in intervention group, and 32 in control group). Considering each outcome independently, there were no differences by condition for eating attitudes or psychological impairment. However, there was relative improvement on physical health for intervention compared to control participants. In multivariate analysis, 15% of variance of all outcomes over time could be explained by differences between the intervention and control groups.	For whole sample, no condition effects. Physical health improved for sub sample of high-risk females but no eating disorder related changes compared to control participants. Improvement in outcomes in both conditions over time may suggest “Hawthorne effect” such that observation and data collection itself may have made students more sensitive to issues raised and influence follow-up reporting. Intervention was relatively brief and diffused with only three classes, one per month. Moreover, the intervention was designed to cover a spectrum of health risk behaviours, physical health outcomes and social and coping skills, partly so as to be relevant to a wider range of students including male students at less risk of developing eating disorders.



## General mental health interventions

The four papers reported in this section take various approaches to dealing with the mental health of different groups. They are not directed at particular mental health conditions but focus on intermediary outcomes (risk and protective factors).

Studies reviewed here include interventions with juvenile offenders, interventions with first-year university students, programmes with inner-city adolescents with chronic illness and public health interventions across entire communities.

Studies appraised for review relevant to general mental health interventions are described in **Table 7 (p. 58)**.

Deschenes and Greenwood (1998) compared two different interventions for low and medium risk young juveniles in the USA. The intervention was a three-month residential programme in a wilderness setting, followed by a nine-month period of community follow-up. The other group received the standard residential programme for 12 to 16 months.

While there were significant cost-savings in offering the intervention (as participants were in custody for less time), outcomes after two years were no different than for the control group on measures of self-esteem, coping skills and anti-social behaviour.

However, there was poor completion for either programme, especially in the intervention group, and problems of randomisation. The authors argued that the after-care programme needed strengthening to prevent the relapse that was observed in the intervention group.

A quite different intervention was provided by Lamothe et al. (1995) who worked with first-year university students in a programme to develop peer support, with the aim of increasing their resilience. The sample was relatively small and already had high levels of social support at baseline. Following the intervention the control group had lower adjustment to university life compared with the intervention group.

However, this result was obtained after dropping from analysis one group for which there was poor attendance. It was also possible that the intervention

did not promote accessing of social support (its primary intent), but actually provided a means of social support through the provision of the group itself.

Adolescents with chronic illness were the group with whom Bauman et al. (1997) carried out their intervention. Using peer counsellors, they compared two groups of 14 to 17-year-olds with chronic physical illness. The intervention group was provided with 12 90-minute training sessions on communication and social skills, and then part-time paid jobs in some helping capacity. The intervention participants had a significant effect on increasing self-esteem through to the fourth and final follow-up at 18 months, as it did on promoting mental health. The effect was greater on girls and younger (14-15 years old) people.

A public health intervention is the focus of the study in Sweden by Berg-Kelly et al. (1997). Community A had had an extensive public health programme in the community concerned with adolescent health (including mental health) for more than 15 years, additional to that operating at a national level. Data was collected from this community and two other matched communities, B and C, which had no additional health promotion programmes in addition to national strategies. Health outcomes (including drug and alcohol use, depression, suicidal thoughts, whether victims of bullying, and life satisfaction) were compared across communities.

Community A had superior adolescent health outcomes at first assessment compared with communities B and C. Following data collection, communities B and C initiated local programmes while community A, believing they had made effective advancements, discontinued their programmes. After two years there was a second assessment in communities A and C (but not in B). At this point, community A still reported higher adolescent health compared with community C but the advantages were less than those at first assessment.

Design constraints limit the strength of conclusions that the 15-year programme gave community A a relative advantage in health outcomes compared with matched communities with less extensive public health initiatives.

These papers report on quite disparate interventions. Only limited conclusions can be drawn from each paper, as further studies would need to be carried out to confirm the effectiveness (or lack of) reported here. However, they do provide indications of the possible gains to be made from such interventions and demonstrate the variety of approaches to intervening on youth mental health.

Table 7. Studies appraised relevant to general mental health interventions

Study	Sample attributes	Intervention	Method	Results	Comments/limitations
<b>Deschenes and Greenwood 1998</b> <i>Programme:</i> <i>Subgroup/setting:</i> Placement of low and medium risk juvenile offenders <i>Country:</i> USA <i>Level of evidence:</i> II-1b	n= 192 <i>Age:</i> 14 years or over, mean= 17 for intervention group, and 16 for comparison group <i>Males:</i> Not specified Less than 20% known gang leaders, 40% drug dealers, over half were drug users.	<i>Conditions:</i> A. Three months' residence and outdoor challenge and nine months community-based after-care (supervision). Aimed to develop social skills, self-esteem, and family functioning. Note that those who were not showing signs of improvement were "escalated" to a training school, and in the community phase, could go truant or be re-arrested. 78% completed the residential programme and only 40% completed the whole programme. B. Comparison group received residential placements that average 14-16 months. This sample was selected from a sample of youths not placed in the intervention programme because of case-flow problems. 84% completed the training school programme. <i>Primary staff:</i> No details provided.	<i>Design:</i> Before and after study with non-randomised concurrent comparison group. <i>Follow-up:</i> 12-month and 24-month post assessment (case assessment review hearing when placement is decided). <i>Attrition:</i> 41% for interviews with participants (full data for arrest records) <i>Outcome measures:</i> DSS records, interviews with youths, interviews with some families, interviews with staff, arrest records. Interviews: personal goals, self-esteem, a social index, coping skills, family functioning.	At baseline, the intervention group was slightly older and had more prior arrests. Weighted data used to correct for attrition bias. Survival analysis identified a higher re-arrest rate for the intervention group but this relates to such participants being at-risk in the community longer than residential placements. At two-year follow-up, youths in the intervention group spent about one third of the time in custody compared to over half the time spent by the comparison group. This led to a saving of some \$20,000 per youth over two years from the intervention compared to the comparison groups. Though there was improvement in goals, self-esteem and coping skills, and decreased anti-social behaviour in both groups, this effect disappeared after two years. There was relapse to baseline for substance abuse and delinquency with no condition effect. The intervention group was less likely to attend school following release.	The major study problem relates to the lack of random assignment due to problems of caseflow. Significant cost savings were found for the intervention group but few differences were evident in outcomes. Gains made by both groups disappeared by two-year follow-up. Baseline differences may relate to the lack of effects found. Authors argue that after-care programmes need to be strengthened to prevent relapse. There was poor completion of the programme, especially in the intervention group.

**Table 7. Studies appraised relevant to general mental health interventions** (*continued*)

Study	Sample attributes	Intervention	Method	Results	Comments/limitations
<b>Lamothe et al. 1995</b> <i>Programme:</i> Social support intervention <i>Subgroup/setting:</i> First year university students <i>Country:</i> Canada <i>Level of evidence:</i> Ia	n= 347 students approached, 55 completed baseline <i>Age:</i> 17-20 years (Mean= 18.6 years) <i>Males:</i> 36% 47 lived on campus, 6 lived off-campus, 2 lived with parents.	<i>Conditions:</i> A. Social support groups, held weekly for six week. B) Control group <i>Primary staff:</i> MA graduate, senior undergraduate, trained. Attendance varied for the three discussion groups in the intervention. While each group consisted of 9/10 students, attendance averaged 8.2, 5.3 and 6.8 for each group. The second group was dropped from analysis due to poor attendance, the cancellation of one session, and due to changes in membership at first meeting (two students were replaced).	<i>Design:</i> Randomised controlled trial. <i>Follow-up:</i> Two weeks after end of intervention (three months post baseline). <i>Attrition:</i> 4% <i>Outcome measures:</i> Social Provisions Scale (social support) Student adaptation to college questionnaire.	Intervention group's level of perceived social support did not increase over time. However, when baseline social support controlled in analysis of covariance, social support was higher for intervention participants at follow-up compared to the control group. Also, intervention group demonstrated greater adjustment to university life relative to the control. However, not clear whether baseline differences explored, as time was not included in analysis.	Small study with practical problems and short follow-up period. Poor participation rate reported as due to short time allowed for students to respond to approach. Potential for volunteering bias in randomisation as made with "provision that all groups would be as gender balanced as possible, and participants would be available for meeting times". Dropping of one group's data led to small sample size. This also meant that only groups that worked well were included which does not reflect the intervention's efficacy if implemented more widely. It was noted that social support was high at baseline, which questions the meaningfulness of improving outcomes. Intervention may not have promoted accessing social support per se but actually provided a means of social support in terms of providing a network in the intervention groups, as reflected by qualitative data.

**Table 7. Studies appraised relevant to general mental health interventions** (*continued*)

Study	Sample attributes	Intervention	Method	Results	Comments/limitations
<b>Bauman et al. 1997</b> <i>programme:</i> Group intervention using peer counselling <i>Subgroup/setting:</i> Inner-city adolescents with chronic illness <i>Country:</i> USA <i>Level of evidence:</i> Ia	n= 428 (278= intervention, controls= 150) <i>Age:</i> 14-17 years with on-going physical health condition (excluded those with serious sensory deficit, speech impairment, motor disability, mental retardation or under treatment for behavioural or psychiatric condition, and non-English speakers). Males= 47% African –American 24%, west Indian 11%, Puerto Rican 37%, white 9%, Asian 1%, mixed 12%.	<i>Conditions:</i> A. Twelve 90-minute training sessions (communication and social skills training) carried out in groups of 20-35 participants, and a part time job internship in some 'helping' capacity. Half participants graduated from training, and 83% of those completed job internship. B. Control <i>primary staff:</i> Peer counsellors, with unspecified training; programme coordinator.	<i>Design:</i> Before and after study with randomised concurrent controls. <i>Follow-up:</i> Four follow-ups at 2, 6, 12, and 18 months post baseline. <i>Attrition:</i> Minimum of 89% at each follow-up. <i>Outcome measures:</i> Data collected through face-to-face interviews and self-administered questionnaires. Rosenberg Self Esteem Scale Harter Self Perception Profile for Adolescents (social competence) Brief Symptom Inventory (BSI), and the Global Severity Index (GSI) measuring mental health status.	Significant condition effect over time was found with increased self-esteem in the intervention group, strongest during the time when the programme was on-going. No significant effects were found on competence sub-scales apart from some initial improvements for the intervention group in scholastic and athletic competence, and romantic appeal. Significant condition effect over time on the mental health scale with increased mental health scores for the intervention group, compared to the control group, over time. The intervention effect was greatest for girls and younger (14-15 years) participants.	Provides some evidence that boosting self-esteem is associated with increasing mental health for young people with an on-going physical disability. Sample sizes for sub-group analysis were small. Lacks adequate information for programme replication.

**Table 7. Studies appraised relevant to general mental health interventions** (*continued*)

Study	Sample attributes	Intervention	Method	Results	Comments/limitations
<b>(Berg-Kelly et al. 1997)</b> <i>Programme:</i> Public health interventions <i>Subgroup/setting:</i> Rural communities <i>Country:</i> Sweden <i>Level of evidence:</i> II-1b	n= 915 at baseline (three communities) and 593 at follow-up (two communities) <i>Age:</i> 13-16 years, grades 7 and 9 <i>Males:</i> Unspecified Three communities had similar sociological factors in 1985 when national census was performed.	<i>Conditions:</i> Community A had long-term (> 15 years) local public health activities on adolescent health, health habits and risk-taking with youth council led by managers for public agencies. Discontinued activities for two years after baseline. Communities B and C have no history of public health programmes for youth beyond those initiated and health promotion programmes led nationally. Initiated some of the activities of community A for two years after baseline. <i>Primary staff:</i> Social agencies, parents, police, adult volunteers.	<i>Design:</i> Before and after study with non-randomised concurrent comparison community matched for population size, socio-economic make-up and distance from city. Data collected in grades 7 and 9 in 1991 for three communities and repeated for communities A and C only on grades 7 and 9 in 1993 (i.e. repeated measures for some participants in grade 7 in 1991 and grade 9 in 1993). <i>Follow-up:</i> Two years <i>Attrition:</i> Not applicable as participants not compared over time. <i>Outcome measures:</i> Self-reported health habits including drug and alcohol use; mental health items including depression, suicidal thoughts, bullying, satisfaction with school and life.	Comparisons made between Communities A, B and C at first assessment, and between Communities A and C only at the second assessment. Note that no comparisons made over time. <i>At first assessment:</i> Community A had greatly higher adolescent mental health status than communities B and C. <i>At second assessment:</i> Community A still had superior mental health status compared with Community C but differences had narrowed.	No baseline before the 15-year intervention for Community A. Therefore, while communities were matched, it is difficult to determine whether the 15-year programme, or other differences, led to the advantages in mental health outcomes for Community A at the first assessment period. Whilst the difference between communities was less at the second assessment than at the first, comparisons were not performed over time or explored for those individuals who did complete pre and post assessments. Baseline data combined information from communities B and C, but data at second assessment was for Community C only that may have biased differences found.





# New Zealand outcome evaluations

## INTRODUCTION

Our search of international literature identified no studies from New Zealand that met our inclusion criteria. Extensive enquires were conducted with a range of research groups, especially those relating to Māori research, across New Zealand (See **Appendix 4**). Through these consultations we did identify two programmes that had been evaluated for outcomes. Though excluded from our larger review because they did not include comparison groups, we refer to them here as they provide useful information relevant to the New Zealand context.

Studies appraised for review relevant to New Zealand outcome evaluations are described in **Table 8 (p. 65)**.

### ***Adventure Development Counselling***

Special Education Services, New Zealand Ministry of Education, initiated an Adventure Development programme in Otago, Canterbury and Southland under contract to the Health Funding Authority (Special Education Services 1998).

Adventure Development Counselling is a counselling intervention for 13-18 year olds. Clients are referred who are at high-risk of developing substance abuse, conduct disorder and other mental health problems such as depression.

The intervention provides four elements: individual therapy, family therapy, group therapy in a wilderness context, and an integrated intervention with other agencies.

Clients are involved with the programme for between five and 10 months depending on the severity of the issues they are facing. The group therapy/wilderness journey component occurs part way through this period and aims to provide experiential skills-learning to deal with many of the issues the young people are facing.

The programme was evaluated between two and four months after the final counselling sessions using cross-sectional methods. Participants completed a

structured interview and schools/referral agencies and parents/caregivers completed questionnaires. Outcome evaluations were reported for 1995-1997 for 10 groups with a combined mean age of 14.7 years.

Participants reported very high positive perceptions of the programme and its effect on their view of themselves, their thoughts and behaviour. These changes were generally supported by observations of referral staff (e.g. school teachers) and families, who also highly recommended the programme to others and found family therapy beneficial. Strong effects were reported by participants, including reduced substance use. Longer term follow-up would be helpful to investigate whether these reported changes were maintained.

The study design was limited in not having data collected prior to the intervention or randomisation to comparison groups. Changes reported by participants therefore cannot be verified by comparing outcomes with baseline data, or be linked exclusively to the programme. However, data collected from school and family members on observed changes supports participants' self-reported improvements, which were impressive.

A stronger evaluation design (ideally a randomised controlled trial) with longer follow-up is advisable, and we understand that an evaluation study of this programme is being conducted by a post-graduate student (personal communication, Alcohol Liquor Advisory Council).

### ***Mentally Healthy Schools Initiative***

The Mentally Healthy Schools (MHS) Initiative is another New Zealand programme that has been evaluated for outcomes (Bennett and Coggan 1999).

The MHS initiative planned to encourage policies and practices that support good mental health in the school environment. The programme's philosophy was to go beyond classroom sessions and to intervene on the wider school culture within which young people live.

The programme covered three domains: the health curriculum, the school ethos, and the relationship between school and the home. Various initiatives were taken to change the environment of the schools (e.g. anti-bullying programmes, establishment of mentor classes within the vertical school structure). There was also an expectation (not met in three schools) that the Mental Health Matters (MHM) Curriculum would be implemented with all year 9 and 10 students (13-and 14-year olds).

This programme illustrates some of the practical difficulties of evaluating an extensive public health intervention in schools. The intended study design was to include comparison schools. However, there were difficulties in obtaining schools willing to be the non-intervention controls. One school included a case-control study with half the classes receiving the curriculum programme and the others not. However, a small sample size limited the ability to statistically pick up differences that may have been present.

A before-and-after intervention assessment was planned but only completed in four of the schools, two of which did not implement the Mental Health Matters Curriculum although they did take other initiatives. Therefore the interventions were very specific to the participating schools as each was making its own choices about culture and policy changes, and each had a specific population profile. Where before-and-after assessments were obtained, the follow-up period varied widely from five to 15 months post baseline.

Because of the great variations between schools in programme implementation, results were presented as a series of case studies. Raw data provided in graphs suggested some favourable changes in student perceptions, however no analyses were provided concerning whether or not these changes were statistically significant. In the school in which it was possible to compare those who had received the MHM curriculum with those who did not, there was little effect on male students except a possible increase in depression and a positive effect for female students in all areas except depression. However, no statistical analyses, or raw data, were reported.

It is difficult to generalise the results from this evaluation. The programme was said to be well received in the schools, and a number of qualitative findings suggest its successful implementation. However, the school populations were not comparable, and schools implemented varying programmes, with only some schools and some classes within schools using the MHM curriculum material.

Positive changes were reported, though not statistically tested. It is difficult to establish the precise reasons for reported changes and their significance to the long-term mental health of the students. The report recognises the need for further evaluation of its longer-term impact.

### ***Why so few New Zealand evaluations?***

While many New Zealand organisations are concerned with youth mental health (Crown Public Health 1999) and some have carried out process evaluations (e.g. Coggan 1996a, 1996b), only two have completed outcome evaluations relevant to this

review, and neither of these met our criteria for study design.

Conversations with people contacted identified a number of factors that contribute to this paucity of outcome evaluations in youth mental health:

- **Priority:** Many people working in this field are fully occupied in delivering their prevention/promotion programme and evaluation is a deferred and often optional consideration. For service deliverers there is also a concern to keep the service youth-friendly with a perception expressed by one service provider that the use of questionnaires may be off-putting to clients.
- **Planning:** While process evaluation is perceived to have immediate value in potentially directing programme improvements, outcome evaluation is often considered after the programme has been delivered. However, if the effectiveness is to be adequately evaluated, pre- as well as post- testing is necessary, and this requires that evaluation of the programme be planned and instituted prior to programme delivery.
- **Skills:** Rigorous evaluative research in this field is complex and time consuming. For example, partnerships need to be developed, funding obtained and maintained, measurement tools developed, data analysed, reports prepared and presented. Those who deliver programmes with youth are not necessarily familiar with the research skills required to design and implement programme evaluations. Skilled researchers need to be consulted and involved in providing guidance for developing and conducting early prevention programmes.
- **Resources:** Many programmes are run on tight budgets with insufficient resources to add an evaluation component. Moreover, some programmes run on short-term funding which may not permit longer-term evaluation.

These issues will need to be considered in order to provide the incentives, skills and resources required to build rigorous evaluations into early prevention programmes for youth mental health.

**Table 8. Studies appraised relevant to New Zealand outcome evaluations - ineligible for review**

Study	Sample attributes	Intervention	Method	Results	Comments/limitations
<b>Special Education Services 1998</b> <i>Programme:</i> Mental health promotion <i>Subgroup/setting:</i> School/agency referrals based on substance abuse and other mental health problems. <i>Country:</i> NZ <i>Level of evidence:</i> III	n= 110 (10 groups between 1995-1997) according to demographic data <i>Age:</i> 13-18 years, Mean= 14.7 years <i>Males:</i> 63% 69 NZ European, 31 Māori, 2 Cook Island Māori, 1 Samoan, 4 other/unknown (reported for 107 people).	<i>No comparison group</i> <i>Intervention:</i> Adventure Development Counselling involving four elements: individual therapy, family therapy, group therapy in a wilderness context, integrated intervention with other agencies. <i>Primary staff:</i> Psychologists and Masters-level counsellors.	<i>Design:</i> Cross-sectional study with no comparison group. <i>Follow-up:</i> Two to four months post end of intervention. <i>Response rate:</i> of 104, 96% for youth participants, 62% for referral staff, 89% for parents. <i>Outcome measures:</i> Participants - structured interview on perceptions of programme, and changes in: self-concept, behaviour and thinking, reported substance use. Questionnaire reports of change in participants by: schools/referral agencies, parents/caregivers.	<i>Participants:</i> (n= 104) 99% reported positive perceptions; 89% positive self-concept; 96% helpful changes. Of relevant substance abusers, 68% decreased alcohol use, 66% decreased cannabis use. Where "other" drug use was broken down (for six groups), reduction of 83% in butane use, 92% petrol, 80% inhalers, 66% uppers and datura, 100% glue and LSD. Where combined (for four) 66% reduced other drug use. <i>Referral staff:</i> Positive changes in 70% of youth. <i>Caregivers:</i> 83% positive changes, 45% (of eight) noted continued changes. 96% (of six) would recommend programme, 70% found family therapy useful, 74% (of four) reported benefits for family.	Results reported as programmes evaluated (over a number of years) and data reported here was collated across reports. One school staff member argued that improvements were related to other programmes. This illustrates the limitation of the evaluation design in not involving randomisation to comparison control groups where changes specific to the programme could be deduced. There was also a variable follow-up period. Response rates for referral staff was limited at times by programme participants moving to another area. No baseline data. However, qualitative reports and data from staff and family members add validity to reported behaviour changes.

**Table 8. Studies appraised relevant to New Zealand outcome evaluations - ineligible for review (continued)**

Study	Sample attributes	Intervention	Method	Results	Comments/limitations
<b>Bennett and Coggan 1999</b> <i>Programme:</i> Mental health promotion <i>Subgroup/setting:</i> Schools <i>Country:</i> NZ <i>Level of evidence:</i> II-3	<p>Eight schools: Single-sex (n= 1)  co-educational (n= 6)  unspecified (n= 1)  n= 2024 from four schools who completed pre- and post-tests. Of these, 27% were year 7, 14% year 8, 11% year 9, 11% year 10, 11% year 11, 11% year 12.  An additional 4118 completed pretest only.  <i>Males:</i>53%  Ethnicity of students varied greatly between schools, from majority Pakeha, to 50% Pacific Islanders, or 50% Māori.  School size ranged from 550 to 1600 pupils.  Socio-economic status of schools ranged from decile two (high SES) to decile seven (moderate SES) on a scale of 1 to 10.</p>	<p><i>No comparison group</i>  <i>Intervention:</i> Intended to involve: a needs assessment for staff and students; the development of a Mental Health Promotion team; a commitment to student involvement; the development of resources to support the initiative; and amendment to school policies and practices.  The Mental Health Matters (MHM) Curriculum was intended for all year 9 and 10 (13 and 14-year-olds) students. However, the study was only implemented for two of the four schools with baseline data.  Curriculum aims to promote mental health, teach strategies and skills to enable young people to cope with stressful situations and explore attitudes, values and beliefs relating to mental health and mental ill-health.  <i>Primary staff:</i> School staff, and Mental Health Foundation and Injury Prevention Research Centre staff.</p>	<p><i>Design:</i> For four schools only: before and after study with no comparison group.  For all schools: participant interviews, and observations.  <i>Follow-up:</i> Post-test taken between 5 and 15 months post baseline.  <i>Response rate:</i> Not reported.  <i>Outcome measures:</i> Pre-test and post-test asked for information about experiences and perceptions of school, experiences of “tough” behaviours, substance use, suicide risk behaviours, self-esteem, use of support services.  Qualitative data included information about changes in school policy and about initiatives taken in the school community.</p>	<p>Raw data presented in graphs suggested the possibility of some favourable changes in student perceptions (e.g. sexual harassment, racism, and support services) although no statistical comparisons were reported.  In one school, only half the students had received the MHM curriculum intervention at the time of follow-up. Results for this school indicated no change for male students except an increase in depression, and a positive effect for female students in all areas except depression. Again, no statistical analyses provided.  Qualitative results reported separately for each school, mainly reporting process measures rather than outcomes, but also reporting on policy changes in each school. Programmes were well received with positive feedback from school personnel.</p>	<p>The school populations, and fidelity of programmes, vary widely making meaningful comparisons between schools difficult.  The lack of presented statistical tests makes it difficult to interpret the significance of reported changes.  Lack of comparison groups also makes it hard to determine whether the programme or other factors contributed to reported changes.  Longer-term follow-up is recommended within a more rigorous study design methodology.</p>

# Discussion of issues in mental health prevention research

In reviewing articles for this report, we were very conscious of the difficulties faced by researchers and health practitioners in providing the programmes and conducting research that is methodologically rigorous. This is a demanding field in which to work, with many logistical challenges in organising the interventions themselves, as well as conceptualising, funding and arranging the research components of an evaluation. Multiple relationships must be negotiated between clients, clinicians, researchers, institutions and the communities in which they live and work.

In what follows we discuss some of the methodological challenges involved in this work, related to study design, implementation and reporting. What follows does not claim to be an exhaustive list of these issues, but narrates some of the more prominent concerns identified in the literature reviewed in this report.

## ***The need for a theoretical framework***

A theoretical framework provides the conceptual structure within which interventions are conceived and implemented. The framework chosen informs the choice of what risk factors and protective factors are being addressed in the intervention, and whether these are internal and/or environmental (See “**theoretical framework**” section of Introduction, p. 2).

Frameworks used in the studies reviewed include social cognitive theory and social learning theory. The theory is not always explicitly stated, but most research will have some underlying orientation to the problem or issue being addressed.

Once variables are identified and the intervention planned to intervene on them, the study design must ensure that the evaluation can measure the success of the programme on altering these factors and, ideally, the mental health outcomes of interest.

## ***Cultural issues***

Cultural issues have had limited attention in the early intervention in youth mental health. Dent et al. (1996) have argued that, in drug intervention pro-

grammes in the USA, “little is known about the etiology and prevention of drug abuse in ethnic minority populations” (p. 911).

While ethnicity is a risk factor for some conditions it is confounded with other risks such as socio-economic deprivation (Fergusson et al. 1997). There is a need to understand for what aspects of a programme culture is critically relevant.

Serifica (1999), in her discussion of mental health prevention for Asian-American youth, argues that more research is needed to understand the role of cultural variables and their interaction with mental health: “For instance, what is the role of each of these variables? Is it a moderating, mediating or simply a confounding variable? And what precisely does a particular cultural variable moderate or mediate?” (1999, p. 148).

In our review, though many studies gave the breakdown for ethnicity within their samples, few carried out sub-group analyses for culture or ethnicity. An exception was a study of American Indians on a reservation (Cheadle et al. 1995) which was limited by a small sample size.

No studies systematically evaluated the effectiveness of an intervention in different cultural contexts, or compared different interventions in the same cultural group. Moreover, the literature tended to report on ethnicity in broad terms (e.g. White, African American, Hispanic) with little acknowledgment of cultural differences within these broad groups. For example, in a drug prevention programme, Palinkas et al. (1996) noted that some Mexican Americans spoke Spanish while others could not - a distinction that was evident in class interactions.

Across a country there will also be wide differences in other factors such as rural/urban, highly educated/less educated, close-knit community/loose-knit community.

Considering whether current drug abuse programmes are generalisable across different ethnic groups, Dent et al. (1996) offer arguments for both sides, as summarised below.

For generalising programmes across cultures:

- There is research evidence of limited effectiveness of some programmes. While there is an absence of data that demonstrates effectiveness (or lack of effectiveness) for some cultural groups, those groups should not be denied these programmes on that basis. That is, absence of evidence is not evidence of absence.
- There are some similarities in the aetiology of mental disorders across ethnic groups. Research

evidence relating to the early stages of development of drug and alcohol use among ethnic populations suggests a similar sequence of drug use initiation from alcohol, to cigarettes and then to marijuana.

- Evidence is building that comprehensive social influence preventive programming may be effective across different cultures.
- Interactive programmes (e.g. facilitated group discussions) may be able to adapt to cultural differences as they are implemented.
- Stressing ethnic group differences may incur wider societal and programme costs.

To make programming group specific:

- Access to prevention programmes may vary across different ethnic groups due to differences in how funds are allocated according to geographical area, community priorities (e.g. focused on treatment rather than prevention) and communication channels that these groups do not use or have access to.
- If the minority group is multi-disadvantaged (in health, housing, employment, education), prevention may be less a concern than day-to-day survival.
- An intervention may be less than optimal to a cultural group because it omits important ethnic-specific components, or is delivered without regard for developmental differences in the time of drug use acquisition between ethnic groups.
- Community gatekeepers are more likely to use health programme materials that are developed and implemented by people from the same ethnic group. Materials such as videotapes or printed literature cannot be easily adapted to new cultural groups (and languages).

Dent et al. (1996) concludes that it is still debatable whether there is a need to develop new programme strategies for different ethnic groups. However, Manson (1997), referring to a 1994 Institute of Medicine Report (Institute of Medicine 1994), argues that the success or failure of preventive programmes is closely tied to cultural competence. A number of issues are suggested as important in this respect:

- relationships between researchers and the community
- identifying culturally mediated risk, mechanisms, triggers and processes
- employing culturally consonant theoretical frameworks
- preparing culturally relevant content, format, and delivery of preventive interventions
- developing culturally appropriate narrative structures and discourse
- tapping critical decision-making processes
- recognising culturally defined support networks as well as natural helpers

- and ensuring fidelity of implementation in the face of such diversity.

In their discussion of the cultural relevance of mental health interventions, Black and Krishnakumar (1998) observed that cultural context is often overlooked. The authors stated: "Interventions that incorporate the values, culture and norms of the community are more likely to be successful because newly learned behaviour is easier to implement in a culturally familiar and supportive environment" (1998, p. 639). They argue for more qualitative studies to gain insight into the contextual validity of programmes. This is especially important in the development and pre-testing stage and also in understanding results found in quantitative studies.

Programme providers in a drug abuse programme for high-risk young women (Palinkas et al. 1996) observed that some social skills training was not consistent with culturally determined norms. For example, discussions with parents and adult authority figures may violate traditional concepts of *respeto* (respect) for Mexican Americans.

In a study aimed at violence prevention for African American youth, Hines et al. (1998) employed a number of strategies to maximise cultural sensitivity. These included beginning and ending each session with a "talking circle" where every individual had an opportunity to speak as an object of cultural significance (an ankh) was passed around. Proverbs, fables, mottos and values drawn from African tradition were included as well as a programme motto.

A number of New Zealand publications also highlight the significance of cultural considerations in prevention and early intervention (Dyall 1997, Ropiha 1993, Simpson and Tapsell 1999) and the need to develop culturally appropriate interventions and services.

### ***Sample selection and recruitment***

#### **Sample biases**

The vast majority of studies reviewed here recruited participants from schools. This approach avoids the difficulty of accessing and recruiting members of the community who do not regularly attend an institution where attendance can be monitored. However, this introduces a sampling bias such that the effectiveness of an intervention is not explored with those who have dropped out of school or are in institutions of some kind, who tend to be at greater risk of mental health problems.

There are notable exceptions. A violence prevention study (Hines et al. 1998) recruited young people from (and conducted the intervention in) the following sites: youth detention centre, an organisation for

high school drop-outs, an alternative high school for behaviourally disordered youth, classified youth, and a mainstream high school.

There were also relatively few studies that looked at interventions involving young people beyond secondary school and these tended to remain in educational settings such as a university (Lamothe et al. 1995, Mann et al. 1997, Winzelberg et al. 1998).

#### Screening for risk status

Universally-oriented interventions (e.g. directed at whole school classes) can have the limitation of including students ranging widely in their degrees of risk, protective factors and early signs or symptoms. This may mean that an intervention may have differential impact on students at high-risk for mental illness rather than low risk.

The definition of high-risk status has varied greatly across studies, ranging from "high relative to others" to using a clinical cut-off point. Measurement of risk status can range in subjectivity, from standardised scales to teacher assignments of risk on no specified criteria. Standard survey instruments as screening tools have their limitations as their validity, particularly in relation to different cultures, needs to be considered. High-risk may also refer to indirect measures including disadvantaged socio-economic status, personality characteristics (for example, risk takers), youth at risk of dropping out of school, and having alcoholic parents.

Franko and Orasan-Weine (1998) argue that the concept of risk status should be consistent with the level of prevention aimed for. Using the example of eating disorder prevention, for universal prevention programmes high-risk status may be determined by having weak protective factors (e.g. self-esteem). For selective programmes, high-risk status may refer to exposure to a weight-conscious peer group (e.g. ballet dancers). For indicated prevention programmes, those at high-risk may be those who exhibit significant dieting or body dissatisfaction (but not to clinical levels).

There is some evidence for more clinically defined outcomes such as depression and eating disorders that screening for risk status may itself, be therapeutic because of the depth and sensitivity of questioning, (Eggert et al. 1995). This problem is difficult to avoid because screening is needed to assign risk.

#### Recruitment

A range of strategies has been employed for maximising recruitment rates. Where interventions formed part of the school curriculum, participation rates would be expected to be high. Some studies

required informed consent from parents or guardians that may have affected response rates.

Strategies for maximising response rates included loudspeaker announcements, promotional fliers, brief orientation sessions of a skit and verbal overview, mailing consent forms to potential participants' homes with follow-up phone-calls to non-respondents, and involving participants as recruiters for future sessions (Hines et al. 1998). The same study included incentives such as a pizza party at the end of recruitment week for those returning their consent forms.

#### Attrition

Attrition rates for early intervention programmes can be significant. Reasons include the fluid nature of study settings (e.g. students leaving school, not attending classes, moving to another community or school, being transferred to another detention centre) which can be compounded in long-term follow-up, especially for hard-to-reach populations (Hines et al. 1998).

Better quality studies do report if comparison groups are different or similar at baseline, and where different make allowances for this in interpreting differences in outcome. There are also statistical methods for dealing with missing data and making allowances for attrition. While these are helpful, it is important to recognise that students who do not respond at follow-up may differ in ways not measured or not apparent at baseline.

Particularly good studies expend extra effort to ensure high response rates at follow-up (e.g. Kisker and Brown (1996)). In a violence prevention study (Hines et al. 1998), participants were given reminder telephone calls, provided with refreshments at the intervention sessions, had a lottery draw for good attenders, made payments for survey completion and researchers obtained alternative contact details to track participants who may have relocated during the study.

### **Interventions**

While guidelines for planning, development and implementation of interventions is beyond the purpose of this discussion, some aspects will be briefly discussed here, particularly as they relate to evaluation procedure and interpretation of results.

#### Type of interventions

No matter how rigorous a study design, potential effectiveness will only be as good as the programme being evaluated.



Many of the research studies reviewed here were limited to classroom-based curriculum, aiming to improve knowledge and awareness of mental illness and the prevalence and harm of risk behaviours (such as substance use, dieting, gun carrying).

Other studies aimed to provide skills training (for example, in resistance to peer pressure, coping). Some involved interactive components such as role plays and behavioural modelling that allowed young people to act out and practise skills in the group and in the wider community (Hines et al. 1998).

Efforts to reach out of the classroom included a variety of novel activities including: a group picnic and dancing to funk music (Buddeberg-Fischer et al. 1998), computer software and monitored e-mail support groups (Winzelberg et al. 1998), parent evenings (Goldberg et al. 1996a, Goldberg et al. 1996b), parental interventions directed at affecting demand and supply of alcohol in the home (Williams et al. 1999), trained peer consultation (Werch et al. 1996), annual conference, carnival and family day (Cheadle et al. 1995), family enrichment training.

#### Development of interventions

The success of an intervention will depend on the time and thought spent on its development as well as efforts to ensure that it is implemented as intended.

To illustrate strategies that can be used to plan an intervention, we will refer to a violence prevention training programme developed by Hines et al. (1998) which we reviewed.

The programme development began with focus groups and meetings with key informants, followed by formulation of the theoretical framework. The curriculum itself was developed after a review of the literature. Information from this and the focus groups led to drafting resources including case analyses and role-plays. Issues considered included content, ordering and time of tasks, as well as attempts to keep the material engaging and interactive. Strategies devised included didactic presentations, videos, games, interactive exercises, group discussions, brainstorming, modelling, role-plays and behavioural rehearsal. Particular attempts were made to make the intervention material culturally familiar (as described in “cultural issues” section above), credible and relevant to the participants who were predominantly African Americans in the inner-city community with high levels of violence. The interventions developed were 12 two-hour long modules provided over an intense six-week long period with three modules given three months later as “booster” sessions.

The length of an intervention itself will clearly relate to its effectiveness. Studies reviewed here commonly involved brief interventions of less than a handful of sessions, and sometimes only one. Given the complexity of the issues and the difficulty of effecting long-term attitudinal and behaviour change, these are brief interventions that one might expect to have a limited impact.

#### Site of interventions

Many of the early intervention studies reviewed here are based in schools, commonly involving classroom-based and curriculum-led programmes. Some studies are community-based, though frequently these also include a school component. Interventions within educational settings take advantage of peer interaction and the context of a learning environment (Rosen and Neumark-Sztainer 1998). However, it may limit the ability of an intervention to change the cultural context that can promote mental illness, such as pervasive violence, family alcoholism, or promotion of ideals of thinness in the media.

Community-based studies are able to address some of these wider issues that impact on an individual's mental health. They also situate the intervention within the environment where risk behaviours (such as substance use) commonly may occur. Some offered an alternative gathering place outside the school or home such as weight rooms (Goldberg et al. 1996a, Goldberg et al. 1996b) or youth centres (Baker et al. 1995).

#### Programme fidelity

Programme fidelity is the degree to which a programme has been adhered to and complies with the programme's protocol.

The components within programmes can vary greatly with respect to their fidelity (for example, whether training is provided, outreach to participants, access of high-risk participants). Intervention sessions can be cancelled or delayed for reasons including competing events or unexpected problems such as an outbreak of violence in a detention centre (Hines et al. 1998).

There can also be variation with the uptake of components of a programme (Bennett and Coggan 1999). It is difficult in such designs to know the contribution of each component to a result, or whether the interaction or additive effect of all components had an effect, or whether some components had opposing effects. The only way to confidently tease out these effects is to conduct several trials where the number and type of components is varied. One efficient way to decide about the design of such a strategy may be to vary interventions in terms of resources required.

Several studies in this review had a number of comparison interventions, which had additive components (e.g. Goldberg 1996a, Sussman 1998).

It is important to explore how programme fidelity may relate to outcome. Even if a programme is shown to work under research conditions where all efforts are made to maximise fidelity (efficacy), it may not work when used more widely when there isn't the support and emphasis on adhering to protocol (effectiveness). Indeed, some studies are biased toward only analysing data where fidelity was shown to be high (Lamothe et al. 1995).

Intervention fidelity could be used as a mediator of outcome (Clarke et al. 1995). However, efficacy trials try to maximise compliance with a protocol and therefore the variability in fidelity across programme providers (for example, teachers) is limited. An alternative approach would be to only give programme providers a protocol manual and little support or training and to assess the effect of varying programme fidelity.

As most interventions reviewed here were carried out in groups (such as school classrooms), programme fidelity may vary between individuals within groups. This may relate to differing effectiveness within a group as a function of individuals' sex, ethnic group, education level, participation in class activities, completion of take-home tasks, intervention attendance, etc. There are statistical concerns with comparing programme fidelity when the unit of analysis is the group (Clarke et al. 1995). Analyses can explore the effect of different levels of participation in a programme on outcomes measured.

### Community partnership

The importance of involving and working with community members and groups cannot be understated in conducting an intervention programme, but community partnership is also vital for ensuring programme fidelity and support for the research and evaluation components.

There can be resistance to research strategies that may be seen to hold up programme implementation.

There are challenges involved in emphasising the need for baseline data collection, randomised allocation to conditions, the need for control groups and the importance of adhering to intervention protocol.

Several studies report their inability to conduct the evaluation as intended due to pressures from the community, school or funding bodies (as discussed in Section "allocation to groups" below). Researchers and programme providers need to stress the important role of evaluation in understanding whether

or not, and how, a programme may be successful, directing improvements, and ensuring that scarce resources (of time and money) invested in the programme are well spent.

Some researchers have found it useful to formalise their partnership with community organisations. Such a written affiliation agreement can specify the benefits for direct participants and the community, and pledge training of staff so the intervention can be continued after the research is completed, as was done by Hines et al. (1998). This violence prevention programme detailed the responsibilities of those organisations involved and found this useful for redirecting attention of staff to the agreed parameters of the study when actions threatened the fidelity of the programme.

### ***Allocation to groups***

Adequate randomisation to groups (intervention vs control) was frequently lacking in studies reported here. It is important to recognise that researchers do not always have control over the study environment. Randomisation was sometimes not carried out as intended due to concerns of programme funders or institutional policy requirements about universal access of all participants to a programme (Kisker and Brown 1996), or participants having a choice about curriculum/intervention options (Eggert et al. 1995).

One way that studies have resolved this issue of equal opportunity to an intervention is to offer a delayed intervention to the control group (e.g. Winzelberg 1998).

A further source of bias is the diffusion of an intervention due to cross-contamination of control group participants and condition group participants. Students may discuss their classes after school or in the playground.

Youth in control groups may also be aware of study hypotheses - that they are expected to report more poorly on outcomes than the special intervention group. This may effect reporting in a competitive way. Also, schools and communities that recognise something needs to be done about a mental health problem and have the resources and effort required to set up programmes and evaluations may have an effect on awareness of the issue in the community. This may lead to general community discussion and greater efforts in other spheres (e.g. within the family) to address the problem which may involve participants not allocated a specific intervention.

There can be difficulties with the selection of control groups. Matching control with intervention communities across relevant factors that are likely to influence research outcomes (e.g. employment level,

population size, economic variables) is essential to be confident that differences witnessed can be related to the intervention alone. Control communities may have their own programmes or less structured attempts at responding to a problem, and may also respond competitively to an evaluation. There may also be alterations in factors common to all groups such as societal changes (e.g. government initiatives) or to developmental changes as young people age across the study. Such factors may contribute to why some studies report changes over time regardless of group allocation (Buddeberg-Fischer et al. 1998, Eggert et al. 1995, Lamb et al. 1998, Winzelberg et al. 1998).

A difficulty in assessing these potential influences is that studies rarely discuss whether comparison groups interacted, whether whole schools or communities where studies occurred were broadly activated to the issue, whether control groups received intervention programmes independently, and what was the socio-political context of the study. While some of these influences may not be moderated, their influence can be measured and considered in interpreting results. The careful and detailed description of comparison groups and sample populations is crucial to support such interpretation.

### **Measurement issues**

Matching outcome measures with programme goals and with an appropriate time frame, directed by an explicit model, is a challenge for early intervention programmes in mental health.

### **Outcomes**

In evaluating the effectiveness of an intervention, there are choices about what outcomes of interest to measure, and what are valid means of carrying out that measurement:

- Outcomes need to be positioned within a theoretical model that explains their relationship with the ultimate outcome (reduced incidence of mental disorder). Measurement of factors such as knowledge (for example, about health effects of risk behaviour, prevalence of mental illness) is only useful if they are known to be strongly linked with behaviour change (for example, substance abuse, bingeing behaviour) or reducing the development or incidence of mental illness.
- The choice of important health outcomes for an evaluation should match closely the intervention goals. Sometimes these goals can compete. For example, studies which aim to provide primary and secondary prevention may find that efforts to reduce stigma (and increase help-seeking) may also increase normalisation and acceptance and reporting of illness-related behaviour (as discussed with reference to eating disorders, Mann et al. 1997).
- The clinical relevance of outcomes measurements needs close consideration and different measures may reveal different results. For example, Clarke et al. (1995), in a study of depression, found no difference in “snapshot” scale assessments of depressive symptomatology, but found reduced incidence of clinical depression over time as measured by survival analyses. Changes in outcomes for some groups may not transfer to reduced incidence of mental disorders (Santonastaso et al. 1999), especially in broad population samples where baseline levels of risk-status may be low and reduced outcome scores may not relate to reduced incidence of mental disorder (Lamothe et al. 1995).
- While focusing on clinically relevant outcomes is desirable, attending solely to the incidence of problem behaviour makes it hard to see how the intervention worked, or failed to work. For example, if an intervention aims to reduce depression through improving communication with parents and finds that depression is reduced, it is not known whether the intervention has had the effect intended or whether it worked through other ways (e.g. peer support from group interaction). Including a range of intermediary and longer-term behavioural/clinical measures is advisable.
- Within some mental disorder areas such as substance abuse and conduct disorder, there is little consistency in the various measurement tools used. Standardised scales are not always used, and there is often poor reporting of validity and reliability of scales. This is of concern for the validity of the results within a study, and also makes it difficult to compare the effectiveness of different interventions across studies. In their review of outcome measures for child and adolescent mental health, Bickman, et al. (1998) argue that there is a dearth of international literature concerning outcome measurement in this area. More work is required to develop and psychometrically test high-quality assessment tools that have standard population norms available with which to compare results nationally and internationally. Research in more clinically defined domains such as eating disorders and depression were more advanced in this respect.
- Studies reviewed here did not include an analysis of the economic costs of their interventions relative to usual approaches or comparison programmes. An exception was the study of juvenile offenders (Deschenes 1998). This found that the nature of the intervention reduced the number of days participants were in custody. This led to cost savings for the programme compared with the control, despite a lack of differences for other outcomes. In order to evaluate

programmes comprehensively and to plan for extending successful programmes for wider participation, the cost effectiveness of early interventions is required.

#### Measurement biases

In some studies, there is the possibility that the baseline questionnaire or initial screening for risk-status may have had an effect itself in sensitising participants to issues.

Research outcomes may be influenced in the desired direction in two ways: by the experimenter's expectations (the Rosenthal effect) and by the care and attention received through observation/data collection (the Hawthorne effect). Such influences are discussed by Mann et al. (1997) and Buddeberg-Fischer (1998) in their research relating to preventing eating disorders.

One way of investigating this problem is to include a randomised allocation of participants to a control group, which does not receive an initial baseline assessment. A Solomon four group design includes two such groups, one receiving and one not receiving an intervention, as conducted by Mann (1997). To minimise the effect of researchers unconsciously altering their interpretation of data, data collectors and, where possible, data analysts should ideally be "blind" to which group is intervention and which control.

There is also a possibility that features of the transmission of an intervention (e.g. increased attention, peer support, group interaction, etc. See, for example, Murray et al. 1999) have led to the effects found, rather than the content of the intervention itself that was intended to have an impact.

Qualitative data for a group intervention for university students suggested the group itself provided social networks rather than developing skills to access social support outside the intervention group (Lamothe et al. 1995). An "attention placebo" control group is important in this context rather than a separate intervention comparison group.

Many analyses of changes in behaviour are based on self-report and may be open to social desirability biases. The Crowne-Marlowe Social Desirability Scale (Crowne and Marlowe 1960) identifies respondents who are prone to such biases (e.g. by not admitting to very common but socially undesirable actions such as white lies).

Responses may also be prone to biases when outcomes measured are unacceptable or illegal (such as drug use in schools) and respondents may wish to avoid punishment or chastisement.

Ways to minimise such effects include the following:

- employing data collectors who are not directly responsible for the participants (for example, not teachers)
- assuring anonymity for respondents
- using well-validated standardised questionnaires
- emphasising that there are no right or wrong answers.

A related problem is that students may exaggerate their responses for their own amusement. Extreme and inconsistent responses can be identified statistically and removed to address this problem though it is better avoided by motivating participants to respond as clearly and honestly as they can. Toxicology tests can also be used to identify false reporting (Palinkas et al. 1996), though reliability can be variable.

#### Follow-up

Studies reported here vary greatly in their length of follow-up (from the end of intervention to six years). On occasion the follow-up period is clearly limited by funding. Interventions may vary in apparent effectiveness depending on whether one is noting changes over a short or longer time frame. In studies reviewed here, follow-up periods tended to be quite soon after interventions had ended (and sometimes immediately after). Such timing is not always made clear as follow-up periods are presented as post-baseline rather than post-intervention.

Timing of follow-up can effect results in various ways. Some positive results shown close to the end of an intervention may represent short-term effects that will not last (e.g. high motivation and intention to change behaviour). Alternatively, short-term follow-up may have little immediate effect (e.g. on clinical incidence) but an effect may be detected at a later stage (if follow-up is prolonged).

The possibility of rebound effects where intervention participants return to worse than baseline levels after intervention also needs to be explored. Concern about maintaining effects over time has led some programmes to include "booster" sessions after the primary intervention e.g. Hines (1998).

While length of follow-up is important, the number of follow-up assessments is also crucial. Two time-point (before and after intervention) assessments can hide patterns of change over time (Bickman 1999). For example, participants from two interventions may both appear to have changed to the same degree at follow-up, however one group may have changed more quickly. Furthermore, multiple assessments are vital for providing information about processes of change that help us understand precursors and moderators of change, which can then inform theoretical

models and help programmes tailor interventions for particular client groups.

### ***Analysis and reporting***

- Ideally, experimental studies randomise individuals to intervention groups. However, in early intervention studies such as those reviewed here, it is not always possible or practical to do so. This is most clearly the case with community interventions but also applies to studies which take advantage of social groupings such as whole schools, school classes, detention centres, support groups, etc. In such cases the randomisation is done by group or cluster. Individuals within groups are more likely to have features in common (as they associate together and share contextual factors such as the same teacher in a class group) than individuals between groups. The statistical implication of this is that responses within groups to an intervention will not be independent from other individuals within the same group. Furthermore, statistical techniques must take into account correlation between individuals within a group. We refer the reader to Simpson and Donner (1995) for a detailed account of these issues. In their review of primary prevention trials they concluded that design and analysis issues relating to cluster randomisation are not recognised widely enough. This point can be well made in our own review of early intervention studies for mental health where randomisation by group is necessarily common.
- The choice of unit of analysis and consideration of measurement errors can have profound effects on study results, as illustrated by Kreft (1998) who reanalysed a prominent data set for a school-based drug and alcohol use prevention programme using different analytical techniques. Earlier reported effects of a successful intervention were not found. Similar conclusions are drawn by Palmer et al. (1998) concerning a substance abuse prevention trial which was reanalysed using a multi-level strategy.
- It is common to employ many statistical univariate tests, which increase the risk of Type 1 error (false positives). In such cases, corrections to the p value accepted should be performed (Bonferroni technique) which has the effect of increasing the likelihood of rejecting the null hypothesis that there is a significant effect when in reality one does not exist. This problem is compounded in studies that employ multiple outcome measures of similar and correlated outcomes. This issue can be resolved by employing principal component analyses to reduce the number of outcomes considered by identifying subsets of correlated variables.
- Some studies are concerned to moderate the impact of risk factors, but many of these risk factors are confounded, and studies are frequently not large enough to control for these factors. This means that the influence of individual risk factors cannot be determined. Multivariate analyses can be used to tease out the relative contribution of various factors to predicting central outcomes (though sufficient sample sizes are required).

# Conclusions

## SUMMARY

This review appraised 35 studies that evaluated the effectiveness of early interventions for mental health conditions in young people aged 14-24 years, and met the criteria for inclusion. Results are reported separately according to which mental disorder the interventions were directed.

### Substance abuse

Sixteen of the 35 studies identified in this review related to early interventions for substance abuse. Three were systematic reviews and meta-analyses, one relating to marijuana use, one relating to alcohol misuse and the third to substance abuse. Concerning marijuana use (Tobler et al. 1999), the meta-analysis demonstrated some evidence that smaller, more interactive programmes were most effective. The other systematic review on alcohol misuse interventions (Foxcroft et al. 1995) and health promotion for prevention of substance abuse (White and Pitts 1998) were inconclusive. Foxcroft et al. (1995) found that there were no large negative effects of alcohol education. About a third of the studies showed significant but small effects on behaviour; whilst many papers reported short-term increases in knowledge about alcohol and attitudes to drinking, there was no link to clear behavioural change. There were no obvious differences between those that claimed success and those that did not, but social skills training was usually a part of those studies that reported positive behavioural effects. White and Pitts (1998) found that few studies evaluated long-term effectiveness (beyond one year), and there is a need for more focussed interventions, and for interventions with hard-to-reach groups. Our review of studies was consistent with these conclusions. Most studies were school-based, though some also involved parent and community involvement. There is insufficient evidence from these studies to assess the impact of parent and community involvement. There is some evidence that school-based interventions for substance abuse have some effect in changing knowledge about drugs and alcohol. Fewer studies demonstrated effects on behavioural measures.

### Violence prevention

Early intervention programmes for conduct disorders related to violence prevention rather than mental health. Of the eight studies identified, five of the interventions were in schools, and three in the community. The studies were predominantly school-based curriculum-driven universal interventions,

directed at the general school community. Results indicated a very limited effect of these school programmes in altering outcomes such as attitudes to violence or levels of self-reported violence. However, follow-up was very short in all but one of these studies (Hausman et al. 1996), although in this one, positive results were achieved after two years for only one of the three cohorts who received the intervention. Two community-based interventions for youth found generally encouraging results, though a parent-focussed intervention had limited success (Murray et al. 1998). This field has attracted significant research interest in the USA where all the studies were based. There is a recognition of the need for further evaluation of projects, long term follow-up of programmes through to adulthood, and attention to the impact of developmental and contextual influences on violent behaviour (Tolan and Guerra 1996).

### Depression

The three studies investigating mood disorder prevention concerned young people at high-risk for major depression and provided school-based interventions. The improvements found over time regardless of condition in two studies could relate to a therapeutic effect of the screening interviews. Design weaknesses in two studies make it difficult to draw clear conclusions about the impact of the interventions. However, the well-designed RCT of Clarke et al. (1995) suggests that classroom-based skills-oriented interventions may have an effect on preventing depression in young people. The study is also important in demonstrating the effects of longer follow-up and of using different outcomes and analyses to investigate impact of an intervention. Further research is required, with larger samples and methodologically rigorous designs.

### Eating disorders

Only four eligible studies were identified relating to early interventions for restrictive eating disorders. Two focussed on university undergraduates, and the other two included high school students with subsample analyses of women at high-risk for eating disorders. Three interventions included lesson-based group discussions, and the other intervention involved software resources and an e-mail discussion list. Overall, these studies reported limited and inconsistent levels of effectiveness for interventions involving female students aged in late adolescence. Body image attitudes were improved by the intervention in two studies. However, there were no effects on eating disordered behaviour. Interventions for students at high-risk for eating disorder reported mixed results. The improvement over time in two studies regardless of condition suggests a possible effect of altering attitudes through completing questionnaires. Whilst the studies reviewed here did not

investigate the long-term impact of their programmes, no impact on eating behaviour was demonstrated despite some short-term changes on intermediary variables such as self esteem and body dissatisfaction. One must be cautious about making conclusions given that the literature on primary prevention programmes in this area is very small.

#### General mental health interventions

The four papers reported in this section are not directed at particular mental health conditions but take a more general approach. Studies reviewed here include interventions with juvenile offenders (wilderness programme), interventions with first year university students (peer support), programmes with inner-city adolescents with chronic illness (communication and social skills training and work experience) and public health interventions across entire communities. These papers report on quite disparate interventions. Only limited conclusions can be drawn from each paper, as further studies would need to be carried out to confirm the effectiveness (or lack of) reported here. However, they do provide indications of the possible gains to be made from such interventions.

#### New Zealand-based studies

The vast majority of studies reviewed here were conducted in the USA ( $n=29$ , 83%), with two systematic reviews produced in the UK, and the remaining four studies conducted in Canada, Switzerland, Italy, and Sweden. Some formative and process evaluations have been conducted in New Zealand (Coggan and Disley 1996, Central Health 1998, Coggan et al. 1996). However, despite extensive consultation with researchers and programme providers, particularly with respect to Māori, we were unable to find any local studies that have completed outcome evaluations which met our inclusion criteria, though two initially excluded outcome evaluations were separately reviewed as they are of local significance.

## IMPLICATIONS AND RECOMMENDATIONS

This review of the literature of early interventions in youth mental health confirmed that, in line with mental health prevention generally (National Institute of Mental Health 1998), there has been little good quality research done on programme effectiveness (35 studies identified since 1995 meeting our inclusion criteria).

The lack of research may reflect a focus by programmes on intervening in middle childhood, rather than in adolescence. Many conditions begin their development in middle childhood (for example,

anxiety disorders (Keller et al. 1992)), and there is an expectation that programmes that intervene at this earlier developmental age are more likely to be effective (Roth and Dadds 1999).

Reducing the suffering from mental illness in our young people has traditionally focussed on improving treatment and access to treatment for individuals. The move toward intervening with a group, before conditions develop to a clinical level, is well advanced in some mental health domains and hardly begun in others. This review demonstrates this imbalance. Most of the studies reported for young people since 1995 concern externalising disorders relating to substance abuse and conduct disorder. Relatively fewer studies report on early interventions for internalising disorders of mood, with none found for anxiety disorders. There were also few found relating to eating disorders. Prevention of disorders of mood, anxiety and eating may tend to attract more individualised treatment of signs and symptoms rather than group-based early interventions. Indeed the dearth of such early prevention approaches for these conditions compares with an extensive literature on clinical treatment for internalising disorders. It is clear from this review that early interventions for depression and eating disorder are in their infancy, in contrast to substance use and violence prevention. This discrepancy may reflect the more publicly disruptive nature of these disorders compared to the more hidden aspects of mood and eating disorders.

Given the paucity of work relating to internalising disorders and eating disorders, and the very different manifestations of these disorders, we cannot make conclusions that generalise across all conditions considered in this review. It may be that early prevention programmes that are effective for preventing popular, peer-influenced behaviours like alcohol use, would not work when targeting rarer conditions such as eating disorders.

The lack of clear consensus about the benefits of certain approaches (e.g. community focused compared to classroom based, skills training compared to social support) is possibly an artifact of the many other factors that effect the success or otherwise of a programme. It is not always clear whether a programme that succeeded in one community failed in another. For instance, we do not know whether a programme that has worked in an inner-city suburb of the USA (which may have extremely high levels of gun carrying, violence, drug trafficking, gang membership, crime, etc) would work in towns and cities in New Zealand. Potential influences on a programme's success may include the following: the "social capital" of the community (Baum 1999) in terms of its networks and cohesion; social-demographic make-up of the community (e.g. ethnicity, employment levels); programme providers'

motivation and commitment; and the resources available, including time, expertise, and financial support.

Given the lack of any rigorous outcome evaluations conducted since 1995 in New Zealand, it is not possible to make conclusions confidently about which of the many early intervention programmes available for youth mental health are demonstrably effective here. Moreover, given the variety of programmes, settings, and mental health conditions considered internationally, and the early stage of primary prevention approaches, there is a lack of consensus about what approaches work best in what circumstances. In this context, we offer the following recommendations for supporting early interventions for mental health in New Zealand (see **Recommendations 1-3**).

Only through rigorous outcome evaluation will we build the depth and quality of knowledge necessary to be confident which interventions will be effective in preventing and reducing the development of mental health conditions in our young people.

It is imperative that process and outcome evaluations are encouraged and resourced for mental health prevention programmes, as has been recommended for policy initiatives more generally (State Services Commission 1999).

Economic evaluations are also required to plan for extending successful programmes for wider participation, and need to be a part of establishing a research/evaluation culture that will inform future purchasing strategies (see **Recommendations 4-8**).

### Recommendations

1. That early intervention programme providers look to the work of others internationally and consider which **programme development strategies** would best meet their needs (e.g. to make a programme culturally appropriate).
2. That early intervention programme providers consider transferring **programmes already implemented** and evaluated elsewhere, bearing in mind features of their community, resources available, and their mental health priorities.
3. That early intervention programmes are **pilot-tested** on a small scale, with rigorous process and outcome evaluation to gauge the potential for success as well as to inform modifications which maximise chances of success.
4. That early intervention programmes involve **outcome evaluation** strategies which are well planned, realistically resourced, and appropriately extended over time to measure short, medium and long-term success.
5. That early intervention programmes include **process evaluations** which inform the fidelity of a programme, and help interpret why outcome effects are found or not found.
6. That evaluations of early interventions include the **cost effectiveness** both of achieving changes in outcomes and conducting the programmes.
7. That **workforce development and training** initiatives are instituted in the areas of early intervention programme development, implementation, and evaluation.
8. That **advice and expertise** on planning and conducting evaluations of early intervention programmes (e.g. in the areas of study design, instrument development, statistical analysis) is available to providers from the early stages of developing their programme.





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# Appendix 1

## SEARCH STRATEGIES

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Database searches were run between mid-May and mid-June 1999. References were limited to English language articles from 1995 onwards.

### **MEDLINE**

```
exp mental disorders/
exp adjustment disorders/
exp substance-related disorders/
exp eating disorders/
exp anxiety disorders/
exp mood disorders/
exp neurotic disorders/
exp factitious disorders/
exp mental disorders diagnosed in childhood/
exp personality disorders/
exp somatoform disorders/
exp "sexual and gender disorders"/
exp dissociative disorders/
exp impulse control disorders/
depression/
exp "attention deficit and disruptive behavior disorders"/
or/1-16
adolescence/
(adolescen: or youth).ti,ab,sh.
18 or 19
17 and 20
health promotion/
preventive medicine/
primary prevention/
preventive psychiatry/
preventive health services/
(prevent: or promot:).ti,ab,sh.
pc.fs.
early intervention.ti,ab.
exp health education/
or/22-30
21 and 31
limit 32 to english
letter.pt.
news.pt.
historical article.pt.
case report/
review of reported cases.pt.
or/34-38
33 not 39
*smoking/
*tobacco use disorder/
*smoking cessation/
(smoking or tobacco).ti.
or/41-44
```



40 not 45  
 40 not 46  
 meta-analysis/  
 exp review literature/  
 meta analysis.pt.  
 review, academic.pt.  
 (meta-analy: or meta analy: or metaanaly:).tw.  
 review literature.pt.  
 ((systematic: adj3 review:) or overview).tw.  
 or/48-54  
 letter.pt.  
 historical article.pt.  
 review multicase.pt.  
 review of reported cases.pt.  
 or/56-59  
 55 not 60  
 46 and 61  
 randomized controlled trials/  
 controlled clinical trials/  
 randomized controlled trial.pt.  
 controlled clinical trial.pt.  
 random allocation/  
 double-blind method/  
 single-blind method/  
 placebos/  
 or/63-70  
 animal/  
 human/  
 72 and 73  
 72 not 74  
 71 not 75  
 46 and 76  
 77 not 62  
 62 or 78  
 46 not 79  
 exp programme evaluation/  
 follow-up studies/  
 longitudinal studies/  
 "outcome assessment (health care)"/  
 (effectiv: or outcome: or evaluat:).ti,ab.  
 or/81-85  
 80 and 86  
 exp school health services/  
 school:.ti,ab,sh.  
 community health services/  
 counseling/  
 community mental health services/  
 community networks/  
 community.ti,ab,sh.  
 family.ti,ab,sh.  
 primary health care/  
 general practi:.ti,ab.  
 or/88-97  
 80 and 98  
 cohort studies/  
 comparative studies/  
 case-control studies/  
 or/100-102  
 80 and 103  
 87 or 99 or 104

**EMBASE**

exp mental health/  
 exp mental disease/  
 behavior disorder/  
 feeding disorder/  
 attention deficit disorder/  
 exp personality disorder/  
 exp antisocial behavior/  
 conduct disorder/  
 exp addiction/  
 exp psychosomatic disorder/  
 psychosexual disorder/  
 psychotrauma/  
 depression/  
 exp affective neurosis/  
 adjustment/  
 exp anxiety neurosis/  
 exp neurosis/  
 exp manic depressive psychosis/  
 or/1-18  
 adolescence/  
 (adolescen: or youth).ti,ab,sh.  
 20 or 21  
 prevention/  
 primary prevention/  
 pc.fs.  
 early intervention.ti,ab.  
 (prevent: or promot:).ti,ab,sh.  
 exp preventive medicine/  
 health promotion/  
 health education/  
 education programme/  
 or/23-31  
 19 and 22 and 32  
 limit 33 to english  
 letter/  
 case report/  
 case study/  
 or/35-37  
 34 not 38  
 limit 39 to (yr=1995 or yr=1996 or yr=1997 or yr=1998 or yr=1999)  
 meta analysis/  
 metaanaly:.tw.  
 meta analy:.tw.  
 review/  
 (review: adj3 (systematic or literature)).tw.  
 exp practice guideline/  
 guideline:.tw.  
 randomization/  
 random:.tw.  
 randomized controlled trial/  
 placebo:.tw.  
 placebos/  
 double blind procedure/  
 single blind procedure/  
 or/41-54  
 40 and 55  
 cohort analysis/  
 comparison/

case control study/  
 controlled study/  
 or/57-60  
 40 and 61  
 "evaluation and Follow-up"/  
 Follow-up/  
 longitudinal study/  
 treatment outcome/  
 (outcome: or effectiv: or evaluat:).ti,ab.  
 or/63-67  
 40 and 68  
 school health srvice/  
 school/  
 high school/  
 community/  
 community mental health center/  
 general practice/  
 general practitioner/  
 family.ti,ab,sh.  
 primary medical care/  
 or/70-78  
 40 and 79  
 56 or 62 or 69 or 80

**HEALTHSTAR**

```

exp mental disorders/
exp adjustment disorders/
exp substance-related disorders/
exp eating disorders/
exp anxiety disorders/
exp mood disorders/
exp neurotic disorders/
exp factitious disorders/
exp mental disorders diagnosed in childhood/
exp personality disorders/
exp somatoform disorders/
exp "sexual and gender disorders"/
depression/
exp "attention deficit and disruptive behavior disorders"/
exp dissociative disorders/
exp impulse control disorders/
or/1-16
adolescence/
(adolescen: or youth).ti,ab,sh.
18 or 19
17 and 20
health promotion/
preventive medicine/
primary prevention/
preventive psychiatry/
preventive health services/
exp health education/
early intervention.ti,ab.
pc.fs.
(prevent: or promot:).ti,ab,sh.
or/22-30
meta-analysis/
exp review literature/
meta analysis.pt.
review, academic.pt.
review literature.pt.
(meta-analy: or metaanaly: or meta analy:).tw.
((systematic: adj3 review:) or overview).tw.
or/32-38
randomized controlled trials/
controlled clinical trials/
randomized controlled trial.pt.
controlled clinical trial.pt.
random allocation/
double-blind method/
placebos/
single-blind method/
or/40-47
exp programme evaluation/
follow-up studies/
longitudinal studies/
"outcome assessment (health care)"/
(effectiv: or outcome: or evaluat:).ti,ab.
cohort studies/
comparative studies/
case-control studies/
or/49-56
school health services/

```

```

counseling/
community mental health services/
community networks/
primary health care/
family.ti,ab,sh.
school:.ti,ab,sh.
community.ti,ab,sh.
general practi:.ti,ab.
or/58-66
21 and 31
21 and 39
21 and 48
21 and 57
21 and 67
or/68-72
limit 73 to nonmedline
limit 74 to english language
limit 75 to (yr=1995 or yr=1996 or yr=1997 or yr=1998 or yr=1999)
from 76 keep 1,12,18,20,22,34,40,45,56,60,70-71,74-75,83-
84,92,95,102,107,110-111
76 not 77

```

**PSYCHLIT**

Database: PsycLIT &lt;1991 to March 1999&gt;

Set	Search	Results
-----		
1	adolescents/	5994
2	adolescence/	32851
3	adolescen:.ti,ab.	21564
4	or/1-3	44460
5	exp mental disorders/	26758
6	exp adjustment disorders/	98
7	exp drug abuse/	8923
8	exp drug dependency/	2973
9	exp drug addiction/	1665
10	exp alcoholism/	4281
11	exp alcohol abuse/	6413
12	exp eating disorders/	4629
13	exp anxiety disorders/	9914
14	exp affective disturbances/	20132
15	exp "depression (emotion)"/	1353
16	depression.ti,ab.	24647
17	exp neurosis/	3059
18	exp factitious disorders/	200
19	exp personality disorders/	3346
20	exp psychosomatic disorders/	1665
21	exp dissociative identity disorder/	689
22	exp impulse control disorders/	35
23	exp conduct disorder/	735
24	exp attention deficit disorder/	2128
25	exp gender identity disorder/	48
26	exp sexual function disturbances/	884
27	exp psychosexual development/	567
28	or/5-24	77174
29	4 and 28	10438
30	exp random sampling/	66
31	exp literature review/	7036
32	exp placebo/	319
33	exp longitudinal studies/	7888
34	exp followup studies/	6267
35	meta-analy:.ti,ab.	1685
36	metaanaly:.ti,ab.	36
37	(systematic: adj3 review:).mp. [mp=title, abstract,	179
38	random:.ti,ab.	11248
39	double blind:.ti,ab.	2603
40	single blind.ti,ab.	165
41	(control: adj2 trial:).ti,ab,sh.	1431
42	(systematic: adj3 overview).ti,ab.	12
43	cohort.ti,ab,sh.	2207
44	case control:.ti,ab,sh.	407
45	comparative stud:.ti,ab,sh.	1041
46	or/30-45	38225
47	exp case report/	6670
48	46 not 47	37986
49	exp prevention/	6559
50	exp drug abuse prevention/	591
51	exp primary mental health prevention/	314
52	exp preventive medicine/	201
53	exp health promotion/	1375

54	exp early intervention/	1238
55	exp health education/	2130
56	(prevent: or promot:).ti,ab,sh.	22152
57	or/49-56	25191
58	57 and 29	834
59	46 and 58	125
60	limit 59 to yr=1995-1999	67
61	exp mental health programme evaluation/	315
62	exp programme evaluation/	2079
63	exp treatment effectiveness evaluation/	1213
64	exp treatment outcomes/	3361
65	(evaluat: or outcome).ti,ab,sh.	52177
66	or/61-65	54308
67	exp community mental health centers/	254
68	exp community mental health services/	1322
69	exp community services/	3637
70	exp counseling/	6686
71	exp school counseling/	999
72	exp peer counseling/	163
73	school:.ti,ab,sh.	45746
74	or/67-73	54393
75	exp general practitioners/	563
76	exp primary health care/	1229
77	exp family physicians/	205
78	exp family therapy/	3432
79	exp family life education/	1033
80	exp family/	3093
81	(family or families).ti,ab.	35246
82	or/75-81	37896
83	4 and 28 and 57	834
84	83 and 82	218
85	83 and 74	324
86	83 and 66	157
87	83 and 48	124
88	or/84-87	541
89	limit 88 to yr=1995-1999	263
90	83 not 88	293
91	limit 90 to yr=1995-1999	157

**ERIC**

No.	Records	Request
1	7228	prevent*
2	11881	promot*
3	17987	prevent* or promot*
4	16323	early
5	8970	intervention
6	2364	early intervention
7	19767	#3 or #6
8	11165	adolescen*
9	1984	#7 and #8
10	6672	mental
11	14026	health
12	2288	mental health
13	6672	mental
14	877	illness
15	177	mental illness
16	2254	substance
17	3710	drug*
18	2527	alcohol*
19	5821	abuse
20	479	addict*
21	4996	disorder*
22	3297	(substance or drug* or alcohol*) near (abuse or addict* or disorder*)
23	1889	anxiety
24	1436	depressi*
25	3086	anxiety or depressi*
26	279	mood
27	4996	disorder*
28	30	mood disorder*
29	656	eating
30	4996	disorder*
31	242	eating disorder*
32	2112	affective
33	4996	disorder*
34	31	affective disorder*
35	2055	conduct
36	4996	disorder*
37	106	conduct disorder*
38	3113	personality
39	4996	disorder*
40	82	personality disorder*
41	8298	#40 or #37 or #34 or #31 or #28 or #25 or #22 or #15 or #12
42	634	#9 and #41
43	250	exact{MENTAL-HEALTH-PROGRAMMES} in *F
44	2	exact{MENTAL-HEALTH-COUNSELING} in *F
45	865	exact{MENTAL-HEALTH} in *F
46	1073	#43 or #44 or #45
47	266	#8 and (#43 or #44 or #45 or #46)
48	824	#47 or #42
49	224047	LA = "ENGLISH"
50	822	#48 and (LA = "ENGLISH")
51	100103	PY >= "1995"
52	366	#50 and (PY >= "1995")
53	44051	evaluat*
54	2473	outcome
55	4265	follow



56	3946	longitudinal
57	51192	evaluat* or outcome or follow or longitudinal
58	2345	random*
59	493	meta-analy*
60	4	metaanaly*
61	2410	systematic*
62	28151	review*
63	32502	random* or meta-analy* or metaanaly* or systematic* or review*
64	17685	family
65	90395	school*
66	8483	families
67	32287	communit*
68	114317	family or school* or families or communit*
69	10781	primary
70	9745	care
71	14569	general
72	34508	practi*
73	309	(primary care) or (general practi*)
74	770	cohort
75	14372	case
76	12357	control*
77	12357	control*
78	934	trial*
79	904	cohort or (case near control*) or (control* near trial*)
80	137235	#79 or #73 or #68 or #57
81	32965	effectiv*
82	145939	#80 or #81
* 83	305	#82 and #52

**AUSTROM**

No.	Records	Request
1	4859	adolescen*
2	6379	prevent*
3	6333	promot*
4	9173	early
5	3831	intervention
6	12821	prevent* or promot* or early intervention
7	647	#1 and #6
8	701	exact{MENTAL-HEALTH}
9	17	exact{MENTAL-HEALTH-PROGRAMMES}
10	2215	exact{MENTAL-ILLNESS}
11	5798	mental
12	27039	health
13	2668	mental health
14	5798	mental
15	3239	illness
16	2372	mental illness
17	941	anxiety
18	2107	depressi*
19	2902	anxiety or depressi*
20	199	mood
21	1711	disorder*
22	21	mood disorder*
23	1601	conduct
24	1711	disorder*
25	45	conduct disorder*
26	1537	personality
27	1711	disorder*
28	92	personality disorder*
29	5716	drug*
30	3340	alcohol*
31	668	substance
32	8136	abuse
33	387	addict*
34	1711	disorder*
35	3778	(drug* or alcohol* or substance) near (abuse or addict* or disorder*)
36	363	eating
37	1711	disorder*
38	104	eating disorder*
39	10058	#38 or #35 or #28 or #25 or #22 or #19 or #16 or #13 or #10 or #9 or #8
40	213	#7 and #39
41	32777	PY >= "1995"
* 42	104	#40 and (PY >= "1995")

**SOCIOLOGICAL ABSTRACTS, SOCIAL SCIENCE INDEX, SOCIAL WORK ABSTRACTS**

No.	Records	Request
1	25274	adolescen*
2	16193	prevent*
3	13399	promot*
4	28154	prevent* or promot*
5	15715	early
6	13432	intervention
7	345	early intervention
8	28373	#4 or #7
9	2366	#1 and #8
10	29692	mental
11	14520	illness
12	7373	mental illness
13	29692	mental
14	80126	health
15	17606	mental health
16	4455	anxiety
17	9547	depressi*
18	12916	anxiety or depressi*
19	1329	mood
20	16835	disorder*
21	100	mood disorder*
22	20031	personality
23	16835	disorder*
24	1216	personality disorder*
25	2724	conduct
26	16835	disorder*
27	364	conduct disorder*
28	2203	affective
29	16835	disorder*
30	566	affective disorder*
31	9263	substance
32	18879	drug*
33	15228	alcohol*
34	22879	abuse
35	16835	disorder*
36	10030	addict*
37	13294	(substance or drug* or alcohol*) near (abuse or disorder* or addict*)
38	118	exact{MENTAL-ILLNESS-PREVENTION}
39	2	exact{MENTAL-ILLNESS-PREVENTION-ADDRESSES-ESSAYS-}
40	2	exact{MENTAL-ILLNESS-PREVENTION-CONGRESSES}
41	29	exact{MENTAL-ILLNESS-PREVENTION-RESEARCH}
42	6	exact{MENTAL-HEALTH-EDUCATION}
43	1	exact{MENTAL-HEALTH-EDUCATION-COMPUTER-PROGRAMMES}
44	1	exact{MENTAL-HEALTH-EDUCATION-GREAT-BRITAIN}
45	4	exact{MENTAL-HEALTH-EDUCATION-UNITED-STATES}
46	163	#38 or #39 or #40 or #41 or #42 or #43 or #44 or #45
47	51034	#37 or #30 or #27 or #24 or #20 or #18 or #15 or #12
48	779	#47 and #9
49	30	#1 and #46
50	783	#48 or #49
51	731495	LA = "ENGLISH"
52	610	#50 and (LA = "ENGLISH")
53	301078	PY >= "1995"
* 54	280	#52 and (PY >= "1995")

**CURRENT CONTENTS**

Set	Search	Results
001	adolescen:.mp. [mp=abstract, title, author keywords, keyword	19207
002	(promot: or prevent:).mp. [mp=abstract, title, author keywor	161356
003	early intervention.mp. [mp=abstract, title, author keywords,	973
004	mental health.mp. [mp=abstract, title, author keywords, keyw	7206
005	mental disorder:.mp. [mp=abstract, title, author keywords, k	2176
006	adjustment.mp. [mp=abstract, title, author keywords, keyword	15245
007	anxiety.mp. [mp=abstract, title, author keywords, keywords p	11400
008	alcohol:.mp. [mp=abstract, title, author keywords, keywords	39703
009	(neurotic or neurosis).mp. [mp=abstract, title, author keywo	731
010	personality disorder:.mp. [mp=abstract, title, author keywor	2325
011	conduct disorder:.mp. [mp=abstract, title, author keywords,	708
012	affective disorder:.mp. [mp=abstract, title, author keywords	2410
013	impulse control disorder:.mp. [mp=abstract, title, author ke	51
014	dissociative disorder:.mp. [mp=abstract, title, author keywo	130
015	mood disorder:.mp. [mp=abstract, title, author keywords, key	1159
	words plus]	
016	(depression or depressive).mp. [mp=abstract, title, author k	29114
	eywords, keywords plus]	
017	substance abuse.mp. [mp=abstract, title, author keywords, ke	3142
	ywords plus]	
018	drug abuse.mp. [mp=abstract, title, author keywords, keyword	2065
	s plus]	
019	drug dependenc:.mp. [mp=abstract, title, author keywords, ke	376
	ywords plus]	
020	factitious:.mp. [mp=abstract, title, author keywords, keywor	208
	ds plus]	
021	somatoform.mp. [mp=abstract, title, author keywords, keyword	248
	s plus]	
022	(gender adj3 disorder:).mp. [mp=abstract, title, author keyw	228
	ords, keywords plus]	
023	(sex: adj3 disorder:).mp. [mp=abstract, title, author keywor	551
	ds, keywords plus]	
024	or/4-23	98869
025	random:.mp. [mp=abstract, title, author keywords, keywords p	97835
	lus]	
026	placebo:.mp. [mp=abstract, title, author keywords, keywords	18397
	plus]	
027	meta-analy:.mp. [mp=abstract, title, author keywords, keywor	3647
	ds plus]	
028	metaanaly:.mp. [mp=abstract, title, author keywords, keyword	2283
	s plus]	
029	(systematic: adj3 (review: or overview)).mp. [mp=abstract, t	1247
	itle, author keywords, keywords plus]	
030	(control: adj3 trial:).mp. [mp=abstract, title, author keywo	16147
	rds, keywords plus]	
031	double blind:.mp. [mp=abstract, title, author keywords, keyw	17215
	ords plus]	
032	single blind:.mp. [mp=abstract, title, author keywords, keyw	1027
	ords plus]	
033	longitudinal.mp. [mp=abstract, title, author keywords, keywo	22815
	rds plus]	
034	case control:.mp. [mp=abstract, title, author keywords, keyw	6474
	ords plus]	
035	cohort:.mp. [mp=abstract, title, author keywords, keywords p	17906
	lus]	
036	comparative stud:.mp. [mp=abstract, title, author keywords,	9375

	keywords plus]	
037	or/25-36	168623
038	case study.mp. [mp=abstract, title, author keywords, keywords plus]	9405
039	case report.mp. [mp=abstract, title, author keywords, keywords plus]	13227
040	38 or 39	22574
041	37 not 40	168087
042	2 or 3	162054
043	1 and 42 and 24	1005
044	41 and 43	253
045	(outcome or evaluation).mp. [mp=abstract, title, author keywords, keywords plus]	298641
046	effectiveness.mp. [mp=abstract, title, author keywords, keywords plus]	166905
047	(Follow-up or followup).mp. [mp=abstract, title, author keywords, keywords plus]	71715
048	or/45-47	474526
049	43 and 48	424
050	primary care.mp. [mp=abstract, title, author keywords, keywords plus]	5998
051	general practice.mp. [mp=abstract, title, author keywords, keywords plus]	5973
052	(family or families).mp. [mp=abstract, title, author keywords, keywords plus]	99458
053	(community or communities).mp. [mp=abstract, title, author keywords, keywords plus]	50346
054	counseling.mp. [mp=abstract, title, author keywords, keywords plus]	3808
055	school.mp. [mp=abstract, title, author keywords, keywords plus]	27379
056	peer.mp. [mp=abstract, title, author keywords, keywords plus]	3677
057	or/50-56	180632
058	43 and 57	710
059	58 or 49 or 44	848
060	limit 59 to english	819
061	limit 60 to (yr=98 or yr=99)	325
062	61	325

## INDEX NEW ZEALAND: COCHRANE LIBRARY

The remaining databases were searched using combinations of the words adolescent\* promot\* prevent\* mental\* NEAR health, mental\* NEAR illness, drug, alcohol\* substance, outcome, evaluation\* effectiveness\*

## Appendix 2

### **NEW ZEALAND WEB SITES SEARCHED**

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The following web sites were searched to identify publications available that met inclusion criteria for review.

ALAC Alcohol Advisory Council of New Zealand (<http://www.alac.govt.nz>)

Eating Disorders Association (NZ) Inc (<http://www.health.net.nz/anorexia>)

Health Funding Authority (<http://www.hfa.govt.nz>)

Ministry of Health (<http://www.moh.govt.nz>)

Mental Health Commission (<http://www.mhc.govt.nz>)

Mental Health Foundation (<http://www.mentalhealth.org.nz>)

Strengthening Families (<http://www.strengtheningfamilies.govt.nz>)



# Appendix 3

## **ORGANISATIONS/PEOPLE CONTACTED IN NEW ZEALAND**

---

Doug Sellman, Psychological medicine, Christchurch

Grant Paton Simpson, Auckland Regional Drug and Alcohol Services

Val Norton and Sandra Kirby, ALAC

Danette Murray, Canterbury University

Terri Huriwai, Christchurch School of Medicine

Paul Duignan, Mental Health Research and Development Project

Yvonne Curie, Crown Public Health, Odyssey House, Auckland

Elisabeth Cunningham, HFA

David Fergusson, Christchurch School of Medicine

John Raeburn, Auckland School of Medicine

Peter Stanley, Specialist Education Services

Felicity Arnold, Ministry of Health

Colin Goldthorpe, Special Education Services

Lois Surgenor, Christchurch School of Medicine

Eating Disorders Association

Margaret McCurdie, Youth Health Centre, Christchurch

Dave Mera, Project 198, Youth Health Centre, Christchurch

Peter Watson, The Center for Youth Health, Auckland

Māori researchers (written contact):

- ☐ Te Herenga Korero, Department of Māori and Pacific Health, University of Auckland
- ☐ Ngai Tahu Māori Health Research Unit, Dunedin School of Medicine, University of Otago
- ☐ Te Pumanawa Hauora ki Manawatu, Massey University
- ☐ Te Ropu Rangahau Hauora A Eru Pomare, Wellington School of Medicine





# Appendix 4

## EXCLUDED ARTICLES

- Abbott, R. D., O'Donnell, J., Hawkins, J. D., Hill, K. G., Kosterman, R., & Catalano, R. F. (1998). Changing teaching practices to promote achievement and bonding to school. *American Journal of Orthopsychiatry*, 68, 542-52.
- Aktan, G. B., Kumpfer, K. L., & Turner, C. W. (1996). Effectiveness of a family skills training program for substance use prevention with inner city African-American families. *Substance Use & Misuse*, 31, 157-75.
- Armbruster, P., Gerstein, S. H., & Fullon, T. (1997). Bridging the gap between service need and service utilization: a school-based mental health program. *Community Mental Health Journal*, 33, 199-211.
- Aronen, E. T., & Kurkela, S. A. (1996). Long-term effects of an early home-based intervention. *Journal of the American Academy of Child & Adolescent Psychiatry*, 35, 1665-72.
- Ashery, R. S., Wild, J., Zhao, Z., Rosenshine, N., & Young, P. (1997). The Wheel Project. Women Helping to Empower and Enhance Lives. *Journal of Substance Abuse Treatment*, 14, 113-21.
- Baldwin, J. A., Rolf, J. E., Johnson, J., Bowers, J., Benally, C., & Trotter, R. T. (1996). Developing culturally sensitive HIV/AIDS and substance abuse prevention curricula for Native American youth. *Journal of School Health*, 66, 322-7.
- Beardslee, W. R., Wright, E., Rothberg, P. C., Salt, P., et al. (1996). Response of families to two preventive intervention strategies: Long-term differences in behavior and attitude change. *Journal of the American Academy of Child & Adolescent Psychiatry*, 35, 774-82.
- Beardslee, W. R., Versage, E. M., Wright, E. J., Salt, P., Rothberg, P. C., Drezner, K., et al. (1997). Examination of preventive interventions for families with depression: evidence of change. *Development and Psychopathology*, 9, 109-30.
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- Beardslee, W. B. (1998). Prevention and the clinical encounter. *American Journal of Orthopsychiatry*, 68, 521-33.
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- Berkowitz, G., Brindis, C., & Peterson, S. (1998). Substance use and social outcomes among participants in perinatal alcohol and drug treatment. *Womens Health*, 4, 231-54.
- Bosworth, K., Espelage, D., DuBay, T., Dahlberg, L. L., & Daytner, G. (1996). Using multimedia to teach conflict-resolution skills to young adolescents. *American Journal of Preventive Medicine*, 12, 65-74.
- Botvin, G. J., Epstein, J. A., Baker, E., Diaz, T., & Ifill-Williams, M. (1997). School-based drug abuse prevention with inner-city minority youth. *Journal of Child & Adolescent Substance Abuse*, 6, 5-19.
- Buckner, J. C., & Cain, A. C. (1998). Prevention science research with children, adolescents, and families: Introduction. *American Journal of Orthopsychiatry*, 68, 508-11.
- Burge, S. K., Amodei, N., Elkin, B., Catala, S., Andrew, S. R., Lane, P. A., & Seale, J. P. (1997). An evaluation of two primary care interventions for alcohol abuse among Mexican-American patients. *Addiction*, 92, 1705-16.
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- cents. *American Journal of Public Health*, 88, 944-8.
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