RESEARCH REPORT

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EPPI-Centre

A REVIEW OF THE EFFECTIVENESS AND APPROPRIATENESS OF PEER-DELIVERED HEALTH PROMOTION INTERVENTIONS FOR YOUNG PEOPLE

Evidence for Policy and Practice
Information and Co-ordinating Centre

This report was prepared by the following members of the EPI-Centre[1] team: Angela Harden, Ros Weston and Ann Oakley.

Acknowledgements

Maintaining and raising the standards of systematic reviews

This review collates evidence intended to help people make better decisions about health promotion.

Anyone wishing to suggest how methods for systematically reviewing health promotion literature may be improved, or able to comment on judgements made during this review is invited to contact the EPI-Centre.

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[1] *The EPI-Centre (Evaluation of Health Promotion & Social Interventions Centre) changed its name in February 2001 to EPPI-Centre (Evidence for Policy & Practice Information & Co-ordinating Centre).*

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SUMMARY

This report reviews what is known about peer-delivered health promotion for young people. It is the fourth in a new EPI-Centre series of health promotion effectiveness reviews.

Using peers to deliver health promotion interventions to young people is an increasingly fashionable strategy, especially in Europe and North America. It is based on the assumption that peers may be seen as more credible sources of information than adult, professionally trained, health educators, and may be particularly helpful in reaching 'at risk' young people.

The aim of the review described in this report was to survey the available literature in order to examine critically the claim that the peer-delivered approach is a more appropriate and effective method of promoting young people's health than more traditional approaches. The review looks across health topics; maps the available literature on peer-delivered health promotion; contains a methodological appraisal of the quality of studies which evaluate interventions; and identifies a number of recommendations which might usefully inform future research and practice in this area. A novel feature of the review, compared to others in the series, is that we have attempted a critical appraisal of studies describing processes involved in implementing interventions, as well as those designed to assess their impact on the target population.

Literature searches were undertaken for all studies describing, discussing or evaluating peer-delivered interventions aimed at the primary prevention of disease or health promotion among young people aged 11 to 24 years. The review was restricted to studies in the English language, and excluded peer counselling or mediation interventions, as well as those where the principal medium of the intervention was video, theatre or newsletters.

The searches produced 5124 citations, of which 523 met the inclusion criteria. Full reports for 462 of these were obtained within the timescale for the review. Most - 63% - of the studies were found using electronic databases; 24% were located using specialised bibliographic registers, and 13% as a result of handsearches, reference lists, or personal contacts. There were 316 reports of 271 separate interventions, of which 68% were carried in the USA and 15% in the UK. A smaller proportion of the UK studies compared to those from the USA described outcome evaluations. The most common focus of the 271 reports was drug use (alcohol, smoking, other drugs - 42%), followed by sexual health (28%). Most studies (79%) were carried out in educational settings, and used information only or skill development interventions (62%) deployed by young people of the same age or no more than a year older than the target group (73%). In only a minority of

cases were the interventions based on needs expressed by the target group (23%) or developed on a partnership basis (37%).

We examined in more detail the studies describing evaluations of interventions focused either on outcomes or processes or both together. This more detailed analysis was restricted to those outcome evaluations which were prospective experimental studies using what authors described as equivalent intervention and control groups and collecting pre- and post-intervention data. Process evaluations had to meet the criterion of being either formative, intermediate or summative evaluations.

Forty nine outcome and 15 process evaluations were included in this more detailed review. The most common focus for the outcome evaluations was drugs (including alcohol and smoking - 53%) and for the process evaluations sexual health (56%). More outcome evaluations were carried out in educational settings than in process evaluations (93% versus 62%) and more of the outcome studies evaluated intervention employing skill development (78% versus 32%). More of the process than the outcome evaluations used peers close to the target population in age (45% versus 69%). Process evaluations were more likely to be based on expressed need (31% versus 8%) and to describe interventions developed on a partnership basis (69% versus 45%).

Twelve of the 49 outcome evaluation studies were assessed as methodologically sound. Of these, seven described interventions which were effective for behavioural outcomes and three for proxy outcomes; one intervention was ineffective, and the impact of one was unclear. Five of the 12 studies directly compared peers and teachers as providers of health promotion interventions. Out of these five studies, two found peers to be more effective than teachers, two found them to be no more or less effective, and one concluded that neither peers nor teachers were effective.

The critical appraisal of the process evaluations assessed them against seven quality criteria commonly advocated in the qualitative research literature as guides to reliability. The number meeting the various criteria ranged from 11 (for clearly stated aims and objectives) to three (data analysed by more than one researcher). Only two of the 15 studies met all seven criteria. Particular methodological problems were identified to be a lack of a clear description of the sample and a lack of a clear description of the methods used with only 47% of the process evaluations meeting these criteria.

Overall, the review found some evidence to support the effectiveness of peer-delivered health promotion for young people. There were more sound outcome evaluations which demonstrated peer-delivered health promotion to be effective than ineffective. More than half of the sound studies showed a positive effect on at least one behavioural outcome.

However, as in previous systematic reviews of health promotion, methodologically sound studies were disappointingly scarce. Because there were few sound studies, it was difficult to identify any specific characteristics of an effective model of peer-delivered health promotion. Many studies gave little information about such details as the attributes of the peer educators, method of recruitment, or kind and length of training. A further disappointment was that only three of the outcome evaluations described integral process evaluations. There is clearly room for both outcome and process studies to increase the extent to which they evaluate interventions based on information about what young people themselves say they need, and which are developed with some sort of partnership between the target group and the intervention providers. While many studies placed a good deal of emphasis on the importance of various theories, such as social influence or social learning theory, in developing effective interventions, the exact contribution made to identifying effective health promotion strategies for young people using theory in general, or theories in particular, is unclear.

The studies reviewed in this report are not encouraging on the issue of peer-delivered health promotion reaching young people at enhanced risk of adverse health behaviours. Additionally, there is a significant gender issue, with young men being notably more reluctant to take on the role of peer educator.

The current evidence-base for peer-delivered health promotion is therefore limited. The intuitive appeal of the idea is not matched by much hard evidence. We suggest that greater care should be taken in future to develop and test interventions using sound methodological principles.

However, our review findings did suggest several specific recommendations for future research and practice within peer-delivered health promotion. Recommendations have also been made for the development of health promotion more generally for young people and for systematic review methodology.

Recommendations for the practice of peer-delivered health promotion

C Although the evidence-base is limited, there are examples of peer-delivered health promotion which have been effective in bringing about positive health behaviour change in young people.

C As this review was unable to identify the specific characteristics of a successful model of peer-delivered health promotion, recommendations about effectiveness can only be made on the basis of individual studies. Professionals involved in the promotion of young people's health can choose from a pool of several

different interventions, although replicating these interventions may not guarantee success.

C   School-based smoking prevention interventions, targeted at 11 to 13 year olds, which use same-age or older peer leaders to teach skills to resist peer and other social pressures, have been demonstrated to be effective. However these positive effects may not be generalisable to all groups of young people, especially those who are already at a higher risk of smoking in the future.

C   It is not yet clear, however, whether the use of peer leaders is essential to the success of the above type of intervention. There is some evidence to suggest that it is the competence of the provider in facilitating learning in groups which is the important factor.

C   Sexual health interventions, which provide skills based information and are delivered by same-age peer leaders in college settings have been shown to be more effective in bringing about positive changes in the knowledge and attitudes of university students (but not behaviour), as compared to adult health educators.

C   Peer delivered interventions in community settings which are developed in partnership with young people and take into consideration some of the wider social and cultural determinants of health can be successful in increasing the practice of safe sex amongst young people (aged over 18) at enhanced risk of adverse health outcomes.

C   Peer delivered health promotion using a 'community mobilisation' approach has been successfully used with young gay men in the USA. To what extent this can be transferred to other countries and to other groups of young people is as yet unknown.

C   Peer-delivered health promotion may be more successful with young women and with those young people who are *not* at enhanced risk of adverse health outcomes, especially in school settings.

C   Simply using peer leaders instead of adult providers to deliver didactic information on health topics does not lead to changes in behaviour.

C   Thus, using peer leaders to deliver health information does not automatically make an intervention more 'innovative' or more likely to be effective than other traditional health education strategies.

C   The possibility that the greatest effect of peer education is on the peer educators themselves needs to be addressed. Intervention (and evaluation) efforts should not neglect the wider target group and confine their efforts to a small group of peer leaders.

C   The possibility of engaging more of the target group as peer leaders needs to be explored. This could be done by adopting the 'community mobilisation' approach in which as many as possible of the target group are recruited as peer educators or through 'reciprocal' peer education in which 'peer educator' and 'peer recipient' roles are alternated.

C   Any attempt to use the above approach should be done within the context of a rigorous evaluation.

C   Recruitment of peer leaders should not be based solely on personal characteristics such as age, sex, ethnic group or upon academic achievement. Young people who are highly individuated, have experience with the health topic/social issue in question and who are able to deliver messages in relevant ways may be better selection criteria.

C   Working in partnership with young people may present difficulties, particularly in school contexts. The boundaries of working partnerships need to be established in consultation with all stakeholders (including young people) before the start of a project, even if a 'non-equal' partnership is chosen.

C   Although many positive experiences of being peer educators have been documented, it should be recognised that this experience can also be negative. In particular, within school-based/ formal contexts, young people may experience conflict with both teachers and pupils and, within community/ informal contexts peer educators need to be equipped to deal with individual requests for advice.

C   A systematic approach to the planning, implementation and evaluation of peer-delivered health promotion needs to be taken. This should include a clear statement of the aims and objectives of the interventions. These aims and objectives should be followed through at the implementation and evaluation stage.

Recommendations for developing and implementing health promotion for young people

C   Health promotion interventions for young people should only be implemented on the basis of a thorough assessment of both young people's self-defined health needs and their views on what kind of intervention they would find most appropriate. Peer-delivered health promotion may or may not be the most appropriate strategy.

C   Such an assessment will help to ensure that intervention content is framed within young people's values and is informed by the social and material context of young people's lives.

C   Professionals involved in the organisation of health promotion for young people, peer-delivered or otherwise, should engage the active input of young people in the development and organisation of the intervention.

C   As young people should not be seen as a homogenous group, this input should be sought from within different sub-groups of young people.

C   The specific boundaries of working in partnership with young people need to be established prior to project implementation. For several reasons, professionals may find it difficult to work in equal partnerships with young people. Resource constraints may be a very real barrier and conflicting values systems concerning young people's autonomy may be a particular problem when working within school-based contexts.

C   Any specific health promotion intervention strategy for young people, peer-delivered or otherwise, should preferably be implemented in the context of wider strategies which target not only individual levels of change but also social, community, organisational, cultural and economic levels of change.

Recommendations for research

C   Research into peer-delivered health promotion needs to examine specifically the applicability of this method to young people at enhanced risk of adverse health outcomes.

C   The effects of being a peer educator on young people needs to be evaluated as a potentially effective health promotion strategy *in itself*.

C   The effects of 'reciprocal' peer education, in which all members of a target group alternate between being a peer educator and a recipient of peer education, needs to be evaluated as a potentially effective health promotion strategy

C   Such evaluations should employ both quantitative and qualitative methods. These should include, where feasible, employing a randomised controlled trial (or a quasi-experimental approach with adequate control and comparison groups) to examine effectiveness and rigorous qualitative methods to examine processes.

C   These evaluations should also clearly present details on the characteristics of the peer educators together with details on how they were recruited/ selected. Such clear reporting will help to identify the important characteristics of peer educators which are currently unclear.

C   The views of young people themselves should be prioritised when evaluating the acceptability of peer-delivered health promotion. Assessing how representative these views are of *all* the young people who received the intervention needs to be undertaken and fully reported. Any negative views should always be reported.

C   There is a need to examine the relative contribution which peer-delivered health promotion can make towards a wider health promotion strategy which targets both the individual and wider social and cultural determinants of young people's health.

C   More generally, evaluative research should move towards the integration, rather than polarisation, of qualitative and quantitative research techniques and of outcome and process evaluations. Funders and commissioners of research need to recognise the value of working towards such an integration.

C   To this end, the research community needs to engage in some 'skills sharing'. Researchers who carry out rigorous *outcome only* evaluations need to learn how to incorporate qualitative process measures and how to develop interventions in partnerships with young people. Similarly researchers who carry out *process only* evaluations have a lot to learn from those who conduct outcome evaluations.

Recommendations for systematic reviews in health promotion

•   It is important to search a wide range of commercially available bibliographic databases to locate relevant health promotion studies. These should include medically orientated databases (in particular MEDLINE) as well as social science specific databases (in particular PsycLIT).

•   Applying additional searching techniques (e.g. hand searching, personal contacts and scanning reference lists of already identified reports) are essential for identifying relevant studies. In particular, specialised registers are an extremely valuable source.

•   Both process and outcome evaluations should be included in systematic reviews of health promotion. Well-designed outcome evaluations should be used to answer questions about whether interventions lead to changes in health outcomes, whilst process

evaluations should be used to answer other closely related questions around, for example, the acceptability of health promotion interventions and examining why interventions work or do not work.

- There is an urgent need to further develop and test criteria for assessing the quality of process evaluations. These criteria should take into account the different qualitative and quantitative methods used within process evaluations, as well as the range of research questions which process evaluations aim to answer.

AIMS

This report is the fourth in a new series from the Centre for the Evaluation of Health Promotion and Social Interventions (EPI-Centre) at the Social Science Research Unit (SSRU), Institute of Education, University of London. The overall aim of the report series is to assemble and analyse available scientific evidence as to the effectiveness of health promotion and other social interventions in improving the health and well-being of the community.

The aims of the review described in this report were:

1. To undertake a *systematic mapping* of research undertaken on peer-delivered health promotion for young people.

2. To determine the *effectiveness* of peer-delivered health promotion in promoting young people's health and to examine the characteristics of peer-delivered interventions which differentiate them from teacher-delivered interventions.

3. To determine the *appropriateness* of peer-delivered health promotion for young people.

4. To summarise the s*tate-of-the-art* with respect to implementing and evaluating a peer-delivered approach to health promotion for young people and to indicate future research, policy and practice needs.

The present report follows one on health promotion interventions in the workplace (Peersman *et al.*, 1998), one on health promotion interventions for men who have sex with men (Oakley *et al.* 1996) and another on sexual health promotion for young people (Peersman *et al.* 1996). These reports build on previous reviews carried out at the SSRU looking at the ways in which health promotion and other social interventions have been evaluated (France-Dawson *et al.* 1994; Oakley *et al.* 1994a; see also Oakley and Fullerton 1994; Oakley *et al.* 1994b; Oakley and Fullerton 1995a; Oakley *et al.* 1995b; Oakley *et al.* 1995c; Oakley *et al.* 1995d).

This review includes a critical appraisal of evaluations of interventions describing processes, as well as those targeting outcomes. Most reviews of effectiveness exclude 'process' evaluations. Our attempt to appraise the quality of process evaluations builds on recent work by Oakley (*in press*) and Rogers *et al.* (1997) to develop a set of possible quality criteria for judging the soundness of the methods used and conclusions reached in process evaluation studies. The intention here is to take a preliminary step towards methods for the quality assessment of qualitative and non-experimental quantitative health promotion research.

BACKGROUND

The primary aim of this review was to assess systematically and critically the growing literature on peer-delivered health promotion to establish whether it is an effective and appropriate strategy for changing the health status, knowledge, attitudes, skills and behaviour of young people. The government reports *Health of the Nation* (DoH, 1992), *Saving Lives* (DoH, 1999), and the *Acheson Report* on inequalities in health (DoH, 1998a), along with the White Paper on Tobacco (DoH, 1998b), all specifically target young people with the express purpose of improving their health, particularly through lifestyle education. In a previous mapping exercise of research on young people's health, Peersman (1996) showed that risk behaviours are clustered, synergistic and linked to environmental and cultural conditions such as poverty, deprivation, poor educational attainment and unemployment. These patterns indicate the need for multi-dimensional ways of improving the health of young people.

Health promotion and young people

This report defines young people as individuals aged between 11 and 24 years old. Although this is necessarily an arbitrary definition, considering the changing social definitions of this population group, this age range was considered to be consistent with the definitions currently used in the health promotion literature (e.g. Aggleton, 1996; Peersman 1996). Over the last few decades this population group has been consistently identified as a key vulnerable group for health promotion both at a policy and research level (e.g. DoH, 1991, 1998; Gillies and McVey, 1996). As Brannen et al. (1994) note, although young people are one of the healthiest population groups as judged by mortality and hospitalisation indices, a whole variety of health risk behaviours increasingly occur in the teenage years.

Thus, the search continues for effective health promotion strategies which will encourage young people to take their health seriously, to reduce risk and enhance positive health. Interventions which aim to increase knowledge levels about health risks and how to avoid those risks have shown only short-term and often transient gains in knowledge and attitudes without any impact on risk behaviours (Kowaleski *et al.*, 1991; Siegal *et al.*, 1989; Society for Adolescent Medicine, 1994). As Moon (1998) has recently documented, the health of young people rests on finding approaches which will be maintained throughout adulthood and which build on their existing knowledge to encourage healthy lifestyles. The evidence showing how health behaviours are shaped, not only by knowledge, but by specific social, cultural and economic contexts highlights the need for intervention strategies which focus on these multiple determinants of health and take into account the specific context and needs of young people (e.g. Gillies, 1994; McWhirter *et al.*, 1998; Wight, 1992).

In line with this, there have been calls for alternatives to top-down, expert-led models of health promotion which can allow the active participation of young people in helping to meet their own health needs (e.g. Aggleton, 1992; Nutbeam, 1990; Oakley *et al.*, 1994b; Rowling, 1997). An important starting point in the search for effective health promotion strategies is, therefore, young people's own agenda, rather than that of adults, and an attempt to learn from young people themselves what they value and are prepared realistically to exchange for improved health status (Porto Novelli, 1992). Such multi-dimensional approaches beginning 'where young people are at' underpin the HEA's Young People's Programme (HEA, 1999).

Peer-delivered health promotion has been suggested as one such approach which is potentially able to start with the agenda of young people rather than adults. However, it is important to consider briefly here the wider cultural and social context in which health promotion with young people operates. The various academic and everyday discourses which frame the concepts of 'childhood' and ' adolescence' construct the 'child' and 'young person' according to very particular ideas. 'Children' and 'young people' are seen as spatially and temporally separate entities who have a special nature involving ideas of innocence and vulnerability (Mayall, 1994; Moore, 1998). Young people are thus characterised by their 'non-adult' status and are positioned without agency and in need of adult protection. They are also constructed as a homogenous group ignoring important differences in experiences according to, for example, class and gender. These constructions have had two major consequences: we currently know very little about the lives, views and experiences of young people and little importance is given to how young people understand themselves as social agents (Moore and Kindness, 1998). For health promotion, these constructions of young people mean that, despite good intentions, interventions are primarily driven by an 'adultist' agenda, which defines what problems need to be tackled and how (Milburn, 1995, Shucksmith and Hendry, 1998).

Thus the suggestion that peer-delivered health promotion may potentially be able to pay more attention to the expressed needs of young people need to be interpreted within this context. Moreover, despite the fact that this approach is increasingly fashionable, there is little solid evidence about the extent to which it is either an effective and appropriate health promotion strategy.

What is peer education ?

Peer education is a term which encompasses a diverse range of activities. A loose definition, however, can be given as involving:

> "interaction between individuals with shared characteristics such as behaviour, experience, status or social and cultural backgrounds" (Charleston *et al.*, 1996:2).

A more specific definition has been given by Finn (1981),

> "the sharing of information, activities or behaviours by people who are not professionally trained instructors but whose goal is to educate" (Finn, 1981:91)

Several authors have distinguished between different types of peer-delivered interventions. For example, Svenson (1998a) distinguishes between peer tutoring, peer counselling and helping and peer health education. Whereas peer tutoring and peer health education have been the main type of peer-delivered interventions implemented in the UK and the rest of Europe, peer counselling interventions have historically been developed and implemented mainly within North America and Canada (Svenson, 1998a). Within these countries, peer counselling schemes are often a integral part of schools and colleges pastoral care services with some institutions providing dedicated staff time to managing these schemes. As Milburn (1995:409) notes peer counselling in these countries is flourishing with young people receiving academic accreditation for becoming a peer counsellor. The reasons for these different cultural developments are not clear, but they are likely to be related to general differences between countries in concepts of the scope both of education and health promotion.

Peer tutoring is an established educational approach in which slightly older pupils help younger pupils learn and develop in a variety of classroom subjects. In *peer counselling* and helping young people are trained to respond and help other young people deal with immediate personal and social problems such as drug abuse, rape, violence and personal relationships. *Peer health education*, in contrast to peer tutoring and peer counselling, does not specifically target particular individuals in need but rather whole groups or communities.

It is described by Svenson (1998a:9) as an approach in which

> "a minority of peer representatives from a group or population actively attempt to inform and influence the majority".

Peer education within the context of health promotion has been applied to a wide variety of health topics and in many different settings. Peer-delivered health promotion has also differed in: the social and demographic characteristics of peer educators relative to the target population; methods used for recruiting peer educators; the amount of training given; and the extent to which peers are involved in the development and content of the intervention. For example, in some programmes, peers are the same age as the target population and recruited by the target population themselves, in others peers are several years older than the target population and chosen by teachers, health educators or researchers on the basis of pre-defined criteria. In some programmes peers are merely used to deliver information scripted by health educators whilst in others peer

educators decide on the content and mode of delivery of the intervention.

Some attempts have been made to classify and describe this variety of 'peer' approaches. Peer-delivered health promotion has been defined according to the educational techniques or health promotion strategies applied within it. For example, it can use 'formal' or 'pedagogical' techniques in which information is presented or discussed in formal group settings such as within a classroom, or it can use more 'informal' techniques such as outreach in which education takes place on a one-to-one basis by peer educators who place themselves in settings in which the target population can be found (e.g. nightclubs, on the streets, health centres) (Svenson, 1998a; Turner and Shepherd, 1999). Svenson (1998a) further highlights the 'diffusional' approach to peer health education in which peer educators are actually from the same social group as the target population, rather than simply sharing characteristics such as age or sexual orientation. In the 'diffusional' approach, education occurs as part of the normal peer-to-peer communication which takes place within already existing social groups. These different approaches to peer-delivered health promotion are not mutually exclusive; one project may use a combination of all three approaches.

Another important dimension on which peer-delivered interventions can differ is the level of involvement of the peer educators themselves in the development of the intervention. These differences relate to the earlier discussion of how the category 'young people' is constructed within health promotion and its implications for interventions being driven by an 'adultist' agenda. Wilton *et al.* (1995) outline four categories of peer-delivered health promotion according to the way the intervention was initiated (either 'top-down' by professionals or 'bottom up' from within the peer group) and the mode of delivery or content of the intervention (either 'informal' in which delivery is dynamic and unstructured with peer educators taking an active role, or 'formal' in which delivery and content is prescribed and didactic). The 'bottom-up/informal' category is close to Svenson's (1998a) 'peer facilitated community mobilisation' approach in which the peer educators represent the community and are responsible for developing and implementing the intervention.

Throughout this report, the term 'peer-delivered health promotion' has been used rather than 'peer education' or 'peer health education'. Whilst many peer-delivered health promotion interventions may be primarily 'educational', use of the term peer education, does not fully capture the diverse range of peer-delivered interventions which could or have been used to promote health. This particularly applies to the 'diffusional' and 'community mobilisation' approaches described above in which young people do not only 'educate' others but are encouraged to become pro-active members of their community.

History of peer education and theoretical underpinnings

Some authors trace the origin of peer education back to Aristotle and Plato and the teaching and learning strategies they employed with their tutees. Most describe the monitorial system of the 1800s, in which teachers taught and trained intelligent and motivated students to teach other children, as an early example of peer education. However, this system was developed to solve the problem of a shortage of teachers rather than in order to develop a potentially effective educational strategy. Peer education gained popularity as a promising educational method in the 1960s in the form of peer-tutoring. Its use occurred in the context of wider shifts in educational theory and practice towards student-centred and experiential learning within which it was argued that: teachers should be facilitators for learning; the learning process should start where the child was; and young people and children should be treated as active partners in their own learning (Schools Council Project, 1972; Simons, 1987). Peer tutoring continues to be applied in practice and examined in research today (e.g. Fitz-Gibbon, 1992; Foot *et al.*, 1990; Topping and Ehly, 1998). Based on the theories of Piaget and Vygotsky, it is thought that peer-tutoring may facilitate educational development by harnessing the valuable developmental processes (e.g. introduction of new patterns of thought, learning to be open to new ideas) which occur naturally in peer interactions (Svenson, 1998a).

Peer education as applied to health promotion has become extremely popular over the last decade (Milburn, 1995; Svenson, 1998a; Wilton *et al.*, 1995), but there are examples in the 1950s and 1960s. For example, Lawler (1971) describes an intervention, for preventing drug use among high school students, and Sloane and Zimmer (1993) describe an intervention initiated and delivered by university students in America in the 1960s, which aimed to educate students about safe drug use.

Peer education has its roots in a number of theoretical disciplines, notably teaching and learning theories (e.g. Sotto, 1994) and psycho-social theories of behaviour and behaviour change (e.g. Bandura, 1977). However, it is psycho-social theories which have tended to dominate the health promotion literature on peer education. Several psycho-social theories have been drawn on to provide a framework for developing and understanding the processes which may be involved in peer-delivered health promotion (Mathie and Ford, 1998; Milburn, 1995; Turner and Shepherd, 1999; Svenson, 1998a; Wilton *et al.*,1995). The more commonly applied are social learning theory (Bandura, 1977); social inoculation theory (McGuire, 1968) and diffusion of innovations theory (Rogers, 1983). In all three of these, 'social influence' is considered to be an important determinant of behaviour.

In *social learning theory*, Bandura suggests that behaviour is learned through observation of role models. In order for successful behaviour change to occur, three factors are crucial: role models must be credible; there needs to be an opportunity to practice the necessary skills to perform the behaviour; and positive reinforcement of the behaviour must be given. It is argued that peer health education fits well into this framework.

Social inoculation theory is based on the assumption that individuals do not want to engage in unhealthy behaviours, but they may lack the skills necessary to be able to resist peer and other social pressures (e.g. from family and media) to engage in them. Individuals who have already developed strategies for resisting this pressure will be less likely to engage in unhealthy behaviours. In this way, helping young people to develop resistance strategies is said to be 'inoculating' them against social pressures. It is argued that the value of peer education within this framework is that peer educators can assist in providing realistic examples of social pressures and how to resist these.

Diffusion of innovations theory explains how innovations are adopted by communities. As described in Turner and Shepherd (1999) and Svenson (1998a), this theory argues that all innovations follow a similar pattern of adoption. One group of people - the 'innovators' - take it up immediately, followed by the 'early adopters', 'the early majority', the 'late majority' and the 'laggards'. Applied to a health promotion intervention, the 'innovators' could be seen to be the health promoters who identify 'opinion leaders' as change agents to influence the rest of the community. For the opinion leaders to be effective, they must possess similar attributes (e.g. beliefs, values, social status) to the target population; thus using peer educators may make opinion leaders more effective. Opinion leaders must also have a wide social network so that the 'innovation' can 'diffuse' through the community. Thus, the diffusion effect is thought to occur through both direct and indirect contact with the 'opinion leaders'.

Despite differences within these theories, common to all is the idea that peer educators need to be people of a similar status to the target group in order for effective identification and communication to occur. Changing norms and values within communities has also been highlighted as a potential process through which peer education could work. It has been suggested that cultural and sub-cultural theories are relevant here (Turner and Shepherd, 1999); within cultures and sub-cultures, particular norms, values and behaviours are promoted, which can be oppositional to mainstream culture. Peer education aims to work within these existing sub-cultures to promote values and norms facilitating the practice of 'healthy' behaviours.

The promise of peer education for health promotion

There has been an increasing trend towards the use of peers in delivering health promotion to young people in the last decade, particularly in the UK, other European countries and North America. Wilton *et al.* (1995) located 30 ongoing peer-delivered health promotion projects in the South and West region of the UK; Svenson (1998b) interviewed workers from 24 peer education projects for HIV prevention in Europe; and Fennell (1993) reported that 70% of schools and colleges surveyed in the USA indicated that they used peers to deliver health and social programmes to other students.

Several authors have analysed the reasons why peer-delivered health promotion has become so popular. It is seen as a way of harnessing the health education that naturally occurs between peers anyway; it is considered to be a more cost-effective method of health promotion; peers are thought to be a more credible source of information than traditional adult providers of health promotion; education presented by peers may be more acceptable; and it is argued that peers are able to reinforce learning through ongoing contact (Hart, 1998; Mathie and Ford, 1998; Turner and Shepherd, 1999; Wilton *et al.*, 1995). In addition it has been argued that peer education is better able to reach 'hard to reach' groups. For example, in the context of reaching drug users, Power (1994) observes that peer education can build on existing informal strategies of communication by training high status members of the hard to reach groups as 'indigenous advocates'. It is argued that such members will be closely linked to the social networks of the target population and should therefore be in a good position to pass on information to support healthy practices. Further, peer-delivered health promotion is potentially consistent with the current emphasis within health promotion on community mobilisation, empowerment and participation, whereby groups and individuals work in partnership with professional agencies to define and work out strategies to meet their own health needs (Hart, 1998; Svenson, 1998a).

This 'promise' of peer-delivered health promotion has led some authors to endorse the method uncritically. For some, peer-delivered health promotion has already been demonstrated as an effective and appropriate method for improving the health of young people. For example, Finn (1981) recommended that

> "Given the evidence of the ubiquity and power of peer education, it is important that health education instructors capitalise on this learning process in order to help students develop the skills necessary to become effective providers of health information to others" (Finn, 1981:14)

Mathie and Ford (1998) urge peer education to be applied more widely across health promotion topics. They see the main purpose of evaluative research as ensuring the sustainability of peer education within schools, rather than examining issues of effectiveness.

Others, however, are more cautious. Reviews of the effectiveness of different approaches to health education for young people within specific areas have so far only suggested that peer-delivered health promotion *may* be characteristic of effective interventions in different topic areas. For example, early reviews of the effectiveness of peer-led psycho-social smoking prevention programmes suggested that this approach is effective for reducing smoking rates and other drug use (Flay, 1985; Glynn, 1989; Klepp *et al.,* 1986). More recently peer involvement in delivery of sexual health interventions has been recommended as a priority area for good quality evaluation (Peersman *et al.*, 1996). However, despite these indications and the current enthusiasm for peer-delivered health promotion, the existing evidence for the effectiveness of the approach is unclear (Milburn, 1995; Turner and Shepherd, 1999; Wilton *et al.*, 1995). As yet no systematic review has been carried out. There has also been no attempt to look at the effectiveness and appropriateness of peer-delivered health promotion across a range of topics such as sexual health, smoking, drugs and diet. This review therefore aims to clarify the extent to which young people find peer-delivered health promotion more appropriate than traditional approaches and whether peer-delivered health promotion can, on the existing evidence, be said to be effective.

Evaluating interventions

Evaluation, as defined by the WHO Working Group on Health Promotion Evaluation (1999:8) is " the systematic examination and assessment of the features of an initiative and its effects, in order to produce information that can be used by those who have an interest in its improvement or effectiveness".

The WHO Working Group suggested that interventions need to be based on the fundamental principles of health promotion. These are that health promotion should be:
*   empowering
*   participatory
*   holistic
*   inter-sectoral
*   equitable
*   sustainable in the long term after funding has ceased
*   built on multi-strategic approaches.

The Working Group recommended that evaluations should have the following core criteria:

*   involvement of all stakeholders
*   use of multi-method approaches

> *   enhancement of the capacity of health promotion to address health concerns across settings and in partnerships
> *   accommodation of the complex nature of health promotion interventions and their long term impact.

Goodstadt (1999) recommends that assessment and critical appraisal of interventions/evaluations should include a number of key elements. The health promotion initiative should be relevant, and should incorporate best practice knowledge. Evaluation should include assessing the relevance and practicality of the evaluative questions and the methods for answering these. Quality criteria are needed to establish whether these elements are present, and they are also needed for synthesizing data in systematic reviews.

Evaluation can be defined as the determination of the effectiveness, efficiency and acceptability of a planned intervention in achieving stated objectives (Homans and Aggleton, 1989). The term 'evaluation' covers studies which aim to describe both *processes* and *outcomes* (Coyle *et al.* 1991). *Process* evaluations study the ways in which services or interventions are delivered; they are designed to assess or monitor the stated goals of intervention and to describe how an intervention works, with whom and why (Scott and Weston, 1998; Tones and Tilford, 1994: Tones, 1998). *Outcome* evaluations are designed in such a way that they can generate answers to questions about the effectiveness of particular interventions in changing specified outcomes.

A systematic approach to the planning, development and evaluation of health promotion, which highlights the importance of process and outcome evaluations, has been outlined by Zaslow and Takanishi (1993) as having:

1. A descriptive (qualitative) phase of understanding the norms and range of behaviours of the target group.

2. A foundation in these data which enables the development of specific hypotheses and theories about why such behaviour occurs.

3. An appropriate design and implementation plan and theory-driven intervention strategies using multi-methodological approaches.

4. A full documentation of the programme.

5. An evaluation of short-term impact by using random assignment to groups and proven behavioural outcome measures conceptually related to the hypotheses under test.

6. A capacity to distinguish short- term effects.

7. A description of the underlying processes.

8. A longitudinal study design to determine the extent to which the effects are sustained over time.

A comprehensive evaluation should include both an outcome evaluation component, designed to establish the effectiveness (or otherwise) of an intervention, and an integral process evaluation component. Process evaluations can be used to 'illuminate' the findings from the outcome evaluation (e.g. explaining why the intervention was successful or unsuccessful); to identify factors influencing the implementation of the intervention; and to examine the views of the various participants/ stakeholders on the intervention (e.g. views about the acceptability of the intervention from the perspective of the target population or the intervention providers).

There is currently much debate about the use of randomised controlled trials (RCTs) to evaluate the effectiveness of health promotion and other social or 'behavioural' interventions (see e.g. Macdonald, 1997; Oakley, 1998; Oakley and Fullerton, 1996; Stephenson and Imrie 1998). This debate is part of a wider discussion about what constitutes 'evidence' in relation to both social and healthcare interventions. However, well-designed prospective experimental studies, which include RCTs, provide a range of good quality data which increase the validity and reliability of inferences about which 'treatments' or interventions work (Kleijnen *et al.*, 1997; Sibbald and Roland, 1998). Including an integral process evaluation in trials provides information on how and why interventions work (or not).

Understanding the role of qualitative research and process evaluations in evidence-based health promotion is an important challenge. Historically, however, in the UK and USA there has been a tradition of carrying out 'process only' evaluations (Hawe *et al.*, 1993; House, 1993; Nutbeam, 1999; Parlett and Hamilton, 1987; Simons, 1987; Speller, 1998; Stake, 1992; Tones, 1998; Weston, 1998a; WHO, 1999). Data collected in process evaluations are often claimed (explicitly or implicitly) to establish effectiveness, whereas this can only be inferred. The most reliable route to answering questions about effectiveness is through well-designed outcome evaluation studies. In a systematic review, information from such studies is gathered together in order to provide a range of audiences with the most up-to-date, relevant and accurate evidence obtainable from available published and unpublished studies.

METHODS USED IN THIS REVIEW

This review was conducted in four stages: identification of relevant studies; classification of these studies; methodological assessment; and extraction of findings.

Identification of relevant studies

Different sources of published and unpublished research literature were searched to locate any reports relevant to peer-delivered health promotion interventions for young people. Relevant studies were considered to be any report describing research which could be used to inform the development, implementation and evaluation of peer-delivered health promotion. The aim of the literature search was to locate a wide variety of research in terms of type of study design (e.g. review articles discussing peer-delivered health promotion; outcome evaluations, surveys); health focus (e.g. sexual health promotion, promotion of healthy eating , smoking prevention); intervention site (e.g. community, educational institution, health care setting) and intervention type (e.g. education, practical skill development).

Searches were conducted on commercially available electronic databases (Medline, EMBASE, PsycLIT, ERIC, the Social Science Citation Index); specialised bibliographic registers (BiblioMap, the bibliographic register of the EPI-Centre, the Cochrane Controlled Trials Register; HealthPromis, the bibliographic register of the Health Education Authority (England), and the bibliographic register of the Health Education Board (Scotland); specialised bibliographies (the 'Europeer' Bibliography and the NIGZ Netherlands Institute for Health Promotion and Disease Prevention 'HIV/AIDS prevention for Youth: Youth as Partners bibliography).

The specialised databases of the Health Education Authority (England) and the Health Education Board (Scotland) were specifically used to track down unpublished reports of completed or on-going peer-delivered interventions. In addition issues of a specialised journal 'Xcellent: The Journal of Peer Education in Scotland' was scanned as a further source of unpublished literature. We also attempted to locate copies of another specialised journal dedicated to peer education, The Peer Facilitator Quarterly, published in the USA. However, we experienced great difficulty in accessing this journal. It was not available in any local libraries for hand searching, was only (inconsistently) indexed by one of the major bibliographic databases (ERIC) and inter-library loan requests for articles from this journal were very unproductive.

For commercially available electronic databases, highly sensitive search strategies were developed using a combination of controlled vocabulary and free-text terms. For PsycLIT, ERIC and the Social

Science Citation Index, terms to denote 'peer-delivered' interventions (e.g. PEER-COUNSELLING; PEER-GROUP; PEER-; peer* educat*; teen* deliver*; pupil* led) were combined with a wide range of general and specific health promotion terms (e.g. HEALTH-PROMOTION; HEALTH-BEHAVIOUR; PREGNANCY-; DRUG-ABUSE-PREVENTION). For Medline, EMBASE and the Social Science Citation Index terms to denote 'peer-delivered' interventions were not combined with health promotion terms. The specialised registers were searched using the free-text term "peer*". (See Appendix 1 for the full details of the terms used in these search strategies.)

Seven journals from 1996 to 1998 were hand searched (American Journal of Public Health; Health Education Quarterly; Health Education Research; Journal of Adolescent Health; Journal of Behavioural Medicine; Journal of School Health; Preventive Medicine). These journals were identified by BiblioMap (the bibliographic register of the EPI-Centre) as the top seven productive journals for reports of peer-delivered health promotion interventions for young people. In addition the reference lists of already identified relevant reports were scanned for details of other relevant reports.

All citations identified by the above searches were downloaded into a ProCite database using BiblioLink data transfer software. They were scanned for relevance as to whether they met the inclusion criteria (see below).

Classification of relevant studies

Full reports of all relevant citations were obtained and classified according to a standardised keywording system developed by the EPI-Centre (Peersman *et al.*, 1997). This classified reports in terms of the type of study; the country where the study was carried out; the health focus of the study; the study population and for reports describing or evaluating interventions, the intervention site, intervention provider and intervention type.

In order to gain a richer description of the research literature relevant to peer-delivered health promotion for young people, reports were also classified according to: whether the intervention was based on the expressed need of the target population; whether the intervention was developed in partnership with the peer educators or the target population; and the age of the peer educators.

Inclusion and exclusion criteria

In order to be considered relevant to this review a report had to describe and/or evaluate and/or discuss an intervention delivered or partly delivered by peers within a primary prevention of disease/promotion of health context for young people (aged 11 to 24 years). All these reports, regardless of intervention type or research quality, were

included in the descriptive mapping of the research in order to give as full a description as possible of the range and type of peer-delivered interventions which have been implemented and of the type of research undertaken in this field.

Reports of outcome or process evaluations had to meet two additional sets of inclusion criteria in order to move on to the next stage of the review. These two sets of criteria, referred to as 'scope' and 'methodological' criteria respectively, enabled us to manage the large number of studies located. All outcome and process evaluations were assessed by two reviewers independently (any differences of opinion were discussed and resolved, if necessary, with a third reviewer).

'Scope' inclusion/exclusion criteria

There were five 'scope' criteria.

(i) The language of the report.

Only those outcome or process evaluations written in the English language were included. Unfortunately, there were insufficient resources to allow translation of reports published in other languages.

(ii) The level of involvement of peer-leaders in the delivery of the intervention.

Outcome or process evaluations which evaluated interventions in which peer-leaders were used to deliver only one component of a multi-component intervention, or were in the role of assisting other providers, were excluded. An exception to this was made for outcome evaluations which directly tested the 'added value' of using peer-leaders to deliver some parts of the intervention/ assist other providers (e.g. comparing the effectiveness of the same intervention delivered by teachers only or teachers assisted by peer leaders).

(iii) The medium used to deliver the intervention.

Outcome and process evaluations were excluded if peer-delivery of the intervention was through video (e.g. peer leaders acting out resistance skills on video), theatre or newsletters. These kinds of intervention were considered to be qualitatively different from interventions delivered by peer leaders in face-to-face contexts, making it problematic to include them in the same review.

(iv) The 'type' of peer-delivered health promotion intervention.

Outcome and process evaluations evaluating 'peer counselling' interventions (in the USA or Canada) or peer mediation interventions were excluded. In addition, interventions in which peer leaders acted as 'buddies', 'advocates' or 'mentors' were excluded, as were interventions which involved peer support groups as their peer-

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delivered intervention strategy. These interventions, in which young people are trained to respond to and help other young people deal with their immediate personal and social problems, were also deemed to be qualitatively different from peer-delivered health promotion which targets whole groups or communities rather than particular individuals in need.

(v) The focus of the evaluation.

This review aimed primarily to examine the effectiveness and appropriateness of peer-delivered interventions from the viewpoint of the recipients of the intervention rather than from that of the peer-leaders themselves. *Outcome evaluations* were excluded if they focused *solely* on the effects of the intervention on the peer-leaders themselves. However, as the processes of training peer-leaders may be important for the effectiveness and appropriateness of peer-delivered health promotion, *process evaluations* were included if they focused on the processes involved in the training of peer-leaders.

'Methodological' inclusion/exclusion criteria

There were three methodological inclusion/ exclusion criteria for outcome evaluations and one for process evaluations.

a) Outcome evaluations.

(i) The design of the outcome evaluation.

To be included, outcome evaluations had to have used a prospective experimental design, with one or more control/comparison groups.

(ii) Equivalent control/comparison and intervention group.

To be included, outcome evaluations had to *appear*[2] to have employed an equivalent (on socio-demographic and baseline outcome measures) control/comparison group.

(iii) Reporting of pre- and post-intervention data.

To be included, outcome evaluations had to have reported data on outcome measures both before and after the intervention.

b) Process evaluations.

Process evaluations had to report a 'formal' evaluation that was either formative, intermediate or summative evaluation. These three types of

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[2]Outcome evaluations were only excluded on this criterion if the authors of reports explicitly stated that the groups in the evaluation were non-equivalent and if the reviewers agreed with the authors' statement. Unless otherwise stated it was assumed, at this stage, that the groups were equivalent.

process evaluations are described below. By 'formal' evaluation, we required that a report of a process evaluation had to have *at least* included a clear and systematic presentation of the evaluation methodology and results.

(i) A formative evaluation.
A formative evaluation examines the very first stage of planning a health promotion intervention. It can involve an assessment of the target population's need for the intervention and/or an assessment of the type of intervention which would be the most acceptable/appropriate for the target population. It can also be a pilot or demonstration project.

(ii) An intermediate evaluation
An intermediate evaluation takes place around the midpoint of an intervention project and aims to evaluate progress made or to highlight areas of the intervention which may need to change.

(iii) A summative evaluation
A summative evaluation takes place at the end of an intervention and aims to assess whether the intervention has achieved its objectives (e.g. was the programme accessible, was the intervention implemented according to protocol, what were the views of the target population, how many people did it reach and what was the cost?)

Assessment of the methodological quality of outcome evaluations

All outcome evaluations meeting the above inclusion criteria went on to the data extraction phase of the review. A standardised data extraction framework was used, the EPI-Centre's 'Review Guidelines' (Peersman *et al.*, 1997). These guidelines enabled reviewers to extract data on the development and content of the intervention evaluated, the design and results of the outcome evaluation, details of any integral process evaluation and data on the methodological quality of the outcome evaluation. Data were entered onto a specialised computer database (EPIC). Two reviewers independently assessed each outcome evaluation and any disagreements were discussed and resolved, if necessary with a third reviewer.

These procedures and the criteria used for assessing methodological quality are the same as those described in previous EPI-Centre reviews (Oakley *et al.*, 1996; Peersman *et al.*, 1996; Peersman *et al.*, 1998), including our two early reports on the methodology of sexual health interventions (Oakley and Fullerton, 1995a, Oakley *et al.*, 1995b). For this reason, the criteria are not discussed in detail here. Methodological quality was assessed by reviewing the outcome evaluations for the presence/absence of eight methodological qualities:

1. Clear definition of the *aims* of the intervention.

2. A description of the study design and content of the intervention sufficiently detailed to allow *replication*.

3. Use of *random allocation* to the different groups including to the control or comparison group(s).

4. Provision of data on *numbers of participants* recruited to each condition.

5. Provision of *pre-intervention data* for *all* individuals in each group.

(An exception was made for those studies using the Solomon four-group design (Campbell and Stanley, 1963). In this design, intervention and control/comparison groups are further randomised to receive pre-intervention surveys or not. This means that the usual range of pre-intervention data is not available for half the participants in each group.)

6. Provision of *post-intervention data* for each group.

7. A*ttrition* reported for each group.

8. F*indings reported for each outcome measure* indicated in the aims of the study.

A study displaying all of the attributes discussed above could be described as achieving a 'gold standard'.

Following the procedures used in other EPI-Centre reviews, and building on other work (Oakley and Fullerton 1995a; Loevinsohn 1990; MacDonald *et al.* 1992) a smaller group of 'core' criteria from the above list were selected in order to divide the outcome evaluations into two broad groups : 'sound' and 'not sound'. 'Sound' outcome evaluations were those deemed to meet the four criteria of:

1. Employing a control/comparison group equivalent to the intervention group on socio-demographic and outcome variables.

2. Providing pre-intervention data for all individuals/groups as recruited into the evaluation.

3. Providing post-intervention data for all individuals/groups.

4. Reporting on all outcomes.

'Sound' outcome evaluations were considered to show sufficient methodological qualities to be able to generate potentially reliable results about the effectiveness of health promotion interventions.

A narrative synthesis of those interventions which had been soundly evaluated was undertaken. These interventions were described according to the characteristics of the peer educators, the key components of the intervention, how the intervention was developed, the evaluation design and any impact of the intervention on health-related outcomes.

Assessment of the methodological quality of process evaluations

Data on process evaluations which met the inclusion criteria set out above were also extracted using the EPI-Centre 'Review Guidelines'. In particular, data was extracted on the findings of these evaluations according to the processes which they examined such as accessibility (e.g. who participated in the intervention ?); acceptability (e.g. what were the views of young people on the content of the intervention ?); implementation (e.g. were there any barriers/facilitators to successful implementation ?); collaboration and partnerships (e.g. were there any barriers against working in partnership with young people) and skills and training of the intervention providers (e.g. was the training provided to peer leaders adequate?).

In addition, the process evaluations were assessed according to their methodological quality. In contrast to the outcome evaluations however, this assessment of methodological quality *did not* lead to the further exclusion of studies. Rather, the process evaluations and their results were *mapped* against several quality criteria.

Since many process evaluations use qualitative research, recent guidelines for the critical appraisal of qualitative research were drawn on here. As Rogers *et al.* (1997) suggest, assessing the quality of qualitative research or process evaluations is not an easy task. The main problem for researchers involved in this work is that of 'subjective' judgement. There is little consensus about criteria for assessing such research. A number of authors have attempted to develop appropriate criteria and use them in assessing health promotion studies (see e.g. Nutbeam, 1999; Rogers *et al.*, 1997; Speller, 1998). This exercise has also been carried out for qualitative research more generally (see e.g. Cobb and Hagemaster, 1987; Boulton *et al.*, 1996; Leininger, 1994; Lincoln and Guba, 1985; Mays and Pope, 1995; Medical Sociology Group, 1996; Muecke, 1994; Popay *et al.*, 1998).

To assess the quality of the process evaluations included in this review, the criteria proposed by four research groups to assess the validity and reliability of 'qualitative' research, presented in Oakley (In press), were drawn upon (Boulton et al., 1996; Cobb and Hagemaster, 1987; Mays and Pope, 1995; Medical Sociology Group, 1996). These four sets of criteria were 'amalgamated' based on the commonalities that exist between the sets. The quality criteria across the four sets

were found to converge on seven 'themes' which related to the different stages of the research process: theoretical framework and or background to the study; formulation of aims or research questions; context of the research; the sample; methodology; analysis of data; and interpretation of data. For each of these seven themes the most commonly used or the most clearly operationalised[3] quality criteria across the four sets was used. Each process evaluation was thus assessed according to the following seven quality criteria:-

(i) *An explicit account of theoretical framework and/ or the inclusion of a literature review was given.* Did the report provide an explanation of, and justification for, the intervention and its evaluation using appropriate literature, and/ or describe the theoretical framework used for the study ? This was intended to assess whether the research has demonstrated how it was informed by or linked to an existing body of knowledge.

(ii) *Clearly stated aims and objectives*: Did the report explicitly and clearly state the aims of the intervention and the evaluation ?

(iii) *A clear description of context*: Did the report adequately describe the context of the intervention and the evaluation (e.g. intervention setting, target group) ? This was intended to assess whether all the factors which could be important in interpreting the results of the evaluation had been considered e.g. intervention setting, target group. Ideally there should also have been some critical reflection on the evaluators' position and any possible consequences of this for the results of the evaluation.

(iv) *A clear description of sample*: Did the report provide adequate details of the sample used to evaluate the intervention and how the sample was recruited ? This should include presentation of socio-demographic data and data on other salient factors such as descriptions of high risk groups.

(v) *A clear description of methodology, including systematic data collection methods*: Did the report provide an adequate description of the methods used in the study including its overall research framework, methods used to collect data and methods of data analysis ?

(vi) *An analysis of the data by more than one researcher*: This was intended to provide an 'indicator' of whether any attempts were made

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[3]For example within the theme 'analysis of data' there were 15 different quality criteria. All of these related in some way to ensuring the reliability and/or validity/ trustworthiness of the data analysis (e.g. 'Evidence of efforts to establish reliability and validity' (Boulton et al., 1996)). However, 'an analysis of data by more than one researcher' (Mays and Pope, 1995) was chosen as representing the clearest operationalisation of this quality criteria.

by the evaluators to assess the validity and reliability of the data analysis.

(vii) *The inclusion of sufficient original data to mediate between data and interpretation:* Did the report present sufficient data in the form of, for example, data tables, direct quotations from interviews or focus groups, data from observation to enable the reader to see that the results and conclusions are grounded in the data ? Could a clear path be identified between the data and the interpretation and conclusions ?

The data extraction and assessment of quality of the process evaluations was carried out by two reviewers. The two reviewers' data extraction and quality assessments were compared and disagreements were resolved through discussion.

The assessment of the methodological quality of the process evaluations was essentially an exploratory exercise. Taken together, the seven criteria were considered to represent the first step to generating a way of assessing the validity and reliability (or 'trustworthiness') of the results and conclusions of process evaluations. Essentially they provided a framework for the reviewer to assess whether enough information had been provided in order to then judge whether the framework of the evaluation, context, sample, methodology, data analysis and data interpretation used within the process evaluations took into account or, at least, made explicit, any possible alternative explanations for the results shown and/or conclusion drawn. In this respect, it differed from the methodological quality assessment of the outcome evaluations. Although process evaluations were assessed on a number of methodological criteria, these criteria were *not* used to generate a sub-set of evaluations from which 'reliable' conclusions can be drawn. Rather, the aim was to provide the reader with a synthesis, within an explicit framework of methodological quality, of the findings of the process evaluations and their implications for developing and implementing peer-delivered health promotion for young people and the accessibility and appropriateness of peer-delivered health promotion.

RESULTS: Mapping the research

Identification of relevant reports

The search strategies yielded a total of 5124 citations. Of these 523 were deemed to meet the inclusion criteria. Full reports were obtained for 462 (88%) of these. Once full reports had been obtained, a further 41 were found not to meet the inclusion criteria. This left a total of 421 reports of studies of peer-delivered interventions to promote health.

Table 1 shows the proportion of peer-delivered health promotion studies found by the different bibliographic sources used in the search strategy.

Table 1: Number and per cent of peer-delivered health promotion studies found within different bibliographic sources (N=421)

Bibliographic Source	N	%
Electronic bibliographic databases	266	63%
Specialised bibliographic registers	102	24%
Handsearch	4	1%
Reference	37	9%
Personal contact	12	3%

More than half of the studies (63%) were found on the electronic bibliographic databases. The most productive of these were PsycLIT and Medline which found 37% (n=157) and 30% (n=128) of all studies respectively. An additional 24% of studies were found by searching specialised bibliographic registers. The most productive of these was BiblioMap which found 16% (n=68) of all studies. A further 13% were found by hand searching, scanning the reference lists of already identified reports and personal contact.

Although we made a substantial effort to locate unpublished reports of peer-delivered health promotion, only 6% (n=27) of all reports fell into this category. We were able to find many references to unpublished reports of peer-delivered projects, completed or ongoing through, for example the Health Education Board's (Scotland) project database and 'Excellent: The Journal of Peer Education in Scotland'. However, there were particular difficulties associated with obtaining these types of reports in that our requests were often not met despite individual letters being sent.

Classification of relevant reports

a) All reports (n=421).

As noted above, nearly all of the identified reports were published (n=394, 94%). Similarly, most (n=410, 97%) were in the English language. Most were published in or after 1990 (n=290, 69%). The earliest report relating to peer-delivered health promotion found in our searches was published in 1968. This was a trial comparing the effect of two different educational methods and message themes, delivered by peers, in the context of the prevention of smoking in rural youth in the USA (Merki, 1968 [excluded outcome evaluation[3]]).

Table 2 shows the distribution of reports according to the type of studies described.

Table 2: Distribution of reports of peer-delivered health promotion according to study types (N=421)

	N	**%**
Background studies	**105**	**25**
Commentary	6	1
Needs assessment	9	2
Secondary reports	7	2
Survey	19	5
Review	64	15
Intervention studies	**316**	**75**
Non-evaluated interventions	62	15
Outcome evaluation *Outcome evaluation only* *Outcome evaluation and process evaluation*	172 *97* *75*	41 *23* *18*
Process evaluation only	82	19

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[3] Whenever an intervention study is referenced in this section, it is followed by a description of what kind of study it is in square brackets, either a non-evaluated intervention, outcome evaluation or process evaluation. In addition, for outcome evaluations and process evaluations, whether the intervention went on to be included or excluded in the methodological assessment of quality stage of the review is also noted (i.e. excluded outcome evaluation or included outcome evaluation).These classifications also direct the reader to the appropriate appendix in which a particular study is listed.

A quarter of the relevant reports were background studies which discussed or reviewed issues relevant to peer-delivered health promotion or reported surveys of, or needs assessments for, peer-delivered health promotion. The majority of reports (75%) actually described or evaluated peer-delivered health promotion interventions. Most of these were evaluative studies, either outcome evaluations (41%) or process evaluations (19%). A small proportion of reports were outcome evaluations with integral process evaluations (18%). Of the 316 reports of intervention studies, 62 (15%) described non-evaluated interventions.

Multiple reports were often found which described or evaluated the same intervention. For example the same intervention would be described in one report, the results of the outcome evaluation described in another and the results of the process evaluation described in yet another report. Thus the 316 reports which described or evaluated interventions reported on 271 separate interventions or evaluations of interventions. Of these, 133 (49%) were outcome evaluations, 77 (28%) were process evaluations and 61 (24%) were descriptions of non-evaluated interventions.

b) Reports which described or evaluated different interventions (n=271).

Table 3 shows the number and proportion of reports which evaluated or described peer-delivered health promotion according to the country in which the intervention was implemented. Most reports (68%) described or evaluated interventions carried out in the USA. Of the remaining countries, reports from Europe made up the biggest proportion (20%). The smallest proportion of reports came from Australia and New Zealand (2%) and from other individual countries around the world (3%).

Table 3: Number and proportion of evaluations/ descriptions of peer-delivered health promotion (N=271) according to country in which intervention was implemented.*

	N	%
USA	184	68
UK	40	15
Rest of Europe	14	5
Canada	21	8
Australia/New Zealand	4	2
Rest of World**	9	3

*One intervention (the WHO collaborative study of alcohol and young people (Perry *et al.*, 1989)) was implemented in more than one country so N does not add up to 271 or 100%. **Chile, Hong Kong, Indonesia, Israel, Russia, South Africa, Swaziland and Zimbabwe.

These figures may reflect a bias within the bibliographic sources searched towards studies published within North America and the UK; there is clearly also likely to be a bias as a result of searches being restricted to English language publications.

A smaller proportion of the reports from the UK (n=40) were outcome evaluations (n=15, 38%) compared to the proportion of outcome evaluations from the USA (total number of studies from the USA = 184; proportion of outcome evaluations n=94, 51%). This could reflect the relative lack of outcome evaluations carried out in the UK, or the greater difficulty in locating outcome evaluations carried out in the UK. These figures are consistent with the findings of other systematic reviews within health promotion (e.g. Oakley *et al.*, 1996; Peersman *et al.*, 1998).

Health topics

Altogether the 271 reports covered 16 distinct health topics. Since single reports could cover more than one health topic this gave a total of 352 (table 4). The most common focus was drug use (tobacco, alcohol and other drugs - 42% of topics) and sexual health (28% of topics).

Table 4: Topics covered in evaluations/ descriptions of peer-delivered health promotion (N=352)

	N	%
Tobacco	53	15
Drugs	51	14
Alcohol	45	13
Sexual health	98	28
Mental health	59	17
General health promotion	20	6
Healthy eating	6	2
Sexual/physical abuse	6	2
Cardiovascular	3	1
Other	11	3

Mental health made up 17% of topics covered. Most of these were 'peer counselling' interventions implemented in the USA or Canada. Some of these interventions involved the provision of a generic service in which peer counsellors were available to give advice and/or support on a range of issues such as family and personal relationships, self-esteem and stress (e.g. Faheem and Zahir, 1991 [excluded process

evaluation]; Morey *et al.*, 1989 [excluded process evaluation]), whilst others involved the provision of a specific service with peer-counsellors providing advice and/or support within particular areas, for example, suicide prevention (Bagley *et al.*, 1985 [non-evaluated intervention]), eating disorders (Martz *et al.*, 1997 [excluded outcome evaluation]; Sesan, 1988 [non-evaluated intervention]) and bullying (Nelson, 1995 [non-evaluated intervention]).

Other types of peer-delivered health promotion within the area of mental health were programmes which aimed to target other health issues such as drug and alcohol use, pregnancy prevention and the prevention of sexually transmitted diseases (STDs), through the fostering of self-esteem, communication and coping skills (e.g. Sawyer *et al.*, 1997 [excluded outcome evaluation]; Botvin *et al.*, 1984 [included outcome evaluation]).

Some interventions (6%) targeted multiple health areas and were classified as 'general health promotion'. For example Carey (1984) described an intervention in which college students from a USA campus acted as peer health advisers on diverse topics such as fitness, nutrition, stress and general 'health impairing habits' [non-evaluated intervention]; and Berkley-Patton *et al.* (1997) [exluded process evaluation] described an intervention involving a youth lay health advising programme designed to provide students from a high school in the USA with support and guidance in a variety of health matters.

A minority of peer-delivered health promotion interventions for young people focused on other health areas. Several focused on healthy eating either in the context of a wider programme targeting other health areas e.g. cardiovascular disease (Klepp *et al.*, 1994 [excluded outcome evaluation]); use of steroids (Goldberg *et al.*, 1996 [excluded outcome evaluation]) or as a single topic in itself (e.g. Braun, 1986 [excluded process evaluation]; Kessler *et al.*, 1992 [non-evaluated intervention]).

A small number of interventions targeted sexual and physical abuse. These focused on preventing 'acquaintance' rape (Lonsway *et al.*, 1998 [excluded outcome evaluation]; Caron, 1993 [non-evaluated intervention]), education about sexual assault (Simon, 1993 [excluded process evaluation]) and preventing violence (Bickmore, 1993 [non-evaluated intervention]; Close and Lechman, 1997 [excluded process evaluation]; Hritz and Gabow, 1997 [excluded outcome evaluation]; Lane and McWhirter, 1992 [excluded process evaluation]; McReynolds *et al.*, 1996 [non-evaluated intervention]).

The remaining peer-delivered health promotion interventions focused on disparate health areas including the promotion of oral health (Albino *et al.*, 1980 [excluded outcome evaluation]); testicular and breast cancer education (Best *et al.*, 1996 [included outcome evaluation]; Naurer, 1997 [non-evaluated intervention]); adolescent parenting skills

(Butler *et al.*, 1993 [excluded outcome evaluation]); immunisation (Clark and Clark, 1985 [excluded outcome evaluation]); prevention of injury and accidents (Stevenson and Lennie, 1992 [excluded process evaluation]; Gazit, 1992 [non-evaluated intervention]); and asthma education (Gibson *et al.*, 1998 [included outcome evaluation]).

Intervention site

Table 5 shows the number and proportion of reports which evaluated or described peer-delivered health promotion according to the site of the intervention. Reporting on intervention site was generally high; only five (2%) descriptions or evaluations did not state the intervention site. The majority of interventions were delivered in educational settings, particularly within secondary education (54%). Thus many peer-delivered health promotion interventions were classroom-based. Typically, such interventions would involve same-age peer leaders teaching their classmates or older peer leaders coming in to teach classes of younger students.

A smaller proportion were delivered in community sites (14%). In addition to interventions delivered in community centres or the delivery of services in the community, some of these involved peer leaders undertaking outreach in the community (e.g. Kegeles *et al.*, 1996 [included outcome evaluation]) whilst others used mass media to reach communities (e.g. Bauman *et al.*, 1989 [excluded outcome evaluation]).

Table 5: Number and proportion of evaluations/ descriptions of peer-delivered health promotion (N=271) according to intervention site

	N	%
Secondary education*	147	54
Tertiary education	68	25
Community site	38	14
Other educational institution	4	2
Health care unit	5	3
Residential care	3	1
Correctional institution	1	< 1
Not stated	5	2

*11- 6 years in the UK ; 11-18 in USA/Canada

A minority of interventions were delivered in health care units (3%), residential care (1%) or a correctional institution (<1%). All of these were carried out in the USA. These included a peer-delivered HIV education intervention delivered in a hospital based adolescent health

clinic (Slap *et al.*, 1991 [excluded outcome evaluation]), a drug prevention intervention for homeless and runaway young people in a residential shelter (Fors and Jarvis, 1995 [excluded outcome evaluation]) and a peer helper programme set up in a correctional institution to improve risk reduction and adaptive living skills amongst incarcerated adolescents (Horan and Barthlow, 1995 [non-evaluated intervention]).

Interventions assessed in process evaluations were less likely to have been delivered in secondary education (process evaluations, n=34, 23%; outcome evaluations, n=80, 54%) and slightly more likely to have been delivered in community settings (process evaluations, n=16, 42%; outcome evaluations, n=14, 37%).

Intervention providers

Table 6 shows the range of providers involved in the peer-delivered health promotion interventions described or evaluated in the reports. The 271 interventions covered a total of 306 providers. Although the majority of providers were peers only (61%), a substantial proportion of interventions involved additional providers. The most common additional providers were teachers (15%) followed by health professionals (6%) and health promotion practitioners (5%).

Table 6: Range of intervention providers (N=306) in evaluations/ descriptions of peer-delivered health promotion

	N	%
Peer only	188	61
Teacher	47	15
Health professional	19	6
Health promotion practitioner	14	5
Researcher	8	3
Community worker	9	3
Parent	7	2
Other	14	5

The role of other providers could be substantial or relatively minor. For example, an outcome evaluation of a smoking prevention programme for 11 to 17 year olds in the USA used peer leaders only to demonstrate skills in resisting pressures to smoke, in the context of a teacher delivered social influence curriculum (Ary *et al.*, 1990 [excluded outcome evaluation]). In other multi-component interventions, peer leaders were used as sole providers to deliver one or two components of the intervention. For example in the North Karelia Youth Project in

Finland, some school based programmes were delivered by peer leaders, whereas health screening and a mass media campaign were delivered by other providers (Vartiainen *et al.*, 1991 [included outcome evaluation]).

Within some evaluations, the effectiveness of peer leaders compared to other providers was directly tested in the evaluation (e.g. Arkin *et al.*, 1981 [included outcome evaluation]; Murray *et al.*, 1984 [included outcome evaluation]). Examining the relationship between study type and whether peers are the sole providers of the intervention revealed an interesting pattern. More non-evaluated interventions and process evaluations than outcome evaluations were based on interventions delivered by peers only (non-evaluated interventions, n=50, 75%; process evaluations, n=61, 74%; and outcome evaluations, n =77, 49%).

Intervention type

As outlined in the introduction it is possible to distinguish broadly between different 'types' of peer-delivered health promotion interventions. Within the health arena, these major types consist of those interventions in which young people are trained to respond to and help other young people deal with their immediate personal and social problems, 'peer counselling' and those interventions which target whole groups or communities in an attempt to inform or influence in some way. A number of more specific intervention types and activities can occur within each of these two broad types.

Table 7 shows the kinds of interventions employed in peer-delivered health promotion. Altogether the reports described 448 intervention types.

The most common intervention type was the provision of information on the health topic(s) targeted by the intervention (44%). Many intervention types aimed to develop skills within the target population (18%). Such interventions aimed to develop health-related skills, for example, resisting social pressures to smoke (e.g. Armstrong *et al.*, 1990 [included outcome evaluation]; Perry *et al.*, 1983 [included outcome evaluation]) or negotiation skills for using a condom with a partner (e.g. Ozer *et al.*, 1997 [included process evaluation]; Basen-Engquist *et al.*, 1997 [non-evaluated intervention]), whilst other interventions aimed to develop generic life skills, for example, communication skills or independent decision-making skills (e.g. Botvin and Eng, 1982 [included outcome evaluation]).

Some intervention types involved giving one-to-one advice/ counselling (17%). Just over half of these were 'peer-counselling' interventions (n=44, 58%) which were all implemented in the USA or Canada. Other examples of peer-delivered interventions which included one-to-one advice were interventions based on outreach in which peer leaders

were trained to go out into their community to advise members of their peer group on health matters (e.g. Kegeles *et al.*, 1996 [included outcome evaluation]; Mathie and Ford, 1993 [excluded outcome evaluation]) and interventions in which peer leaders were trained to act as a resource of information for their peers to call on (e.g. Berkley-Patton *et al.*, 1997 [excluded process evaluation]; Bernard *et al.*, 1981 [excluded process evaluation]).

Table 7: Types of intervention (N=448) employed in descriptions/evaluations of peer-delivered health promotion

	N	%
Provision of information	198	44
Skill development	80	18
Advice/counselling	76	17
Social support	26	6
Resource access	31	7
Service access	22	5
Bio-feedback	6	1
Other*	9	2

*Incentives; environmental modification; regulation; parent training and immunisation.

Six per cent of interventions involved an explicit social support component. Of these, the majority (n=17) were peer counselling interventions in which peer counsellors provided social support to their peers to help them cope with a variety of problems. For example de Rosenroll (1990) [excluded process evaluation] described a school-based peer counselling programme in the USA based on the premise that adolescent peers have their own natural support system and that peer counsellors can be trained to use this to work effectively with others who have problems. A further seven interventions which used social support as an intervention strategy were focused on young parents. For example, Butler *et al.*, (1993) [excluded outcome evaluation] evaluated the effectiveness of a peer-delivered intervention in the USA to ameliorate stresses and enhance parenting skills in pregnant or parenting young women with an average age of 16 years. The peers in this intervention were senior level undergraduate psychology students who were 'matched' to young mothers (on the basis of social demographics and personality characteristics) and acted as both a source of social support and an advocate. Rubenstein *et al.* (1990) [excluded outcome evaluation] evaluated the effectiveness of an intervention which aimed to prevent repeat pregnancy and school-drop out rates among adolescent mothers in the USA. Peer companions - older "well functioning teen mothers" - acted as peer

counsellors to younger pregnant women to provide emotional and social support through group and one-to-one discussions, educational sessions and other activities such as parties, exercise groups and mother and baby groups. An intervention which used peer delivery in a less formalised way was a community-based support group set up for young mothers to meet and share experiences and receive social support with their peers (de la Rey and Parekh, 1996 [excluded process evaluation]).

Two other interventions using social support as an intervention strategy targeted high risk young people in the context of violence and gang membership in Denver (Hritz and Gabow 1997 [excluded outcome evaluation]) and in the context of preventing drug use in runaway and homeless young people (Fors and Jarvis, 1995 [excluded outcome evaluation]).

Some intervention types included providing increased access to resources and services (7% and 5% respectively). For example, Sellers *et al.* (1994) [included outcome evaluation] provided access to condoms in the context of a peer-delivered HIV educational intervention and Yaccarino (1995) [non-evaluated intervention] described a peer counselling intervention for alcohol use which provided students with referrals to a psychological counselling service.

Several peer-delivered interventions included bio-feedback (i.e. personal feedback of health status e.g. carbon monoxide levels, cholesterol levels). For example, Schlegel (1990) [non-evaluated intervention] described an intervention in a German secondary school which used peer leaders to measure and feedback the blood pressure of their peers, whilst Carpenter *et al.* (1985) [excluded outcome evaluation] evaluated the effectiveness of a peer-delivered alcohol abuse prevention intervention for American Indian high school students in which peer leaders fed back students' alcohol levels.

The main intervention types falling into the 'other' category were incentives and environmental modification which were employed in combination with other intervention activities. For example, in the UK, Nathan *et al.* (1997) [excluded outcome evaluation] evaluated the effectiveness of a smoking intervention for 13 to 14 year olds which combined the use of peers to monitor smoking prevalence in the school in combination with anti-smoking lectures by teachers, weekly quit smoking counselling sessions and incentives in the form of prizes for providing saliva samples. In the USA, Stevens-Simons *et al.* (1997) [excluded outcome evaluation] evaluated the effectiveness of monetary incentives for taking part in a peer support group for young mothers. The North Karelia Youth Project combined peer-delivered and teacher-delivered health education on smoking and healthy eating with changes in school diet in the context of the prevention of cardiovascular disease (Vartiainen *et al.*, 1991 [included outcome evaluation]). Other intervention types were programmes which combined peer-delivered activities with regulation or legislation such as smoking bans or safety

guidelines (e.g. Shaw *et al.*, 1997 [excluded outcome evaluation]; Stevenson and Lennie, 1992 [excluded process evaluation]); parent training (Butler *et al.*, 1993 [excluded outcome evaluation]); and a programme in which peer-leaders encouraged immunisation (Clark and Clark, 1985 [excluded outcome evaluation]).

Age of peer leaders

Table 8 shows the number and proportion of descriptions and evaluations of peer-delivered health promotion according to the age of the peer leaders. The majority of interventions used peer leaders of the same age as the target population, whilst a minority used either older peer leaders who were from the same 'community' as the target population (e.g. older secondary school students teaching younger secondary school students) or older peer leaders from a different 'community' as the target population (e.g. university students teaching secondary school students).

Table 8: Number and proportion of evaluations/ descriptions of peer-delivered health promotion (N=271) according to age of peer leaders

	N	%
Same age (no more than one year older)	198	73
More than one year older but from within same community	23	8
More than one year older from a different community	33	12
Not stated	17	7

Outcome evaluations were less likely to evaluate interventions delivered by the same age peer leaders (n=88, 66%) than process evaluations (n=64, 83%).

Strategies used to develop interventions

Table 9 shows details of how the peer-delivered health promotion interventions were developed. It distinguishes between interventions implemented on the basis of a formal needs assessment and those developed in partnership with the target population. The table subdivides formal needs assessment into 'felt' or 'expressed' need (based on what the target population think are the problems which need addressing or based on what the target population actually asks for) or 'normative' need (based on what expert opinion considers to be the problems which need addressing). Just over half of the interventions were based on normative need, whereas only 23% were based on felt need. A further 22% of reports did not specify the type of needs assessment undertaken.

Table 9: Number and proportion of evaluations/ descriptions of peer-delivered health promotion (N=271) according to strategy used in the development of the intervention.

	N	%
Based on needs assessment		
Felt need	61	23
Normative need	150	55
Not stated	60	22
Total	271	100
Partnership		
Yes	100	37
No	90	33
Not stated	81	30
Total	271	100

Examples of 'normative' need were interventions implemented in response to concerns over high rates of adolescent risk behaviours such as smoking, drinking or violent behaviours. For example the WHO four country alcohol study (Perry *et al.*, 1989 [included outcome evaluation]) evaluated an intervention to delay onset of alcohol use for young people. This was based on the observation that onset of drinking is occurring at earlier ages and alcohol-associated morbidity and mortality is increasing in all age groups; Orpinas *et al.* (1995) [included outcome evaluation] implemented a violence prevention intervention for Hispanic and African-American adolescents in Texas in response to local statistics suggesting that African-Americans and Hispanics are at particularly high risk of violence-related injury and death; and McAleavy *et al.* (1996) [excluded outcome evaluation]) implemented a peer health education intervention for young people in areas of high unemployment in Belfast, in response to research which found that adolescent health and social problems were negatively impacting on young people's employment training.

Examples of interventions based on 'felt need' included detailed assessments of target populations' self-identified health needs and/or their preferences for type of intervention activities. For example, in the UK, prior to the implementation of the 'Sea, Sand and Safer Sex Project' (Mathie and Ford, 1993 [excluded outcome evaluation]), a peer-delivered sexual health promotion intervention for seasonal workers and tourists in Devon and Cornwall, Ford (1990 a, b; 1991) undertook several surveys of the socio-sexual lifestyles of seasonal workers and tourists. These found high demand for more information on STDs and suggested that health promotion messages should be framed and delivered within the context of young people's lifestyles

(e.g. high level of involvement in sport, and high importance of social life). Similarly, in the UK, Frankham (1993) [included process evaluation] undertook an analysis of young people's conversations about sex to determine the need for a peer-delivered sexual health promotion intervention for young people in Norwich.

The second part of table 9 shows how many interventions were developed in 'partnership' with the target population. What this means is that the intervention was developed in collaboration with the target population - for example, through joint decision-making about the type of intervention to be implemented, or joint design of appropriate intervention materials. Since peer leaders were often members of the target population, those interventions which included involvement of peer leaders or other members of the target population were considered to have been developed using 'partnerships'. The role of peer leaders in the development needed to be explicit and they had to have a developmental role over and above their role of deliverers of the intervention.

Just over a third of reports of interventions (37%) stated that they were developed using a partnership. Such 'partnerships' varied in the level of involvement which was accorded to the target population or peer leaders. Some interventions involved minimal input from the target population, whilst in others target groups were given sole responsibility for developing the intervention (with guidance from professionals). For example, in some interventions, peer leaders were given the role of developing one of many components of an otherwise highly prescribed intervention curriculum developed by researchers (e.g. Sellers *et al.*, 1994 [included outcome evaluation]; Kirby *et al.*, 1997 [included outcome evaluation]). In others, particularly in peer counselling interventions, peer counsellors were able to decide on the most appropriate type of advice or support to give in a particular case (e.g. Russel and Skinkie, 1990 [excluded outcome evaluation]; Carr, 1998 [excluded process evaluation]). In some studies, the peer leaders set the aims of the intervention, decided on intervention types and activities and their own training needs (e.g. Fox *et al.*, 1993 [included process evaluation]; Stevensen and Lennie, 1992 [excluded process evaluation]; Kegeles *et al.*, 1996 [included outcome evaluation]).

Outcome evaluations were more likely than process evaluations to have evaluated interventions based on 'normative need' (n=101, 76% versus n=28, 36%). Outcome evaluations were also less likely to evaluate interventions developed in partnership with the target population (n=45, 34%) than process evaluations (n=46, 60%).

Applying exclusion criteria

As stated earlier, for the purposes of mapping the research on peer-delivered interventions in this review, all studies which described or evaluated a peer-delivered intervention within a primary prevention of

disease/ promotion of health context for young people aged 11 to 24 were included. The next stage of the review involved examining in more detail those studies which reported evaluations of interventions. Of the 271 interventions described in the 316 reports, 61 were not evaluated (see Appendix II for a list of these).

Table 10: Number and proportion of included and excluded evaluative studies and reasons for exclusion: All evaluative studies (N=210)

	Outcome evaluations (n=133)		Process evaluations (n=77)	
	N	%	N	%
Included	**49**	**37**	**15**	**19**
Excluded on 'scope' criteria	**41**	**31**	**39**	**51**
Not published in English	1	<1	2	3
Level of involvement of peer educators minimal	12	9	1	1
Peer-delivery through video, theatre or newsletters	3	2	0	0
Peer counselling/peer mediation	17	13	36	47
Focus of evaluation on training peer leaders	8	6	n/a	n/a
Excluded on 'methodological' criteria	**43**	**32**	**23**	**30**
Did not describe a formative, intermediate or summative evaluation	n/a	n/a	23	30
Did not use a prospective experimental design	31	23	n/a	n/a
Authors did not state equivalent control or comparison group	4	3	n/a	n/a
Authors did not describe reporting of pre and post intervention data	8	6	n/a	n/a

Applying the scope and methodological exclusion criteria discussed earlier to those studies (n=210) reporting evaluations of interventions resulted in the number of studies reviewed being significantly reduced. Table 10 shows the included and excluded outcome and process evaluations and the reasons for exclusion.

Forty nine of the 133 outcome evaluations and 15 of the 77 process evaluations met the methodological and scope inclusion criteria. A third of the outcome evaluations were excluded on the basis of their 'scope', in particular in terms of the minimal role of peer educators in the overall intervention (e.g. peer educators only delivered one small component of a much larger intervention) and the type of intervention (e.g. peer counselling). Over half the process evaluations were also excluded on scope grounds; in particular, a large proportion evaluated peer counselling interventions.

Around a third of both outcome and process evaluations were excluded on methodological criteria. The main reason for excluding outcome evaluations was that they were not prospective experimental studies and/or their authors did not describe the use of an equivalent control or comparison group.

Summary

A large number of reports discussing, describing or evaluating peer-delivered interventions for young people were located. Specialised registers were an important source in addition to electronic databases for finding reports, especially unpublished ones. The majority of studies located were evaluative studies. Few of these evaluations, however, incorporated both outcome and process evaluation.

Most of the peer-delivered interventions located for this review were implemented in North America, with a small number in the UK and only a small number in other countries. Compared to the UK, a greater proportion of studies from the USA were outcome evaluations.

The studies found described a wide range of 'types' of peer-delivered interventions. However, most involved peer educators providing information or developing skills within groups. Apart from 'peer-counselling' interventions, only a small number of peer-delivered health promotion interventions involved peer educators delivering an intervention on a one-to-one basis.

Although peer-delivered health promotion has targeted a wide range of health areas and has been implemented in several different settings, most of this work to date has focused on smoking, alcohol or other drug use and sexual health (both pregnancy prevention and the prevention of STDs). Most of it has been implemented within educational settings, has tended to be classroom-based and involve the provision of information or the development of skills (particularly

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skills to resist peer pressure). Peer-delivered interventions have been less likely to be conducted in the community or to use other intervention strategies such as the fostering of social support.

Most of the interventions used peer leaders of the same age as the target population. This suggests that it is widely assumed that parity of age establishes the boundary of one's peer group.

Several characteristics of peer-delivered health promotion interventions located for this review suggest that most interventions have been implemented using a 'top-down' process. When stated, interventions were more likely to be based on 'normative need' (the opinion of 'experts' as to what is needed) rather than 'felt' need (the views of the target population on what they need). Although nearly half of the interventions gave an indication that they were developed with some input from the target population or peer leaders, this was likely to be confined to one component of an otherwise highly prescribed (researcher or practitioner-led) intervention. There was a relationship between type of evaluation and use of 'top-down' procedures for planning and developing peer-delivered interventions: outcome evaluations were less likely to be based on 'felt need' and less likely to develop interventions in partnership with the target population.

RESULTS: The outcome evaluations

Of the 133 reports of separate outcome evaluations of peer-delivered health promotion interventions located for this review, 49 met the criteria for inclusion in the quality assessment and went on to be fully reviewed. Appendix III lists the excluded outcome evaluations.

Characteristics of peer-delivered health promotion evaluated in outcome evaluations

Tables 11 and 12 show the characteristics of peer-delivered health promotion evaluated in the outcome studies.

a) Health focus, intervention site and type

Table 11 shows the health focus, intervention site and intervention type. The majority of interventions focused on sexual health or smoking prevention, were conducted in secondary education sites and employed skill development (in particular skills to resist social pressures to engage in smoking, drinking, taking drugs, and sex).

Table 11: Health focus, intervention site and intervention type employed in peer-delivered health promotion: All included outcome evaluations (N=49)

	N	%
Health Focus		
Sexual health	19	39
Smoking only	18	37
Alcohol/drugs	8	16
Other	4	8
Total	49	100
Intervention site		
Secondary education	36	75
Tertiary education	9	18
Other	4	8
Total	49	100

Table 11: Health focus, intervention site and intervention type employed
in peer-delivered health promotion: All included outcome evaluations
(N=49) (cont'd)

Intervention type		
Provision of information	9	18
Skill development	38	78
Resisting social pressures	*24*	*49*
Negotiating safer sex	*6*	*12*
Life skills	*3*	*6*
Other	*5*	*11*
Outreach	2	4
Total	49	100

b) Characteristics of peer leaders

Table 12 shows the characteristics of the peer leaders and their
recruitment and training. In general, reporting of these characteristics
was poor. Although most studies reported on the age of the peer
leaders and whether or not they received training (76% and 86%
respectively), most (73%) did not say what sex the peer leaders were,
nearly half (45%) did not give any details of how the peer leaders were
recruited, and a third (37%) did not give any details of length of training.

Table 12: Characteristics of peer leaders, their recruitment and
training: All included outcome evaluations (N=49)

	N	%
Age of peer leaders		
Same age (not more than 1 year older)	22	45
Older	15	31
Not stated	12	24
Sex of peer leaders		
Male only	2	4
Female only	2	4
Mixed sex	9	18
Not stated	36	73
Recruitment		
Chosen by peers	13	26
Chosen by teachers/other adult	14	29
Not stated	22	45

Table 12: Characteristics of peer leaders, their recruitment and training: All included outcome evaluations (N=49) (cont'd)

Recruitment	N	%
Chosen by peers	13	26
Chosen by teachers/other adult	14	29
Not stated	22	45
Training		
Peer leaders trained	42	86
Peer leaders not trained	0	0
Not stated	7	14
Amount of training		
1 to 4 hours	6	12
5 to 8 hours	10	20
9 to 12 hours	4	8
13 to 16 hours	2	4
17 to 20 hours	4	8
21+	5	10
Not stated	18	37

Just under half of the interventions employed peer leaders of the same age or up to one year older; a third used older peer leaders. Most studies which provided this information used both male and female peer leaders. However, in the five outcome evaluations which gave the ratio of male to female peer leaders, there were more female peer leaders than male. Only 14% (n=7) of outcome evaluations gave any other characteristics of the peer leaders. Such other characteristics were generally with regard to ethnicity or the academic courses the peer leaders were studying.

In terms of the recruitment of peer leaders, almost equal proportions were chosen by their peers or by a teacher or other adult. Just over a third (37%, n=18) of outcome evaluations also stated the criteria used to select the peer leaders. In the case of school based peer-delivered interventions in which the peer leaders were chosen by their classmates, a typical example of selection criteria was that students were instructed to choose peers whom they "admired and respected" (e.g. Orpinas *et al.*, 1995; Severson *et al.*, 1991; Telch *et al.*, 1990) or peers "who they would most like to be like" (e.g. Perry *et al.*, 1989). Typical criteria for selecting peer leaders in school-based interventions

in which teachers or other adults (e.g. project staff) made the choice were "socially successful" students (e.g. Howard and McCabe, 1990), "leadership potential, willingness to make a commitment and presumed non-use of tobacco" (e.g. Wiist and Snider, 1991). Some criteria which teachers used recognised the need to select the most appropriate peer leaders for the target group (e.g. "Selected on the basis of the natural leadership within the school, but also tried to obtain a representation of student types" (Clarke *et al.*, 1986); "Special care was taken to select students who would appeal to the broadest range of students, including those at risk for unhealthy behaviours" (Botvin *et al.*, 1984). In other interventions in secondary education settings, peer leaders were already acting as peer counsellors within the schools' peer counselling service (e.g. Cohen *et al.*, 1989; Prince, 1995). Peer leaders delivering interventions implemented within tertiary education in the USA typically received course credit for becoming a peer leader (e.g. Elder *et al.*, 1994).

The majority of outcome evaluations reported that the peer leaders had been trained to deliver the intervention (86%). Of those that gave details about the training, the median number of hours of training received was eight, with a range between 1 and 80 hours. Most commonly, peer leaders received between 1 and 12 hours training.

Only 25% (n=12) of outcome evaluations provided information on who carried out the training: these included health promotion practitioners (Shulkin *et al.*, 1991; Walpole-Szabo and Sanagan, 1987; Young *et al.*, 1988); health professionals (Howard and McCabe, 1990); educationalists (e.g. educational psychologists) (Macri and Tsiantis, 1997-8; Mellanby *et al.*, 1995; Nagelberg, 1981); researchers (Perry *et al.*, 1993); counsellors (Cohen *et al.*, 1989; Orpinas *et al.*, 1995 and 'community elders' (Kegeles *et al.*, 1996).

Almost half (45%) of outcome evaluations reported on the type of training the peer leaders received. A common training framework, reported to have been used in 43% (n=21) of cases, included providing the peer leaders with a knowledge base in the health area of interest (e.g. knowledge about HIV transmission; sources of social influence for smoking) and with skills necessary to be able to transfer this knowledge to their peers (e.g. presentation skills, classroom management techniques, helping skills and leadership skills). Such skills were taught through experiential learning techniques such as role-plays, practice runs and the provision of feedback. Other outcome evaluations employed different types of training which included: attempts to ensure that the peer leaders followed the intervention protocol (Sanderson and Jemmott, 1996); allowing peer leaders to generate the material to be used in the intervention with opportunities to seek advice from adult specialists (Macri and Tsiantis, 1997-8; Smart and Bennett, 1976); familiarisation with the curriculum to be delivered plus a teachers' manual (Botvin and Eng, 1982); and providing basic information on smoking and how to lead a group discussion.

Development of peer-delivered health promotion in outcome evaluations

Tables 13 and 14 show how the peer-delivered interventions in the outcome evaluations were developed. Table 13 provides information on whether the interventions were based on a needs assessment and whether a partnership with the target population was used in developing the intervention. (This table repeats table 9 earlier which showed the same information for all 271 studies.)

Over two thirds (69%) of the outcome evaluations evaluated interventions initiated on the basis of expert opinion, mainly from the research community. For example several interventions to promote the use of condoms on a college campus in the USA were implemented in response to epidemiological surveys suggesting high STD rates amongst college students (Reeder *et al.*, 1997; Shulkin *et al.*, 1991; Sikkema *et al.*, 1995; Weisse *et al.*, 1995) whilst many of the psycho-social interventions aiming to prevent smoking were implemented in response to research suggesting the lack of effectiveness of 'traditional' approaches (e.g. fear arousal) to smoking prevention (e.g. Botvin and Eng, 1982; Macri and Tsiantis, 1997-8; Severson *et al.*, 1991). Some interventions, in addition to the expert opinion of the research community, were also based on the views of groups within the community. For example, an intervention to prevent alcohol abuse in Canadian high schools was introduced in response to the concerns of a parents' advisory council over increased use of alcohol by younger students (Walpole-Szabo and Sanagan, 1987).

Table 13: Number and proportion of peer-delivered health promotion interventions according to development strategy: All included outcome evaluations (N=49).

	N	%
Based on needs assessment		
Felt need	4	8%
Normative need	34	69%
Not stated	11	23%
Partnership		
Yes	21	45%
No	28	55%

Only four interventions evaluated in the outcome evaluations were based, at least in part, on 'felt' need. An intervention to increase the practice of safe sex in young gay men in the USA was based on the results of focus groups and interviews with this population (Kegeles *et*

al.,1996); another intervention to decrease sexual activity amongst 12 to 16 year olds in the UK followed from the results of a survey of the reasons why young people have sex (Mellanby *et al.*, 1995); Project Northland, an intervention which aimed to reduce or prevent the onset of alcohol use amongst 11 to 14 year olds in the USA, took forward the results of focus groups with young people to examine the need for, and acceptance of, creating alcohol-free activities for young people (Perry *et al.*, 1993); and the Minnesota Heart Health Program, an intervention which aimed at cardiovascular disease prevention, was based on the results of a needs assessment conducted with students and teachers to locate areas of perceived need for educational programmes (Perry *et al.*, 1989).

Another rationale for evaluating peer-delivered interventions was simply the need to test effectiveness. Thus, a study comparing the effectiveness of an anti-smoking intervention for 11-12 year old pupils in the USA delivered by peer leaders chosen by pupils, with the effectiveness of the same intervention delivered by peer leaders chosen by teachers, was justified on the basis that there had been no previous attempt within the research literature on peer-delivered health promotion to examine systematically the best method for choosing peer leaders (Wiist and Snider, 1991).

The second part of table 13 shows how many interventions were developed in 'partnership' with the target population. Almost half of the interventions evaluated inthis group of studies were developed, at least in part, in partnership with members of the target population. The use of partnerships varied across studies. For some, the role of the target population was confined to one component of the intervention - for example, a video used in a wider HIV prevention intervention was performed and written by local teenagers (Quirk *et al.*, 1993); and peer leaders designed the content of weekly messages about violence in the context of a wider violence prevention intervention developed by researchers (Orpinas *et al.*, 1995). In others, the target population and/or peer leaders designed and developed the content of all intervention activities in partnership with health promoters or researchers (Kegeles *et al.*, 1996; Macri and Tsiantis, 1997-8). The reporting of these partnerships was often not given in very much detail. The level of detail ranged from dedicated publications describing how the intervention was developed (e.g. Perry *et al.*, 1989) to one or two sentences. For example, in the outcome evaluation of an intervention to increase safer sex amongst young African American women, the role of the target population in the development of the intervention was described in one sentence in the report "The intervention was developed by the research team with several young adult African American women from the neighbourhood" (DiClemente and Wingood, 1995:1272).

Table 14 shows the range of different theoretical models/ concepts which were stated by authors to have informed the development of

peer-delivered interventions. Ten studies did not state the theoretical concept/model on which the intervention was based. The remaining 39 studies included 56 instances of authors stating which theories informed development.

Table 14: Mentions in outcome evaluations of theoretical model/ concepts used to develop interventions (N=56)

	N	%
Social learning theory	15	27
Credibility/communication	14	25
Social influence	12	21
Social norms	7	12
Social innoculation theory	4	7
Diffusion of innovations	2	4
Empowerment	2	4

The most commonly mentioned approach was social learning theory (27%). Peer leaders were considered to act as role models from which young people would be more likely to imitate healthy behaviours and learn the skills necessary to practice them (e.g. Abernathy *et al.*, 1992; Basen-Engquist, 1994; Reeder *et al.*, 1997; Cohen *et al.*, 1989). Some interventions used the concepts of 'credibility' and 'communication' to explain why peers were used to deliver the intervention (25%). Peers were said to be better able to communicate and increase the credibility of the intervention message, for example, through their shared culture and language (Mellanby *et al.*, 1995).

Other interventions framed the development of a peer-delivered intervention in terms of 'social influence', in particular 'peer influence' (18%). Within these, it was argued that since peers have been shown in research to have the biggest influence on health behaviour, their use in health promotion must be a promising strategy (e.g. Gibson *et al.*, 1998; Nagleberg, 1981; Rickert *et al.*, 1991). The concept of 'social norms' were also said to have informed development in a significant number of interventions (11 %). Authors highlighted the influence of peer leaders in changing the norms and values of peer groups surrounding health behaviours (e.g. Clark *et al.*, 1986; Hurd *et al.*, 1980; Moberg and Piper, 1990; Moberg and Piper, 1998; Orpinas *et al.*, 1995; Shulkin *et al.*, 1991).

Less commonly drawn on were diffusion of innovations theory (4%) and empowerment (4%). Two interventions were developed according to diffusion of innovations theory; in these, peer leaders were selected as 'opinion leaders' to diffuse information on safer sex through the social networks of the groups targeted by the intervention (Kauth *et al.*,

1993; Kegeles *et al.*, 1996). Two interventions explicitly used the concept of empowerment. Quirk *et al.* (1993) evaluated an HIV prevention intervention for inner city women in the USA and argued that use of peer leaders may empower the target group; "involving peer leaders in the development and delivery of the intervention helps the recipient of the intervention to feel more powerful and theoretically enhances the possibility of behaviour change" (p.22). Kegeles *et al.*(1996), in an evaluation of an HIV prevention intervention for young gay men in Southern California, used the concept of empowerment in relation to the peer leaders themselves. The authors argued that involving young gay men as peer leaders in the development and delivery of the intervention would serve to empower and mobilise the community.

Authors of some of the studies which did not state the theoretical basis for using peer leaders appealed to the argument that peer leaders had been shown to be effective in other research (see e.g. Jordheim, 1976; Kirby *et al.*, 1997). Others did not explicitly justify the use of peers as deliverers of the intervention at all (e.g. Sanderson and Jemmott, 1996; Sellers *et al.*, 1994; Vartiainen *et al.*, 1991).

Assessment of methodological quality of outcome evaluations

Table 15 shows the basic data from the methodological review of the outcome evaluations. Nearly all outcome evaluations discussed the impact of the intervention on all outcomes targeted by the intervention and clearly stated the aims of the intervention (91% and 87% respectively). Over half the outcome evaluations employed random allocation of control/comparison and intervention groups (59%) and nearly two-thirds described the intervention and evaluation design in enough detail to allow replication (63%). Just over half the outcome evaluations provided the numbers of individuals/groups recruited into the evaluation and provided post-intervention data for each group (both 55%). Only just over a third (37%) employed a control group which was equivalent on socio-demographic variables and baseline outcome measures, and only 30% of outcome evaluations reported attrition rates or pre-intervention data for all individuals as recruited into the study.

In Table 15 the minimum four quality criteria outcome evaluations must meet, to be judged methodologically 'sound', are shown in bold. Twelve of the 49 outcome evaluations met these criteria. The main reasons that outcome evaluations failed to be assessed as 'sound' were non-equivalent control groups (n=31, 63%) and the absence of pre-intervention data for all individuals as recruited into the study (n=34, 69%).

Table 15: Number and proportion of included outcome evaluations displaying different methodological qualities (N=49).

	N	%
Impact of intervention discussed for all outcomes	**45**	**91**
Aims clearly stated	43	87
Random allocation	29	59
Replicable intervention and evaluation design	31	63
Numbers recruited provided	27	55
Post intervention data provided for each group	**27**	**55**
Equivalent control group	**18**	**37**
Attrition rates provided for each group	15	30
Pre-intervention data provided for each group	**15**	**30**

Part of the reviewing process consisted of comparing the claims to effectiveness made by the authors of outcome evaluations with those derived from the review process, bearing in mind the need for methodological soundness as a base for establishing effectiveness. Table 16 shows the authors' assessments of the effect of interventions according to the reviewers' judgements of methodological quality. This table shows that most of the interventions were tested in outcome evaluations that had methodological problems. This means that authors' conclusions about effects were unreliable for 79% of the interventions claimed to be effective, 73% of the interventions claimed to be partly effective (i.e. effective for some outcomes/ some groups, ineffective for others), 67% of the interventions claimed to be ineffective, and for the single intervention claimed to be harmful.

Table 16: Authors' assessment of the effect of the intervention according to reviewers' judgement of methodological quality: All included outcome evaluations (N=49).

Authors' assessment of the effect of interventions	Reviewers' judgement on methodological quality of the outcome evaluation		
	Sound (n=12)	Not Sound (n=37)	Total (n=49)
Effective	4 (21%)	15 (79%)	19 (100%)
Partly effective (effective for some outcomes, ineffective for others)	7 (27%)	19 (73%)	26 (100%)
Ineffective	1 (33%)	2 (67%)	3 (100%)
Harmful	0	1 (100%)	1 (100%)

Table 17 shows that even for the methodologically 'sound' outcome evaluations (i.e. those from which potentially reliable conclusions can be drawn), the authors and reviewers did not necessarily agree on the impact of the intervention. Agreement between the authors and reviewers as to the effect of the intervention was achieved in 58% of cases. In 42% of cases, the authors and reviewers disagreed: the authors judged the intervention to be effective or partially effective and the reviewer judged it to be ineffective or unclear in its effect. The main reason for disagreement was a high attrition rate (i.e. one third or more) not adequately dealt with (for example no information on drop-outs provided post-intervention).

Table 17: Agreement/disagreement between the authors and reviewers on the conclusions about the effect of interventions: 'Sound' outcome evaluations (N=12).

Authors' versus reviewers' conclusions	N	%
Agreement	**7**	**58%**
Effective	1	8%
Partly effective	5	42%
Ineffective	1	8%
Disagreement	**5**	**42%**
Authors: effective/partly effective Reviewers: Ineffective/Unclear	5	42%

Table 18: Number and proportion of outcome evaluations according to the length of follow-up: All included outcome evaluations (N=49).

	N	%
< 1month	10	20
2 to 6 months	11	22
7 to 12 months	6	12
1 to 2 years	5	10
2 to 3 years	5	10
3 to 5 years	3	6
More than 5 years	5	10
Not stated/unclear	4	8

Many of the outcome evaluations also lacked long term follow-up. Table 18 shows length of follow-up. Over half of the outcome evaluations employed follow-up periods of less than a year, with most being less than six months. Of those follow-up intervals which were less than one month, half (n=5) occurred immediately after the

intervention. Ten per cent of outcome evaluations did, however, employ a long term follow up of more than five years.

Which interventions are effective ?

Twelve outcome evaluations were classified as 'sound' and therefore able to generate potentially reliable results about the effectiveness of peer-delivered health promotion. These evaluated interventions implemented in Australia (2), Greece (1), Finland (1), and the USA (8). Four of the interventions targeted young people aged over 16 and eight targeted young people under 16. Two interventions were implemented in a community site and the other ten were implemented in educational settings (either tertiary or secondary education). The health focus of the interventions was sexual health (prevention of STDs), smoking, asthma education, violence prevention and prevention of testicular cancer.

Table 19 shows the characteristics of the peer-delivered health promotion interventions in 'sound' outcome evaluations according to the reviewers' judgements of the effectiveness of the intervention. Judgements of effectiveness are broken down into: (i) effective for behavioural outcomes (interventions found to be effective for at least one behavioural outcome); (ii) effective for 'proxy' outcomes (no effect found for behavioural outcomes but effective for at least one other outcome, e.g. knowledge, attitude, intentions, self-efficacy); (iii) ineffective (evaluation did not demonstrate any positive effect of the intervention); and (iv) unclear (intervention effects were unclear, e.g. due to high attrition rate).

Table 19: Characteristics of the 'sound' outcome evaluations (N=12) according to reviewers' judgement of the effectiveness of interventions

	Effective for behavioural outcomes (n=7)	Effective for 'proxy' outcomes (n=3)	Ineffective (n=1)	Unclear (n=1)
Health focus				
Sexual health	2	2	0	0
Smoking	3	0	1	1
Asthma education	0	1	0	0
Violence prevention	1	0	0	0
Testicular cancer	1	0	0	0
Intervention site				
Secondary education	5	1	1	1

Table 19: Characteristics of the 'sound' outcome evaluations (N=12) according to reviewers' judgement of the effectiveness of interventions (cont'd)

	Effective for behavioural outcomes (n=7)	Effective for 'proxy' outcomes (n=3)	Ineffective (n=1)	Unclear (n=1)
Tertiary education	0	2	0	0
Community	2	0	0	0
Skill development	5	1	1	1
Opinion leader approach	1	1	0	0
Age of peers				
Same age	4	0	1	1
Older	3	1	0	0
Not stated	0	2	0	0
Recrutiment of peers				
Chosen by peers	2	0	1	0
Chosen by teacher/other adult	2	0	0	1
Not stated	4	2	0	0
Length of training				
3-6 hours	3	1	0	0
20 hours or more	1	1	0	1
Not stated	3	1	1	0
Need				
Felt need	1	0	0	0
Normative need	6	3	1	1
Partnership				
Yes	4	2	0	1
No	3	1	1	0

Seven outcome evaluations found interventions to be effective for at least one behavioural outcome (Armstrong *et al.*, 1990; Best *et al.*, 1996; DiClemente and Wingood, 1995; Elder *et al.*, 1994; Kegeles *et al.*, 1996; McAlister *et al.*, 1980; Orpinas *et al.*, 1995); three found interventions to be effective for 'proxy' outcomes (Basen-Engquist, 1994; Gibson *et al.*, 1998; Jordheim, 1976); one found an intervention to be ineffective (Vartiainen *et al.*, 1991) and in one the effects of the intervention were unclear (Macri and Tsiantis, 1997-8).

Table 19 reveals that there is no clear relationship between the characteristics of the interventions and effectiveness. For example, three interventions focused on smoking were found to be effective and two were found to be ineffective or unclear, and there were more or less the same number of effective interventions regardless of whether they were developed, at least in part, in partnership with young people.

Five of the sound outcome evaluations directly compared the effectiveness of peer leaders to teachers in delivering the same intervention. In two of these, the peer leaders were found to be more effective (Jordheim, 1976; Orpinas *et al.*, 1995) and in another two peer leaders were found to be no more or less effective than teachers (Armstrong *et al.*, 1990; Best *et al.*, 1996) . In one outcome evaluation, neither the peer leaders nor the teachers were shown to be effective (Vartiainen *et al.*, 1991).

The following section describes the twelve sound outcome evaluations in full, paying particular attention to the development of the intervention, the characteristics of the peer leaders and the results of any process evaluation. Details of these studies can also be found in Appendix VII.

RESULTS: Description of the 'sound' outcome evaluations

Interventions in school settings

Eight of the sound outcome evaluations evaluated peer-delivered health promotion in secondary school settings. Five aimed to prevent smoking, one focused on the prevention of testicular cancer, one focused on violence prevention and one aimed to increase awareness and knowledge of asthma and improve the quality of life for asthmatic students. Except for the study examining asthma education, all the interventions in school settings were primarily classroom-based interventions in which peer-leaders delivered an already developed curriculum using either formal didactic presentations, less formal teaching methods such as role-play and leading group discussions, or a combination of both.

Smoking prevention
Four of the five soundly evaluated interventions which targeted smoking all shared the same type of intervention: teaching skills to resist social pressures to smoke, based on social inoculation theory and social learning theory. Three of these were found to be effective for at least one behavioural outcome, one showed no effect and one was unclear in its effect.

McAlister *et al.* **(1980)** evaluated a peer-led smoking, alcohol and drug abuse prevention programme, 'Project CLASP', with middle class junior-high school students (aged 12-13 years) in California. The intervention aimed to prevent the use of tobacco, alcohol and marijuana. Although the outline of the intervention was designed by Stanford Heart Disease Prevention Program staff, it was developed as a joint effort between the university, the American Lung Association and school district staff and students. The authors explicitly report the use of a 'partnership' in the development of the intervention in that "students provided considerable input into the language and mode of delivery" (Perry *et al.*, 1980).

The intervention consisted of peer leaders teaching students skills to resist social pressures to start smoking. Peer leaders were eighteen mixed sex, older, non-smoking, high school students who were selected by a committee of students and staff on the basis of their communication skills and judged attractiveness to the kind of young people who are likely to start smoking ("adventurous and unconventional but not unhealthy in their behaviour").

Following six hours of training, teams of five to seven peer leaders led a series of structured classroom sessions which aimed to increase students' commitment not to start smoking and to innoculate them

psychologically against pressures to smoke. Strategies used to achieve this included identifying and practising resisting pressures to smoke, and a public commitment to not becoming a regular smoker. The intervention took place over two years beginning with intensive instruction sessions, follow-up instruction at one or two month intervals and a lecture on the health hazards of smoking. By the end of the eight grade each student should have participated in ten school hours of smoking prevention instruction.

The intervention was evaluated in two roughly matched, middle class junior high schools. The two schools were non-randomly assigned to receive the intervention or to serve as a control. The local Lung Association identified the school where the intervention was delivered as one in which administrators were seeking a solution to admitted problems of smoking, alcohol and drug abuse. The control school was chosen as a convenient and nearby demographic match where administrators were willing to allow the surveying and breath testing procedures. This school received an intensive course of health education (The School Health Curriculum Project or "Berkeley Project") but was not given special training in resisting pressures toward tobacco, alcohol and drug use.

The results showed that significantly fewer students in the intervention school reported smoking in the past week at three months' follow-up compared to the control group, and this difference was maintained at two years' follow-up. The authors conducted intensive interviews with some of the 11 and 12 year olds who participated in the intervention. These interviews indicated that the intervention may have influenced the entire 'social atmosphere' regarding smoking, with students reporting things like "hardly anybody smokes now" and "it's not cool to smoke any more". The authors argue that this shows that cigarette use is no longer viewed as an effective way of appearing 'tough' and 'cool' among the young people who received the peer-led intervention.

A possible confounder of these results is the way the schools were assigned to the intervention and control group. Although intervention and control groups were equivalent in terms of baseline smoking, parental smoking, peer and sibling smoking, and socio-economic status, the principal of the intervention school perceived there to be a smoking problem, whereas the control school principal believed there to be no problem, so a specific smoking intervention was not needed.

Elder *et al.* **(1994)** found similar results, over a longer follow-up period (three years) for another smoking prevention intervention based on teaching resistance skills, Project SHOUT (Students Helping Others Understand Tobacco), and evaluated with multi-ethnic young people aged 11-16 in San Diego, California. The intervention was implemented over three years from the seventh to the ninth grade. Specific intervention components included a review of the health and social consequences of tobacco use, reading celebrity endorsements of non-use, rehearsing methods of resisting peer pressure, practising

decision making, mobilising students as anti-tobacco activists (e.g. writing letters to tobacco companies describing students' opinions on youth tobacco use), public commitments to remain tobacco-free and learning ways positively to encourage parents and others to stop smoking. In the ninth grade, each participant was contacted individually by mail or phone call to deliver a tobacco use prevention message tailored to individual needs (participants who were smoking were mailed cessation advice and materials).

The intervention was delivered by pairs of trained college undergraduates who acted as 'peer leaders'. The authors argued that the college undergraduates, as older adolescents, would serve as positive role-models who would also be able to develop a better 'rapport' with younger adolescents. The authors took the view that using college undergraduates is more cost-effective, and peers from this age are likely to be more motivated than same age or slightly older peers. The peers were recruited from a variety of academic departments (e.g. psychology, family studies, physical education) within San Diego State University. All potential candidates were interviewed, by project staff, to assess their suitability (relevant work experience, smoking status and reasons for volunteering). Forty-two were selected (6 male and 36 female) with a mean age of 21.9 years. The peer leaders received course credit for taking part. They underwent 20 hours of training in effective teaching strategies, classroom management techniques and implementation of the SHOUT curriculum.

The intervention was evaluated with students from 23 self selecting schools in San Diego. These schools were divided according to a median split of school enrollment, matched on prevalence of tobacco use and then randomly assigned to a control (n=12) or an intervention (n=11) group.

Follow-up measures were taken at one, two and three years after the baseline measures were collected. The results revealed that the prevalence of tobacco use in the past month (validated using the 'bogus pipeline technique') in the intervention group was significantly lower than the control group (14.2% v 22.5%). This difference did not manifest itself until three years after the baseline measures were taken. Overall attrition at the 3 year follow-up was 27%. Authors report that attrition was similar across the control and intervention groups and that there were no significant differences between those who dropped out of the study and those who remained in the study on baseline or socio-demographic factors.

Although the authors also report positive effects of the intervention on refusal skills, the reviewer judged the intervention to be unclear in its effects on this outcome as pre-intervention data for this measure were not reported.

A concurrent process evaluation examined the accessibility of the intervention (in terms of participation rates) and the skills of the peer leaders. Attendance at the specific classes which taught refusal skills was considered to be high: 78% attended all 3 sessions, 13% attended 2, 7% attended 1 and only 2% did not attend any sessions. The skills of the peer leaders were assessed by observing the peer leaders on seven performance dimensions (e.g. being organised and ready for class, communicating well with students) and in terms of 'manageability' (i.e. ability to work within project management constraints e.g. being co-operative, ability to deal with an unexpected crisis). The performance and manageability scales were negatively correlated, such that those who were evaluated positively on class performance were rated more negatively on manageability. Predictors of good performance were outgoing, adventurous and analytical personality and age; predictors of manageability were wanting an easy class, grade point average (negatively correlated), likelihood of attending graduate school and outgoing personality. On the basis of these findings the authors make recommendations regarding the recruitment of peer leaders: efforts should be made to over-recruit volunteers and select those who will be 'good performers' instead of actively selecting easily manageable volunteers (and thus possibly eliminating good performers). Extensive efforts should be made to reduce the likelihood of management difficulties occurring during the intervention.

Use of undergraduate facilitators for delivering the intervention was judged by the authors in this study to be a factor influencing the success of the intervention. The authors report the students to have been "highly motivated, easily trained and managed and well received". However, they also note that delivering the intervention in a classroom environment was a challenge for the peer leaders, especially "in schools where students were difficult to control, were not very interested in the program or were reluctant to participate in some of the program activities" (Young *et al.*, 1990:466). Together with the participation rates, this suggests that the intervention may not have been acceptable to and/or appropriate for all students.

A slightly different pattern of results was found in an outcome evaluation examining the effectiveness of the third 'resistance skills' intervention, implemented in Australian schools. Compared to the previous two interventions, the peer leaders differed in this intervention in that they were the same age rather than older. **Armstrong *et al.* (1990)** directly compared the effectiveness of the same smoking prevention intervention led by same-age peer leaders (selected by their classmates) and teachers with Australian school students with a modal age of 12 years. The intervention aimed to increase knowledge of the effects of smoking and awareness of non-smoking, and to teach skills to resist social pressures to smoke. It was based on the 'social consequences' curriculum developed by the University of Minnesota (Arkin *et al.*, 1981). Intervention components included changing normative beliefs about smoking in young people (i.e. correcting

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students' overestimates of the number of young people their age who smoked), learning about the immediate physiological effects of smoking, practising refusal techniques for social pressure to smoke, preparation and discussion of arguments in support of non-smokers' rights, identifying advertising and family influences to smoke and a voluntary public commitment to non-smoking.

The intervention was evaluated by randomly assigning the year seven classes of 45 schools to one of three groups: control group; peer-led programme and teacher-led programme. The schools were stratified before randomisation by size of class and regional location to ensure as far as possible equal numbers and uniformity of socio-economic status across the three groups.

The results revealed that overall the intervention (either peer-led or teacher-led) was effective for some groups only as compared to the control group. This suggests that the *type* of intervention was important rather than the use of peer leaders. For females who were non-smokers at baseline, significantly fewer started smoking in both intervention groups as compared to the control group at both one- and two-year follow up. At seven years this effect was maintained. There was no effect of the intervention on those who already smoked at baseline. For males, at one-year follow-up there were significantly fewer smokers in the teacher-led group as compared to the peer-led group, suggesting that the peer-led programme was not effective for males. However, this difference had disappeared at seven years follow-up. This suggests that this type of intervention, teaching skills to resist social pressures to smoke, may only be effective for preventing smoking in young women who have not yet tried smoking.

Although attrition was very high in this evaluation at seven years follow-up (overall 63%), the authors do compare the characteristics of those who dropped out of the study to those who remained in it. Those who dropped out were more likely to be smokers at baseline and displayed more characteristics at baseline which would predict that they are more likely to become smokers in the future (e.g. parental and sibling smoking, expressing intentions to smoke in the future). Thus, the findings of this outcome evaluation may be restricted to only those young people who display characteristics which make it less likely that they will smoke in the future.

The fourth intervention to use a 'resistance skills' approach was judged to be ineffective by the reviewers. **Vartiainen** *et al.* **(1991)** evaluated the second North Karelia Youth Project, a community and school based intervention for non-communicable disease prevention in Finland. The peer leaders were the same age as the target population (seventh grade in school) and were selected by their classmates.

Intervention components delivered by peers included: discussing the functional meaning of smoking and drinking; training in skills to resist peer pressure to smoke; exploring the influence of advertising and the

family; and making a public commitment not to smoke. Other components of the intervention consisted of biology lessons; home economics classes in which low fat recipes were prepared; changes in school diet; health screening; a mass media campaign; and an information campaign for shopkeepers regarding the sale of cigarettes to under sixteens.

The North Karelia Youth Project was evaluated using four groups: a direct programme group in which intervention activities were carried out by project workers, teachers and trained peer leaders; a teacher-led programme group in which intervention activities were carried out mainly by teachers trained by project staff; an administrative programme group in which teachers were provided with written and audiovisual material but got no training or assistance from project staff, and a control group which received no intervention. Thus within the three intervention groups the basic intervention programme was the same; the difference was the extra resources given to the project at the school.

Schools to form the intervention and control groups were recruited from two counties: 24 from North Karelia and 16 from Kuopio. In North Karelia all 24 schools were randomly allocated to three groups; eight schools for direct intervention; eight for teachers trained to deliver the intervention and eight for the administrative intervention. Of the 36 schools in Kuopio 16 schools were randomly selected in two groups: eight schools for the administrative intervention and eight for the control group. Baseline and follow-up measures were taken on cross sectional samples of ninth grade students.

The results revealed that at one-year follow-up, there were 49% less smokers in the direct-programme (peer-led) schools and 30% less in the teacher-led schools as compared to the control schools. However at three- and four-years' follow-up, this effect had disappeared: daily smoking rates had increased at the same rate (22%) in both intervention and comparison groups.

The final peer-delivered smoking intervention was judged by the reviewers to be unclear in its effect. **Macri and Tsiantis (1997-8)** evaluated the effectiveness of a school-based intervention to prevent smoking in young people aged 12-13 years in Greece, delivered by same age peer leaders. The peer leaders received ten weeks of training from mental health professionals in which they developed audio-visual materials to use in the intervention (e.g. videos showing peer leaders acting out smoking related scenarios).

The intervention consisted of presenting and discussing the materials the peer leaders had developed in regularly scheduled classes that lasted for an hour. It was evaluated by randomly assigning two urban public schools to either an intervention or a control group. The schools were selected on the basis of convenience sampling. All the students attending the first and second grades of the experimental school

constituted the intervention group. The control group was made up of randomly selected sections from the first and second grades of the school assigned to the control condition.

At follow-up, 13 months after administration of the baseline survey, the authors claimed the intervention to be effective for smoking behaviour (the increase in smoking behaviour in the intervention group was significantly smaller than the control group), but ineffective for attitudes towards smoking and intentions to smoke in the future. Further, they observed that the intervention had a negative effect on knowledge (knowledge of the harmful effects of smoking significantly decreased in the intervention group). In addition, there was substantial attrition within the control group (17% of the participants dropped out of the intervention group and 40% dropped out of the control group). Since no data were presented on the characteristics of those who dropped out of the study and those who stayed in, the reviewers judged this intervention to be unclear in its effects.

The authors attribute the success of the intervention to the peer leaders who developed and delivered the intervention rather than to the content of the intervention itself (anti-smoking messages). They argue that the peer leaders ensured that "the messages delivered are developmentally appropriate . . they address the issues that are important to them in the contexts that are important to them" (Macri and Tsiantis, 1997-8:305). In addition, informal observations made by health professionals suggested a 'spill over' effect from the ten meetings in which peer leaders developed intervention materials and were trained. Peer leaders were frequently asked questions about what they were doing. The authors suggested that "these discussions created an atmosphere of interest and excitement about the project" (Macri and Tsiantis, 1997-8:305).

Testicular cancer education
Best *et al.* (1996), in the only sound peer-delivered intervention to focus on testicular cancer education, compared the relative effectiveness of different educational materials (e.g. slide/tape presentation, lecture and overheads) and different instructors (peers, health professionals) in teaching male high school students in the USA, aged 15-16 years (66% white, 34% black, 65% lower socio-economic group) about testicular cancer. The peer leaders were reported to be older male college students. However, no other information was reported on any other characteristics of the peer leaders or how they were selected.

The intervention consisted of a lecture based on a written curriculum about testicular cancer and testicular self-examination, a booklet summarising the lecture which included frequently asked questions and/ or a slide show and/or practice sessions on testicular self-examination using testicular models. These materials were pilot-tested with male students and teachers at a local private school.

There were a total of eight different intervention groups in the evaluation and one control group. Students from three high schools served as controls and students from a further five high schools formed the intervention groups. Students were randomly assigned to eight intervention groups. These varied according to four educational methods used to deliver the messages of the intervention (lecture only; slide show only; lecture and slide show; lecture, slide show and testicular examination practice) and according to whether the messages were delivered by an adult male volunteer (a physician or other health professional) or a male peer leader (college student).

The results of the evaluation demonstrated that overall, the intervention group showed an increase in knowledge and increased their practice of testicular cancer at six months' follow-up, and this difference was maintained at 18 months' follow-up. In terms of relative effectiveness between the intervention groups, the adult-led group had higher knowledge of testicular cancer symptoms but the peer-led group had higher knowledge about the steps involved in testicular self-examination. There were no differences in testicular self-examination between the peer and adult health educators. But the intervention group which had the chance to practice testicular self-examination had a higher frequency of testicular self-examination than the other intervention groups. Although the authors claimed that, overall, the intervention groups showed more positive attitudes towards testicular self-examination, the reviewers judged the effect of the intervention to be unclear for this outcome as no pre-intervention data were reported.

Violence prevention
Orpinas *et al.* **(1995)** evaluated a peer-delivered violence prevention programme with predominantly Hispanic (64%) mixed sex students from an urban American middle school. The intervention aimed to decrease impulsive and aggressive behaviour and to increase social competence in terms of anger management and conflict-resolution skills. Same age peer leaders (selected by their classmates) were seen as central to the intervention in terms of their role in modifying norms about violence and social support for non-violent behaviour.

The curriculum used in the intervention was based on a previously piloted curriculum, 'The Second Step'. The curriculum consisted of fifty minute lessons taught two to three times a week for six weeks and involved increasing knowledge about violence (e.g. factors associated with violence), and training students in empathy, anger management and interpersonal problem solving skills which were then applied in practice through role-playing different scenarios (e.g. dealing with peer pressure, resisting gang pressure).

Four middle schools took part in the evaluation. Participating schools did not differ from other schools in the district in state evaluations in the racial distribution of students or in average student achievement. In two schools, three sixth grade classes were assigned to one of three conditions: administration of the 'Second Step' curriculum by a

teacher; administration of the curriculum by a teacher with the assistance of trained peers; and a control group.

The evaluation found that there was no difference between the intervention and control group on violence prevention knowledge (e.g. alternatives to violence and peer pressure resistance), attitudes towards violence and alternatives to violence or self-efficacy for engaging in alternatives to violence, as measured immediately after the intervention or at three months' follow up. However, males in the peer-assisted group in one school showed a significant reduction (by 51%) in self-reported aggressive behaviours (e.g. teasing, pushing, name calling) compared to the control group, and males in the teacher-only group reduced their aggressive behaviour by 23%. There were no significant differences in reported aggression for female students.

Attrition in this study was low - 7.4% at immediate follow up and 13.6% at three months. Students who dropped out were significantly older and had a significantly higher aggression score than those who remained in the study. Thus the positive effects of the intervention demonstrated by this evaluation may not be generalisable to older students who were reporting higher aggression at baseline.

A concurrent process evaluation examined the acceptability and implementation of the intervention. After the immediate post-test, students were surveyed to elicit what they liked and disliked about the intervention and whether they had used any acquired skills in real-life situations. More girls than boys (76% versus 56%) positively evaluated 'The Second Step' curriculum (e.g. reported mostly positive comments and gave an example of a skill they had used). In one of the schools in which the results of the outcome evaluation showed the curriculum to be the least effective, one-third of the boys and one half of the girls did not know what 'The Second Step' was. Aggressive behaviour was higher among boys who had a negative evaluation of 'The Second Step'.

Comments from teachers were also elicited. These revealed a number of common implementation problems including: class periods that were too short for implementing lessons; lessons included too much information and were above the grade level of the students; and students were reluctant to talk about personal problems or feelings. The teachers reported that using peer leaders in the classroom did not affect the implementation of the curriculum. Teachers also emphasised the importance of commitment from the school principal, the district and from other teachers. From these results the authors conclude that "teachers' commitment to the prevention of violence may have a major effect in the success of the intervention" (Orpinas *et al.*, 1995: 370).

Again, taken together, the results of both the process and outcome evaluation suggest that, although the intervention was judged to be effective for at least one behavioural outcome for males only (self-

reported aggressive behaviour), it may not have been as acceptable to males as to females, particularly to males with high aggressive behaviour scores.

Asthma education

Gibson *et al.* **(1998)** evaluated a peer-led asthma education programme (the 'Triple A Program') for young women in two Australian high schools in a suburban area of Sydney. The programme aimed to improve asthma knowledge, attitudes and quality of life in students with asthma and to improve knowledge and attitudes concerning asthma amongst their peers. The volunteer peer leaders were a year older than the target population but were from the same school. A few of the peer leaders had asthma themselves, but this was not a selection criterion for becoming a peer leader.

This intervention was very different from the other school-based interventions. It was implemented as a three step process in which, firstly, a school asthma action committee was formed to oversee the development and implementation of the programme in the school. Peer leaders were then trained during three 90 minute workshops run by project staff, covering topics such as asthma management and skills in group leadership. Thirdly, the peer leaders formed pairs and conducted 45 minute health lessons with the students by means of group discussions, videos, games and problem solving sessions. Fourthly the participants of the peer-delivered intervention, year ten students, developed brief (three to five minutes) performances (e.g. songs, debates) which were presented at a half day event to students in year seven, school staff, parents, and invited community guests.

For the evaluation, two schools were either assigned to receive the asthma education programme or not. In the year prior to implementation of the intervention, teaching and ancillary staff of both schools received a three lesson programme dealing with the management of acute episodes of asthma in students at school. Both schools also received an asthma first aid kit, asthma education for school staff, and a student asthma record card. Schools were then assigned to the comparison school or to receive the 'Triple A Program' as a new intervention. The schools were located in the Western suburbs of Sydney, an area of high unemployment, with 90% of the population non-English speaking.

The results showed no differences in attitudes (e.g. tolerance towards asthmatics) between the intervention and control school and no differences in the quality of life of students with asthma (e.g. degree of limitation experienced in the past two weeks). There were, however, significant differences in asthma-related knowledge. The authors conclude overall: "This study demonstrates that peer-led asthma education is feasible in the high school setting and the Triple A program can be used to improve knowledge about asthma in adolescent female students and their peers. Peer-led education is well received by adolescents, and with further evaluation may be a useful

approach to improve the management of asthma in this age group"(Gibson *et al.*, 1998:71). Without a process evaluation, the reviewers judged it to be difficult to conclude anything other than that a peer-delivered asthma education programme was effective in increasing knowledge about asthma in female students.

Interventions in college settings

Two of the sound outcome evaluations examined the effectiveness of peer-delivered health promotion implemented in college settings. Both of these were judged to be effective for 'proxy' outcomes only.

Reviewers judged peer-leaders delivering either a skills based intervention or a lecture on HIV prevention to be effective in changing 'proxy' outcome measures on the basis of the outcome evaluation by **Basen-Engquist (1994)**. Basen-Engquist compared the relative effectiveness of a skill development intervention and a lecture on HIV prevention, both delivered by peer educators, for mixed sex, American college students. Both interventions aimed to increase HIV preventive behaviour. The skill development intervention involved three strategies for increasing self efficacy: mastery experiences, role-modelling and social persuasion, and was adapted from the Eroticising Safe Sex Workshop (Palacios and Schernoff, 1986). The workshop was a three-hour session in which small groups discussed safer sex strategies, role-played communicating about safer sex with a partner and learnt how to use a condom. Encouragement and feedback on all activities was given by the peer leaders. The HIV lecture contained the same information as in the skill development workshop but did not include the strategies for increasing self-efficacy.

Peer leaders received 20 hours of training on HIV, other STDs and the specific skills and knowledge required to teach the interventions. The authors do not provide any details on the characteristics of the peer educators or on how they were selected.

The intervention was evaluated with a sample of 209 students enrolled in a health education class. These students were given the option of participating in the study or writing a short paper to fulfill a course requirement: all students opted to participate in the study. The sample was predominantly white (82%) and heterosexual (98.3%), with an average age of 21.9 years. Students were randomly assigned to one of the two intervention groups or the control group (which received a lecture on family violence).

The evaluation found that, at two months' follow-up, the HIV lecture and the skill development workshop were equally effective in increasing 'proxy' outcome measures. The intervention was effective for students' self-efficacy in using condoms and intentions to use condoms in the future but ineffective for behavioural outcomes and there were no significant difference between the three groups in the frequency with

which they had discussed STDs with their sexual partners or had used condoms.

The other peer-delivered sexual health promotion intervention implemented in a college setting was evaluated by **Jordheim (1976)**, who compared the relative effectiveness of peer educators to health educators for educating urban community college students in New York about STDs. One hundred students were randomly selected from three health education classes and assigned to receive either a curriculum (developed by the author) on STDs taught by the peer leaders (recruited from a public health course in the same college) or their regular health educators. The peer-delivered group also involved small group discussion groups. The teacher-delivered group was taught about STDs using "the traditional classroom method" (Jordheim, 1976:286). This study does not give any further details on the content of the intervention or on the characteristics of the peer educators. Attrition rates were 4% for the intervention group and 6% for the control group. Time to follow-up was not explicitly stated.

Results showed that the peer-led group had a higher knowledge score and more positive attitudes towards taking a test for STDs at follow-up than the teacher-led group. However there were no differences between the groups for attitudes towards STD prevention and control and in intentions to practice STD preventative behaviours.

Interventions in community settings

Two of the sound outcome evaluations examined the effectiveness of peer-delivered sexual health promotion interventions implemented in community settings. Both of these targeted young people within specific communities and were judged to be effective for at least one behavioural outcome.

Kegeles *et al.* **(1996)** evaluated a peer-led community-based HIV prevention intervention for young gay men. Following the 'opinion leader' approach of Kelly *et al.* (1991) based on the theory of diffusion of innovations, the aim of the intervention was to mobilise and empower the young gay men's community to encourage and support each other about the need for safer sex. The use of peer leaders in this intervention is, therefore, very different to many other peer-delivered interventions: rather than using a small pool of peer leaders, as many young gay men as possible were used and each man who attended the project was considered to be a potential agent of change.

The peer leaders were central to the development, content and the delivery of this intervention. Four young gay men were employed part-time as Project Coordinators and a core group of 12-15 young gay men served as the decision-making body for the design, content and delivery of the intervention (e.g. they designed outreach materials, and made decisions about how to conduct outreach). In addition a team of

young gay men conducted outreach work in order to encourage safer sex and to recruit young gay men into the project.

The intervention consisted of several components: 'formal' and 'informal' peer outreach to diffuse the safer sex message and to recruit young gay men into the project; and small group work and a publicity campaign to provide a continual reminder of the norm for safer sex. 'Formal' peer outreach consisted of: peers going out to locations frequented by young gay men to encourage safer sex by distributing safer sex materials and inviting them to join the project and organising weekly events (e.g. small group discussions, video parties and picnics, hikes and bicycle rides). 'Informal' outreach consisted of young men communicating with their friends in casual conversations about the need for safer sex, distribution of safer sex materials and condoms, and invitations to join the project. The small group meetings involved 8-10 young gay men who discussed and rehearsed skills needed for practising safer sex.

Two cites in southern California were randomly assigned to the intervention or to a delayed intervention group. The evaluation recruited 191 young gay men from the intervention community and 109 in the control community. The sample was predominantly white (81%) and 86% identified themselves as homosexual, 14% as bisexual. They were aged from 18 to 29 years. The results showed that at 12 months after baseline there was a significant reduction in the proportion of men in the intervention community reporting unprotected anal intercourse in the past two months with men in general, with boyfriends and with secondary partners. There were no significant reductions in the control community. Men in the intervention community reported experiencing fewer problems resisting unsafe sex when aroused, enjoying unsafe sex less and increased sexual communication skills. However the intervention group did not differ from the control group in terms of their perception of the barriers to safer sex and social norms, or in the reported frequency of talking about safer sex with partners.

Attrition was a problem for the evaluation; 35% in the intervention and 19% in the control did not provide follow-up data. Comparisons between those who dropped out of the study and those who stayed in revealed only two significant differences: intervention community men who were lost to follow-up were less likely to have sex in public environments, and control community men lost to follow-up had significantly fewer sexual partners in the last two months. This may limit the generalisability of the above findings.

A concurrent process evaluation examined participation in various components of the intervention. High risk-taking men (defined as those who engaged in unprotected anal intercourse prior to the intervention) were less likely to attend some aspects of the intervention. Although most of this group had heard of the intervention and high proportions experienced formal outreach activities (e.g. were given safer sex

materials), they were less likely to have attended the small group sessions, to volunteer as a peer outreach worker or to be a member of the Core Group.

The results of the outcome evaluation and process evaluation suggest that although this type of intervention is effective in reducing unprotected anal sex in young gay men, it may not be accessible, acceptable and/or appropriate to high risk-taking men.

The second peer-delivered sexual health promotion intervention implemented in a community setting was evaluated by **DiClemete and Wingood (1995)**. The intervention was an HIV sexual risk reduction intervention for young African-American women living in urban communities in Northern California. The intervention aimed to develop HIV risk reduction skills and was delivered by two African-American peer health educators. It was developed by both the research team and with input from the target population, and was based on social cognitive theory, socio-structural theories surrounding the relationship between gender and power, and empirical data from focus groups exploring the psycho-social and cultural influences on sexual decision making in young adult African-American women.

The intervention group received five weekly two hour group sessions. Intervention components included emphasising gender and ethnic pride (e.g. positive attributes of being an African American woman, identification of African American women as role models), learning about HIV risk-reduction strategies, training in sexual assertiveness and communication (including how to manage risky sexual situations, such as a non-compliant partner), learning how to use a condom, fostering positive norms toward consistent condom use and developing cognitive coping skills. All exercises were modelled by the peer health educators and were then role-played by participants in several practice situations with the peer health educators providing corrective feedback.

The intervention was evaluated with a sample of 128 women, aged 18 to 29, recruited from a community in which 34% of households are below the poverty line. Women were recruited using street outreach and media advertisements. Women who agreed to take part were randomly assigned to one of three groups: (i) the skill development intervention, (ii) a one session educational intervention and (iii) a delayed intervention control group.

At three months' post test, compared to the delayed HIV education condition, participants in the skill development intervention demonstrated increased consistent condom use, greater sexual self control, greater sexual communication, greater sexual assertiveness and increased partner adoption of norms supporting consistent condom use. There were no differences in knowledge or condom use skills between the groups. Comparison of the HIV education group with

the delayed HIV education group revealed no significant differences.

There was a 9% attrition rate in the intervention group and a 38% attrition rate in the comparison group, but there were no significant differences between those who dropped out of the study and those who remained in the study. Although the evaluation design did not directly compare the effectiveness of peer-delivery as opposed to other providers, the authors explicitly stated that the peer educators seemed to contribute to the effectiveness of the intervention: "they are perceived as a credible source of information, communicate in a manner that is easily understood and serve as positive role models" (DiClemente and Wingood, 1995:1275).

RESULTS: The process evaluations

As noted earlier, the literature search resulted in 82 reports of 77 separate process evaluations of peer-delivered health promotion interventions. Of these, 39 were excluded on the basis of their 'scope', and 23 because they did not describe a 'formal' process evaluation, either summative, formative or intermediate. There were thus 15 included studies. These 15 studies actually evaluated a total of 16 interventions as one study reported on 2 separate interventions.

Classifying the process evaluations was not an easy task. There was a particular problem with one evaluation, which reported a pilot study for a randomised controlled trial of peer-delivered sex education (Charleston *et al.* 1996). This was, strictly, neither a full outcome nor a full process evaluation, since its aim was to test out the methodologies now being used in a large multi-centre trial. We have listed it as an excluded process evaluation; the complete list of these is given in Appendix IV.

The surviving process evaluations were separated into two categories according to the different focus of their evaluations:

(i) *Training peer leaders*
     Four of the studies evaluated the processes involved in training peer leaders only (Croll *et al.*, 1993; Fife Healthcare NHS Trust, 1996; Massey and Neidigh, 1990; and Schonbach, 1995). These studies did not go on to evaluate the actual intervention which the peer educators went on to deliver. Some, however, did describe the intervention that they would be delivering.

(ii) *Implementation of / views on the peer-delivered intervention*
     Eleven studies evaluated the processes involved in the actual implementation of the peer-delivered intervention to the target group and/or the views of the various participants/other stakeholders in the intervention (Chaiken, 1990; Frankham, 1993; Fox *et al.,* 1993; Guy and Banim, 1991; Peers *et al.*, 1993; Newman *et al.*, 1991; Orme and Starkey, 1999; Ozer *et al.*, 1997; Richie *et al.,* 1990; Strouse *et al.,* 1990; and Ward *et al.,* 1997)

Characteristics of peer delivered health promotion in the process evaluations

This section outlines the key characteristics of the 15 included process evaluations.

a) Country

Of the fifteen included process evaluations, six were carried out in the USA, eight in the UK and one in Germany.

b) Health focus, intervention site and type

As noted above, the 15 included studies actually evaluated 16 separate interventions. The report by Orme and Starkey (1999) reported the process evaluations for two different interventions focused on drug use.

Table 20 shows the health focus, intervention site and type found in the included process studies.

Table 20: Health focus, intervention site and intervention type employed in the process evaluations in peer-delivered health promotion and peer training programmes: All interventions from the included process evaluations (N=16)

	N	%
Health Focus		
Sexual health	9	56
Smoking only	1	6
Alcohol/drugs	5	32
Other	1	6
Total	16	100
Intervention site		
Secondary education	8	50
Tertiary education	5	31
Community	3	19
Total	16	100
Intervention type		
Provision of information only	9	56
Skill development	5	32
Outreach	1	6
Not stated	1	6
Total	16	100

Over half (56%) of the interventions related to sexual health (including prevention of STDs and pregnancy) and a third focused on drugs or alcohol (32%). One intervention focused on multiple health topics (Croll *et al.*, 1993). The majority of interventions took place within secondary education settings (50%). Provision of information was the most commonly used intervention strategy employed in the interventions,

although some had the explicit aim of delivering this information in interactive ways and aimed to facilitate discussion (e.g. Frankham, 1993; Guy and Banim, 1991).

A third of interventions were located in a framework which aimed to develop knowledge and skills. Some focused on developing skills which help to resist peer and social pressure to engage in unhealthy practices (e.g. Newman *et al.*, 1991), whilst others focused on developing skills to negotiate safer sex (e.g. Schonbach, 1995). One intervention took a broader approach to skill development and aimed to develop more general life skills (Chaiken, 1990). Only one intervention involved outreach in which young people passed on information about dugs to other young people in informal settings (Ward *et al.*, 1997). Although it was difficult to identify what types of intervention were delivered by peer leaders in those evaluations which focused on the issues surrounding the training of peer leaders (e.g. Fife Health NHS Trust, 1996), only one study did not describe the actual peer-delivered intervention in any way at all (Massey and Neidigh, 1990).

c) Characteristics, recruitment and training of peer educators

Table 21 shows the characteristics of the peer educators, recruitment strategies and whether the peer educators received training. Eleven out of the 16 interventions gave the age of the peer leaders as the same age or up to a year older. One study used peers that were up to three years older (Ozer *et al.*, 1997).

Thirteen studies used both male and female peer educators but in all cases there were more females than males recruited, no matter how similar or different the recruitment strategies were. More females stayed with the programmes than males. In all studies except Massey and Neidigh (1990), the attrition rates for males were high. Where the males did remain, they felt that they had been sensitised by the experience, that it helped them to communicate more appropriately and to understand the feelings of others (Fife Healthcare NHS Trust, 1996; Schonbach 1995). Authors of studies consistently reported that males found the training and talking about feelings difficult, especially in mixed groups.

The study by Massey and Neidigh (1990), which used male peer educators only, provided an interesting perspective. The males in this study were part of a student organisation which had a policy for controlled and sensible drinking. The study was initiated by the students because the organisation was not supporting the policy, and neither were the peer leaders who had the responsibility of ensuring it was carried out. A key issue raised was that those responsible for the programme were not modeling controlled drinking behaviours; they were in fact some of the most prolific drinkers, encouraging others into negative behaviors. Turner and Shepherd (1999) make the point that peer education and its associated dominant theory, social learning theory, assumes that peer educators are necessarily positive models from whom others can learn. This study clearly undermines this assumption.

Table 21: Characteristics of peer educators, recruitment strategies, training and intervention length: All interventions from the included process evaluations (N=16)

	N	%
Age of peer leaders		
Same age (not more than 1 year older)	11	69
Older	3	19
Not stated	2	12
Sex of peer leaders		
Male only	1	6
Female only	2	13
Mixed sex	13	81
Recruitment		
Chosen by peers	1	6
Chosen by teachers/other adult	5	31
Volunteers	4	25
Not stated	6	38
Training		
Peer leaders trained	11	69
Peer leaders not trained	2	12
Not stated	3	19

In terms of the recruitment of peer leaders, none of the interventions reported that the peer leaders were chosen by their peers. The majority of studies reported that the peer educators were simply interested 'volunteers' and therefore self selected (e.g. Fox *et al.*, 1993; Peers *et al.* 1993). In other studies very specific selection criteria were applied. For example, in the intervention described by Fife Healthcare NHS Trust (1996) peer educators were identified on the basis of their enthusiasm and commitment to the project and in the intervention evaluated by Croll *et al.* (1993) peer leaders were chosen on the basis of their previous experience in human service organisations and/or as showing characteristics such as 'warmth' and being 'genuine'.

The majority of studies (69%) reported that peer leaders had received training prior to the intervention. Some training courses were extensive and included residential weekends for training (e.g. Fife Healthcare NHS Trust; 1996 Orme and Starkey, 1999). Such residential training

was thought to be valuable for developing trust within groups of peer educators, discussing difficult issues, and understanding group dynamics. For example, Orme and Starkey (1999) included two residential weekends. These allowed the peer educators to try out teaching and learning strategies and develop intervention materials. Two studies reported a mixed success story in terms of residential training. Schonbach (1995) included two residential training periods and found difficulties with the first. The planning and activities were muddled and resulted in the peer educators feeling frustrated and angry. The second residential period was more successful. In the Fife Healthcare NHS Trust (1996) project, failure was due to poor and ineffective planning, confusion about purpose and one co-ordinator promoting a different agenda to the other two co-ordinators. However, the peer educators themselves found the residential training useful as it allowed them to get to know each other, and gave them time to deal with difficult issues. In both these studies, the male peer educators, although in the minority, found the residential training beneficial. One interviewee in the Schonbach study (1995:45) commented: "I've noticed that I can resist the urge to give a piece of advice much better". The Fife Healthcare NHS Trust project found that a major benefit of the residential trips was that many young people got the chance to try out new activities (for example, hillwalking, 'outdoor problem-solving') for the first time. The main aim of these activities was to develop trust and encourage creativity.

The training components and the aims and objectives were similar in all the studies. These did not differ according to whether the programme was adult-led or a partnership between adults and professionals. The peer training was intended to provide the peer-educators with the confidence to begin the process of peer education with their own peers (Fife Healthcare NHS Trust, 1996; Schonbach, 1995). The training components fell into the categories of: understanding the target group and their needs; teaching specific skills, for example related to classroom organisation and questioning techniques; and those skills relating to personal development, including assertiveness, self-confidence and problem-solving.

Development of peer-delivered health promotion in the process evaluations

Table 22 shows how the interventions evaluated in the process evaluations were developed. This table can be contrasted with Table 13 which shows the same information in relation to the interventions evaluated within the outcome evaluations.

A third of interventions were developed, at least in part, according to the 'felt need' of the target population. Three of these were developed according to the views of the peer leaders as representatives of the target population (Fox *et al.*, 1993; Massey and Neidigh, 1990; Schonbach, 1995). For example, Fox *et al.* (1993), in addition to peer leaders (young mothers) deciding on their own training needs, they

were also responsible for deciding on the content of the sexual health intervention they delivered to younger teenagers. Two process evaluations actually carried out more formal needs assessments with the actual target population (Frankham, 1993; Peers *et al.* 1993). For example, to inform the intervention evaluated by Frankham (1993), how young people talk to each other about sex was examined. However, the reporting of these needs assessments was not systematic and it was thus not clear how their results led to the intervention that was delivered.

Table 22: Peer-delivered health promotion interventions according to development strategy: All interventions from the included process evaluations (N=16)

	N	%
Based on needs assessment		
Felt need	5	31
Normative need	8	50
Not stated	3	19
Partnership		
Yes	11	69
No	3	19
Not stated	2	12

Two-thirds of the interventions were developed using 'partnerships' with young people. In all of these, the partnerships involved the peer leaders themselves rather than the wider target group. For some interventions, partnerships with young people and other stakeholders were central to the intervention and evaluation (Fife Healthcare NHS Trust, 1996; Massey and Neidigh; Peers *et al.*, 1993) whilst in others the peer leaders role as partners was restricted to having only some input into the content of the intervention (Chaiken, 1990; Frankham, 1993; Guy and Banim, 1991; Orme and Starkey, 1999; Ward *et al.*, 1997).

In terms of theoretical frameworks used to help inform the development of the intervention, all the studies show that researchers-practitioners were cognisant of the need for multiple approaches to, and theories for, the interventions they were planning, and all used positive health approaches. The most popular approaches were a preventive-educational/community models combined with a social influence or life skills curriculum, using social learning theory, and concepts of empowerment.

Social learning theory, which suggests that peer educators act as positive role models for their peers, and ideas surrounding the peer

leaders as being more credible sources of information were the dominant frameworks used to support the implementation of peer-delivered health promotion. However, in the evaluations which focused on the training of peer leaders, empowerment concepts were frequently used. Concepts of empowerment challenge the notion that young people are powerless and passive recipients of information or other interventions. The term 'empowerment' was used in two different ways in the process evaluations. Empowerment was said to occur through the training of peer educators by equipping them with the skills necessary to make informed decisions (e.g. Chaiken, 1990; Fife Healthcare NHS Trust, 1993) and/or through giving young people decision-making powers in collaboration with professionals (e.g Massey and Neidigh, 1990; Schonbach, 1995).

Quality assessment of included process evaluations

As discussed earlier, we decided to apply seven quality assessment criteria to the process evaluations. Table 23 shows the number of process evaluations displaying these quality criteria.

Most of the studies stated their aims and objectives clearly (73%), offered a clear description of context (67%) and included sufficient original data to mediate between evidence and interpretation (67%). Just under half demonstrated an explicit theoretical framework and/or literature review (47%), described the sample clearly (47%), and provided a clear description of methodology and how data was collected (47%). Only 20% of the process evaluations reported that the data was analysed by more than one researcher.

Table 23: Number of process evaluations displaying the different methodological quality criteria: All included process evaluations (N=15*)

	N	%
Explicit theoretical framework and/or literature review	7	47
Aims and objectives clearly stated	11	73
A clear description of context	10	67
A clear description of sample	7	47
A clear description of methodology and systematic data collection	7	47
Analysis of data by more than one researcher	3	20
Inclusion of sufficient original data to mediate between evidence and interpretation	10	67

*N does not add up to 15 or 100% as studies could show more than one quality criteria

In making an assessment about whether the process evaluation included a through literature review and/or an explicit theoretical framework, the reviewers looked primarily for clarity about the evidence for the stated problem/intervention. In other words, why was this intervention chosen rather than another? Ideally, the literature search needed to include an explanation of the health promotion approach to be used in the intervention and the value systems underpinning this (Goodstadt, 1999). The reviewers looked for the **cognitive map** which the researchers were using to guide the planning process and clarify the identified goals or targets for the intervention (Green and Kreuter, 1992; Tones, 1998; Zaslow and Takanishi 1993). This basic information should be easily accessible. As Goodstadt (1999) and Zaslow and Takanishi (1993) suggest, there should also be integrity between what is stated in the literature review, what is done, and how it is done. For example, if the researchers state that the intervention will use a **partnership approach** to **empower** young people, the reviewers would expect to find that the methodology of the intervention and its evaluation fitted this stated framework. Just under half of the process evaluations (n=7) met this quality criteria (Guy and Banim, 1991; Massey and Neidigh, 1990; Orme and Starkey, 1999; Ozer *et al.*, 1997; Peers *et al.*, 1993; Schonbach, 1995; Strouse *et al.*, 1990).

In terms of stating the aims and objectives of the evaluation clearly, although most of the included evaluations gave aims and objectives for the evaluation, these were not always explicit or very detailed. Only eleven process evaluations were deemed by the reviewers to have met this quality criterion (Chaiken, 1990; Croll *et al.*, 1993; Fox *et al.*, 1993; Massey and Neidigh, 1990; Newman *et al.*, 1991; Orme and Starkey, 1999; Ozer *et al.*, 1997; Richie *et al.*, 1990; Schonbach, 1995; Strouse *et al.*, 1990; Ward *et al.*, 1997).

In making an assessment about whether the process evaluations provided a clear description of context, the reviewers were looking for information about the target group, the setting, and the historical development of health promotion /prevention in that setting and with that defined target group. All studies did give a description of context but some studies gave very little detail. Only those studies (n=10) which gave a thorough account were deemed to meet this criterion (Chaiken, 1990; Fife Healthcare NHS Trust, 1996; Fox *et al.*, 1993; Frankham, 1993; Guy and Banim, 1991; Massey and Neidigh, 1990; Orme and Starkey, 1999; Ozer *et al.*, 1997; Peers *et al.*, 1993; Schonbach, 1995).

Describing the sample clearly was a criterion on which 8 of the 15 studies fell down. This poses a serious problem for the interpretation of the results of the process evaluations. If the characteristics of the sample are not clearly defined it is impossible to establish the parameters of the population for whom the results may be generalisable. For example, although all the studies use young people as their sample, lack of detail on their specific characteristics (e.g.

socio-demographics, academic status) makes it difficult to draw meaningful interpretations and conclusions from the results. Seven studies were deemed by the reviewers to have provided at least some clear detail on the sample used in the study (Chaiken, 1990; Fife Healthcare NHS Trust; Fox *et al.*, 1993; Ozer *et al.*, 1997; Peers *et al.*, 1993; Richie *et al.*, 1990; Ward *et al.*, 1997).

With respect to a description of methods used in the process studies, the reviewers were looking for a clear account of the methodology used in the evaluation. Process evaluations need to assess qualitatively how intervention targets were achieved, with whom and by what means. To do this the evaluation methodology needed to explain the methods used to monitor all aspects of the intervention. Again eight of the 15 studies fell down on this criterion. This also poses difficulties for the interpretation of the results of the process evaluations. If it is not clear how the methods used 'measured' or accessed, for example, young people's views on the acceptability of the intervention; it is also difficult for a reviewer to assess the extent to which the results are an 'artefact' of the particular methods used. For example, the use of quantitative fixed response categories (e.g. 'excellent', 'good') to 'measure' acceptability could not only introduce a positive response bias, but also ignores the complexities of young people's views which may be better accessed through interviews or focus groups. Seven of the 15 studies were deemed by the reviewers to have provided at least some clear detail on the methods used in the study (Chaiken, 1990; Croll *et al.*, 1993; Massey and Neidigh, 1990; Newman *et al.*, 1991; Ozer *et al.*, 1997; Schonbach, 1995; Ward *et al.*, 1997).

Rigorous qualitative research requires that two researchers (or more) check the data and results of a study to be sure that the results are as accurate as they can be and remain grounded in the data. Other researchers reading these results and conclusions should be able to draw similar conclusions. There were only three studies which explicitly stated they used more than one researcher in the analysis of data (Ozer *et al.,* 1997; Schonbach, 1995; Strouse *et al.*, 1990). In other cases, it was either clear that only one researcher had been involved in the data analysis, or it was not possible to tell from the text how many researchers were involved.

For the final quality criterion, inclusion of sufficient original evidence to mediate between evidence and interpretation, the reviewers looked for the inclusion of data tables for each stage of the evaluation, for direct quotations supporting the conclusions arrived at from participants, stakeholders, or other relevant people; or any other appropriately explicit ways of presenting the data. Ten studies were deemed to meet this criterion (Chaiken, 1990; Fife Healthcare NHS Trust, 1996; Fox *et al.*, 1993; Guy and Banim, 1991; Massey and Neidigh 1990; Newman *et al.*, 1991; Ozer *et al.*, 1997; Richie *et al.*, 1990; Schonbach, 1995; Ward *et al.*, 1997).

It is possible that publication restrictions may have made it difficult to include sufficient data to allow readers to be confident that the

researchers' conclusions were reliable; thus, in some cases it may be necessary to contact the authors if reviewers are to make a fair assessment. The studies which were classed as 'grey' literature tended to have more original transcripts and direct quotations than the published studies, but with a less clear presentation.

Which processes were evaluated?

Table 24 shows the key issues addressed in the process evaluations. A total of eight main issues were addressed by the process evaluations. Some studies examined more than one issue. In all the 15 process evaluations examined a total of 39 issues.

Table 24: Issues addressed in the process evaluations (N=39)

	N	%
Acceptability of the intervention	10	25
Factors influencing implementation of the intervention	9	23
Training of peer leaders	7	18
Personal development of peer leaders	5	13
Recruitment of peer leaders	5	13
Accessibility of the intervention	3	8
Working in partnership with young people	3	8
Quality of peer leader delivery	2	5

The most common processes evaluated were the acceptability of the intervention (25%), factors influencing the implementation of the intervention (23%) and the training of peer leaders (18%). Some of the process evaluations which focused on the training of peer leaders also examined the peer leader's perceived personal development (13%). Less commonly evaluated processes were the accessibility of the intervention (8%); the barriers and facilitators to working in partnership with young people (8%); and the quality of the peer leaders in delivering the intervention (5%).

Although the process studies evaluated a disparate set of interventions in terms of, for example, health topic, intervention setting and target population, and that there was inconsistency in what was monitored/evaluated across the process evaluations, common issues did arise. The following section of the report highlights some of these common issues. As noted earlier, some of the main methodological problems encountered in the process evaluations were to do with lack of detail on methodology and samples used in the evaluation. It is therefore difficult to determine to what extent these issues are

generalisable beyond the specific context of the process evaluations included in this review or whether the findings are limited to the particular methodology used in these studies.

a) Acceptability of peer-delivered health promotion

Ten process evaluations examined the acceptability of the peer-delivered intervention by examining peer leader's views and/or the wider target group's views (Chaiken, 1990; Fox *et al.*, 1993; Frankham, 1993; Guy and Banim, 1991; Newman *et al.*, 1991; Orme and Starkey, 1999; Peers *et al.*, 1993; Richie *et al.*, 1990; Schonbach, 1995; Strouse *et al.*, 1990). These views were examined using fixed response items on a self-completed questionnaire (e.g. Chaiken, 1990; Richie *et al.*, 1990) or by conducting interviews or focus groups (e.g. Fox *et al.*, 1993; Frankham, 1993). In general, many positive reactions to the peer-delivered interventions were documented. Quantitative ratings showed that the majority of the target group rated the intervention highly, for example, as 'good' or 'excellent' (Chaiken, 1990; Orme and Starkey, 1999; Richie *et al.*, 1990; Schonbach, 1995). Peers *et al.* (1993) found that safer sex materials produced by peer educators were consistently rated by young people as more persuasive and relevant to their needs than other sources of information. Common positive reactions from qualitative data included: expressing a preference to peer-led sessions in comparison to previous teacher-delivered efforts; being able to relate well to the peer leaders; perceiving the peer leaders as credible sources of information; feeling relaxed in the sessions; describing the sessions as 'fun'; appreciating that peer leaders did not lecture or act as 'if they knew it all'; and feeling that the peer educators understood the problems young people face better (Fox *et al.*, 1993; Frankham, 1993; Guy and Banim, 1991; Orme and Starkey, 1999).

It is worth noting that only a few of these process evaluations documented negative reactions to peer-delivered health promotion. Of those that did, negative reactions included: feeling uncomfortable with shy or nervous peer leaders (Fox *et al.*, 1993); from a male perspective, it was considered that there was too much emphasis on feelings (Schonbach, 1995); and dissatisfaction with how peer leaders dealt with particularly emotive topics such as abortion (Fox *et al.*, 1993; Strouse *et al.*, 1990).

b) Factors influencing the implementation of the intervention

Nine studies examined factors influencing the implementation of peer-delivered health promotion (Chaiken, 1990; Fife Healthcare NHS Trust; Fox *et al.*, 1993; Frankham, 1993; Massey and Neidigh, 1990; Newman *et al.*, 1991; Orme and Starkey, 1999; Peers *et al.*, 1993; Ward *et al.*, 1997). The main issue to arise from these process evaluations was that the organisational context in which the intervention is implemented can have a significant impact on the functioning of peer-delivered

health promotion. A common problem identified was the conflict between the 'philosophy' of peer education as a non-traditional educational strategy implemented in more traditional school settings (Frankham, 1993; Newman *et al.*, 1991; Orme and Starkey, 1999; Ward *et al.*, 1997). Particular problems arising from this conflict included peer leaders being seen as 'teachers' and teachers undermining peer leaders' control over the content and/or organisation of their sessions

c) Working in partnership with young people

The conflicts raised above show similarities with the results of the process evaluations which examined working in partnership with young people. Three process evaluations examined this (Fife Healthcare NHS Trust, 1996; Massey and Neidigh, 1990; Peers *et al.*, 1993). The Fife Healthcare NHS Trust evaluation concluded that there are major problems in supporting the co-ordinators of programmes as well as the peer-educators. The Fife project had a problem with a co-ordinator who worked in an equal partnership with the peer educators. She expected them to develop and they did, but others in the project could not cope with the personal development of the peer educators as they began to have their own ideas, needs and wants. This caused confusion all round with much professional jealousy impeding further development. The evaluation by Peers *et al.* (1993) offered a similar perspective. They found working in equal partnerships with young people to be challenging. In particular, such partnerships were not always felt to lead to the best use of resources and working partnerships had to be re-assessed in order to provide the necessary organisation, discipline and control while ensuring the peer educators felt a sense of ownership over the project.

This problem is documented in the literature on student-centred learning, community development and participative approaches (Weston, 1986). However much they believe in equity and partnership, professionals tend to seek to re-take control when things do not go as they plan. As the Fife Healthcare NHS Trust (1996) evaluation comments "Although the project was underpinned by a strong philosophy of peer educator involvement, some issues about peer educator autonomy did arise. In particular, some peer educators were keen on acting as student counsellors in a buddying scheme. There were also plans for a trip abroad to liaise with another peer education project. To some extent this is inevitable in a project which encourages young people to take the initiative, yet is still bound by the constraints of the school or college environments. The issues were resolved and the co-ordinator managed to turn resolution of the difficulties into a learning experience" (Fife Healthcare NHS Trust, 1996:43).

Massey and Neidigh (1990) illustrate how autonomy can be shifted back onto young people. In their evaluation of the functioning of a peer-based alcohol project in a university setting, the power differential

between peer educators and professionals was realigned by taking a step back to evaluate the problems. Following this, explicit decision-making procedures were set out. Although initially the peer educators needed explicit support for making decisions, They gradually adapted to their position of control and responsibility.

d) Training of peer leaders

Seven of the process evaluations examined the view of peer leaders on the adequacy of the training they were given to deliver health promotion to others (Fife Healthcare NHS Trust, 1996; Fox *et al.*, 1993; Guy and Banim, 1991; Orme and Starkey, 1999; Richie *et al.*, 1990; Schonbach, 1995; Ward *et al.*, 1997). In general, peer leader comments were positive. For example, Schonbach (1995) reports that the peer leaders valued the non-hierarchical approach of the training and Richie *et al.* (1990) found that the majority of peer educators rated their training as 'good' or 'very good'. However peer leaders also expressed some negative views about their training which highlight the importance of ongoing support and training for peer educators. For example Orme and Starkey (1999) report that 56% of peer educators viewed their training as not sufficiently adequate to enable them to educate others and many studies found that peer leaders would have liked more ongoing support. In addition many of the process evaluations reported that the peer educators found some difficulty in classroom management (e.g. Frankham, 1993; Ozer *et al.*, 1997; Schonbach, 1995). Schonbach (1995) details possible reasons for why this was so: lack of time for supporters, lack of real commitment to the project, teachers and others may not fully understand the project or peer education, lack of overall planning, time and resources. Guy and Banim (1991) also illustrate the importance of further training once the peer educators have delivered their initial sessions to other young people. In their study, it was only after several sessions that the peer educators became competent and confident in their role. The importance of on-going support is highlighted in other process evaluations which did not directly examine peer leader views on their training. For example, the evaluation by Frankham (1993) showed that peer leaders were not always prepared to deal with informal requests for information outside of their formal sessions.

e) Personal development of peer leaders

Five of the process evaluations examined the views of the peer leaders on the perceived impact on their personal development of the training that they received to become a peer leader (Fife Healthcare NHS Trust, 1996; Fox *et al.*, 1993; Massey and Neidigh, 1990; Orme and Starkey, 1999; Schonbach, 1995). There was general agreement among peer educators that the training gave them the specific knowledge and skills they needed to implement the intervention as well as providing them with an opportunity for personal development such as improved confidence, maturity and independence; enhanced ability to discuss

problems, emotions and sensitive issues; sense of empowerment; greater trust in teachers; ability to network; and skills in facilitating groups.

For example, Schonbach (1995) gives the following examples of quotes from peer educators: "...this education gave me a lot personally as well, because there was a lot I didn't know myself either. After our meetings we were always completely drained and knackered, but knackered in a positive way. We were exhausted, but we knew we had achieved something";"I learnt to feel secure in communicating, to recognise my feelings and those of others, and to talk about them with other people in the same way as I do with my best friends" (Schonbach, 1995:59). Fox *et al.* (1993) reported that the training that young mothers undertook to enable them to deliver a sexual health intervention provided a great deal of scope for personal development: "The project provided them with an interest, 'something to do', 'something to talk about', additional status and new self-confidence. It also gave them a sense of possible future directions" (Fox *et al.*, 1993:34). The training offered to peer educators in the intervention evaluated by Fife Healthcare NHS Trust (1996) led to some of the peer leaders expressing the view that the intervention had changed their own behaviour:"...some of the peer-educators, by their own admission, changed their behaviour as a result of taking part in the project - peer education had given them a more in depth understanding of the things they already knew or had heard about" (Fife Healthcare NHS Trust, 1996:3).

Caution needs to be exercised in the interpretation of the results about the impact of peer leader training on young people. Although the views of the evaluators and the peer educators themselves on the impact of the training highlight the potential effectiveness of training young people to become peer leaders, the design of the process evaluations did not make it possible to judge whether or not these effects did actually occur.

Since there seem to be *potential* benefits for young people as a result of receiving training to become peer educators and the experience of being a peer educator, it could be argued that the primary aim of peer education could be focused on trying to bring about positive development within those trained to become peer educators rather than on promoting the health of a wider target group. Indeed this did seem to be the only aim in three of the included process evaluations (Chaiken, 1990; Fife Healthcare Trust, 1996; Massey and Neidigh, 1990). However, this raises the issue of cost-effectiveness. In the majority of cases, young people underwent intensive training to become peer leaders and required much ongoing support. If the primary aim of peer education shifts to focus on such a small number of people then it would become difficult to justify the cost of such an intervention.

f) Accessibility of peer-delivered health promotion

There were limited data on the accessibility of peer-delivered health promotion to young people from the included process evaluations. Only four process evaluations explicitly examined the accessibility of the peer-delivered health promotion to the target group (Frankham, 1993; Peers *et al.*, 1993; Richie *et al.*, 1991; Ward *et al.*, 1997) making it difficult to identify any common patterns. Peers et al. (1993) simply reported that 40% of the young people in their survey of the target community were aware of products that the peer educators had produced, whilst Richie et al. (1991) reported that peer education was least accessible to the engineering faculty of the university in which a peer delivered HIV prevention intervention had been implemented.

One interesting finding was found with respect to the accessibility of informal peer education. Frankham (1993) found that, on an informal basis, peer leaders only felt comfortable giving information and/or advice to close friends and even with close friends, some peer leaders were unsure about whether there advice would be seen as 'interfering'. Similarly, Ward et al. (1997), in their evaluation of informal peer education about drugs within the community, only two percent of the contacts made were with young people unknown to the peer educators. As Frankham (1993) notes, if the success of peer education rests on the assumption of informal education continuing outside of the parameters of the intervention, then much more work needs to be done to work out how peer education can build upon already existing mechanisms for the exchange of information between peers.

g) Recruitment of peer leaders

Although just under two thirds of the process evaluations stated how the peer leaders were recruited (see page 74, Table 21), only five studies actually collected any data which could be used to evaluate their recruitment strategies in some way (Chaiken, 1990; Fife Healthcare NHS Trust, 1996; Fox *et al.*, 1993; Massey and Neidigh, 1990; Strouse *et al.*, 1990).

All these studies provided data regarding the demographic profile of the peer educators. A consistent finding in this respect was that peer educators were more likely to be female, and there was great difficulty in recruiting and retaining male peer educators. Although three process evaluations showed some success in recruiting young people considered to be particularly 'at risk' to be peer educators (Chaiken, 1990; Fox *et al.*, 1993; Massey and Neidigh, 1990), other studies recruited peer leaders who could be considered to be 'high achievers' (e.g. Fife Healthcare NHS Trust, 1996; Strouse *et al.*, 1990). This raises serious questions about how accessible peer-delivered health promotion is likely to be to if the young people recruited to become peer leaders only represent a particular sub-group.

As recruiting and retaining young people as peer educators is fundamental, it was disappointing that none of the included process evaluations paid sufficient attention to it, beyond reporting the strategies that were used to recruit peer educators and their demographic profile.

h) Qualities of peer leaders

Again there were limited data on the qualities of peer leaders. Only two process evaluations examined this (Croll *et al.*, 1993; Ozer *et al.*, 1997). Croll *et al.* (1993) found that peer educators are capable of achieving high standards in delivering a range of health-related interventions. Ozer *et al.* (1997) found that highly individuated and less shy (but nor more sociable) individuals were more positively regarded by the target group in a school based sexual health intervention. This finding was irrespective of perceived similarity of the peer leaders to the target group (in terms of gender and ethnic group).

Summary

The most common focus for the process evaluations was sexual health, and most of these studies evaluated interventions implemented in educational settings. Compared to the outcome evaluations, the process evaluations were less likely to employ skill development as an intervention strategy. More of the process than the outcome evaluations used peers close in age to the target population. Process evaluations were more likely to be based on felt need and to describe interventions developed in partnership with young people.

The main issues examined by the process evaluations were acceptability of the intervention, factors influencing the implementation of the intervention, the training of peer leaders and working in partnership with young people. Commons findings in relation to these issues emerged from the process evaluations. In terms of acceptability, most young people expressed positive views on peer-delivered health promotion. Negative views were rarely documented in the process evaluations. In terms of implementation issues, conflict between the philosophy of peer education and the school environment was identified as a barrier, and such organisational contexts also made working in partnership with young people challenging. In terms of training, a main problem identified was the importance of ongoing support for peer educators.

The quality assessment revealed that the majority of studies had clearly stated aims and objectives, a clear description of context and included sufficient original data to mediate between evidence and interpretation. Particular methodological problems concerned a lack of a clear description of the sample and methodology used in the study, a lack of an explicit theoretical framework and/or literature review for the intervention and use of only one researcher to analyse data. Only two

process evaluations met all seven of the quality assessment criteria.

The results of this systematic assessment illustrate the extent to which researchers are falling short of desirable standards in making explicit and systematic the methods used in process evaluations of health promotion interventions in the area of peer-delivered initiatives. In many cases, the development of the intervention is still being seen as separate from the evaluation planning phase in a way that is inappropriate. Some evaluations do not go far enough; there is no evaluation with the target group, and no indicators or criteria set for monitoring progress, reach, impact or cost assessment. Methodological rigour is still a problem in the planning and delivery of interventions and in the presentation of reports. Data collection and analysis for the most part was poorly described and results presented from ill-defined samples.

RESULTS: Description of the included process evaluations

This section describes the 15 included process studies in full. As these 15 studies evaluated 16 separate interventions, there are a total of 16 descriptions. Orme and Starkey (1999) evaluated two separate interventions so this study appears twice in the list. To ensure a framework of quality control, this section should be read in conjunction with the methodological qualities each process evaluation met outlined above. Within the descriptions, attention is drawn to the possible methodological problems of the study.

Interventions delivered in school settings

There were seven interventions delivered in school settings evaluated in the process studies. Two of these focused on processes involved in training the peer leaders only and these are reported in a later section. Of the remaining six studies, four focused on sexual health, one on smoking and one on drug use.

Fox *et al.* (1993) evaluated a peer-delivered intervention which aimed to provide young people in Norwich, in the UK, with insight into issues connected with early parenthood; to provide support and training to the peer leaders (young mothers aged 17 to 26) and to enable these young women to acquire a range of communication skills, self-confidence and self-worth. The peer leaders delivered sessions covering the realities of being a young mother (e.g. the cost of being a single parent) and information on contraception in youth clubs and schools, using presentations, discussion, quizzes and question-and-answer sessions. The project grew out of discussions with young mothers who were keen to prevent other young people from finding themselves in a similar situation. In collaboration with youth and community workers, the young mothers set the aims of the intervention and developed the content of the intervention.

The process evaluation aimed to produce a narrative account of the project and its experience and to evaluate the impact of the training experience on young mothers and the impact of the intervention on young people. It examined the acceptability of the intervention to the target population through questionnaires administered to all the young people (aged 13 to 17 years) attending the sessions and the views of the peer educators on the implementation of the intervention and the quality of the training that they received through interviews.
The peer educators generally had positive views on their training: they felt they had learned a lot and gained new skills and confidence although some felt the training had been 'rushed'. Similarly, they had mostly positive views on how they implemented the intervention: they found the sessions relaxed and easy and found the support of the community worker and peer educator partner reassuring. Overall the

evaluators gained the impression that the young mothers were extremely enthusiastic and committed to the project: "The project provided them with an interest, 'something to do', 'something to talk about', additional status and new self confidence. It also gave them a sense of possible future directions" (Fox *et al.*, 1993:34).

In terms of acceptability of the intervention to the target population, the young people offered many positive comments about the peer-delivered sessions: there was a feeling of being able to 'relate' to the young mothers, and the intervention felt very 'social' (e.g. they felt that the content of the intervention fitted well with discussions that they would have amongst themselves anyway). Negative themes included a feeling that some of the peer educators were shy or nervous, conflict between the peer educators, and a lack of other possible options presented for dealing with an accidental pregnancy.

Overall the authors concluded, in terms of implementation, that extended sessions in the intervention were needed, older adults (as long as they were not teachers) did not affect the delivery of the intervention, the intervention should narrow its focus to one topic (e.g. the realities of being a young parent) and that the intervention should be incorporated into a wider programme of sex education. In addition, they question whether school culture can accommodate peer education and suggest it may be more suited to youth club settings.

This process evaluation was judged to have met four of the seven quality criteria. Particular problems were judged to be the lack of an explicit theoretical framework and/or literature review for the intervention and no detailed description of the methodology used in the evaluation. However, this study was judged to be particularly useful by the reviewers as it provides a rich description of the context in which the intervention was carried out and elicits data from both the peer leaders and the recipients of the intervention.

Schonbach (1995) evaluated a sexual health intervention implemented in secondary school in Germany, which aimed to train a group of young people to educate their peers on sexuality, love, partnership, pregnancy prevention and STDs through one off-class sessions using interactive teaching methods. Principles of 'empowerment' informed this project: the young people themselves initiated the project, due to a lack of information on sexual health within their school. The peer educators established the aims of the intervention and had an equal role in the development of the intervention and they presented their services to pupils, teachers and parents. Education sessions were only implemented if pupils within the school requested them.

The process evaluation examined the acceptability of the intervention, processes relating to its implementation and the training the peer educators received. Data were collected from the pupils who received

the intervention (100 pupils aged between 13 and 18) and all the peer educators in the form of questionnaires and interviews.

In terms of acceptability, questionnaire data revealed that the majority of pupils rated the intervention as 'good' or 'excellent' with girls and older pupils rating it more positively. Positive comments from the pupils revealed that they had been encouraged to talk about sexual health issues through peer education, while negative comments revealed that for some there was too much emphasis on factual information and for others there was too much emphasis on 'feelings'.

The peer educators' views on the implementation of the intervention revealed that in general they felt their sessions had been positively received but they had difficulty dealing with some situations arising in the classroom (e.g. how to get everyone to participate), and female-only sessions went better than male-only sessions. Views on the training revealed that a non-traditional relationship between the trainer and peer educator contributed to eagerness to learn and motivation. The peer educators felt themselves to be more self-confident and open.

Overall, the authors concluded that the peer education project demonstrated all the principles of 'good practice' in health promotion, including empowerment and participation. More specifically, they recommended that the intervals between the training sessions should be shortened to maintain enthusiasm and commitment, and that training should ensure more emphasis on how to conduct a class.

This evaluation was judged by the reviewers to have met all seven of the quality assessment criteria and so could be considered an 'exemplar' study.

Ozer *et al.* **(1997)** evaluated a school-based intervention to promote safe sex knowledge, attitudes and behaviours in an urban junior high school in the USA. Students in the ninth grade (aged 14 to 15) delivered 8 sessions to seventh grade students (aged 12 to 13). The sessions used a social learning/social influence model, with experiential learning exercises deployed by peer educators who were demographically similar to the target group. The curriculum consisted of interactive games, role plays, and discussions about drug use, HIV risk, decision-making, communication and condom use. Skills sessions were used to practise refusal skills and condom use. The peer educators had scripts for each session, but were encouraged to elaborate and develop their own material on safer sex (including communication skills, condoms use and strategies to resist social pressures to have sex) using interactive games, role plays and discussions. The peer leaders were chosen by school counsellors to reflect the ethnic diversity of the school (majority African-American and Asian American) and received 30 hours of training.

The process evaluation was conducted as part of a randomised controlled trial to examine the effectiveness of the intervention. This report is yet to be published and attempts made to obtain it from the author were unsuccessful. The evaluation aimed to assess the relationship between classroom organisation and peer leader attributes and the effects of the intervention. Its aim was to test several hypotheses generated from the empirical and theoretical literature on peer-delivered health promotion about the qualities of peer educators most likely to relate to intervention efficacy. It was predicted that highly individuated, sociable and less shy peer educators would be rated more highly in credibility, expertise, warmth, attractiveness and sense of humour by the recipients; and that improvements in AIDS/HIV knowledge and attitudes would be associated with young people's perceptions of the peer educators as similar in terms of ethnicity and gender, and as credible, expert, warm, attractive and humorous.

Mostly quantitative data were collected for this evaluation. Data on classroom organisation took the form of narrative accounts conducted and analysed by two researchers. The relationships between peer-educator qualities and the effect of the intervention on the target group were explored at two levels: that of individual change and classroom environment. The findings suggested that highly individuated and less shy (but not more sociable) individuals were more positively regarded by recipients, irrespective of perceived similarity. Those who were taught by peers for whom they reported positive regard were less likely to think sex made you popular and to feel confident in talking to peers about sex. A more structured classroom organisation was noted to be an important factor in successful knowledge gain from peer education.

The authors concluded that the target group perceived their peer educators in terms of two dimensions: positive regard and similarity. More individuated and less shy, but not more sociable, peers, were held in stronger positive regard. The authors recommend that "mid-program assessments of intervention climate and perceptions of peer educators could be useful to identify the difficulties and provide additional support and training as needed. In addition, presentation by shy and less individuated peer educators could be improved through the development and use of easily personalised curricula that encourage communication in educators own words" (Ozer *et al.* (1997:320).

The reviewers judged this process evaluation to meet all seven of the quality assessment criteria. However, they noted that relationships identified in the evaluation between peer leader attributes, classroom organisation and effects of the intervention should be treated with caution as the effectiveness (or otherwise) of this intervention is yet to be established.

Frankham (1993) evaluated an HIV/AIDS peer education project implemented in schools in the city of Norwich in the UK Peer leaders

led seminars, timetabled into existing social studies periods. These seminars included a quiz about HIV/AIDS, a game involving designating particular sexual activities as either high, medium or low risk, a condom demonstration and an anonymous question and answer session. The authors do not provide any details on the characteristics of the peer leaders or the target group.

The evaluation examined the acceptability of the intervention to the target group, the views of peer educators on their role and the training they received and factors influencing the implementation of the intervention. In addition, the authors examined the amount and nature of informal contacts the peer leaders made outside of the formal intervention context. Data were collected via focus groups with peer leaders together with some of their peers and with eight groups of young people who had received the peer-delivered seminars.

From the eight groups of young people interviewed, six reported that the experience of attending the seminars was positive. Participants preferred the peer-led approach to their former experiences of teacher-led sessions. They said it was a relaxed way of learning and that the seminars were fun. They appreciated peer leaders making it clear that they "didn't know it all" and suggested that peer leaders' motivation was better than that of teachers in terms of wanting to help others. The young people also felt that they had gained more knowledge on the issues surrounding HIV. They felt the seminars stimulated further informal discussion and that discussion about safer sex was easier to initiate subsequently. Interestingly the young people became much more critical about the lack of education on HIV they had experienced before the seminars.

In terms of implementation, the results suggested that the school-based context of the intervention presented several difficulties. Longer sessions in schools were needed, the voluntary nature of the sessions needed to be made clearer so that young people had a choice over whether to attend and there was lack of communication between teachers and peer educators on organisation of the seminars such that peer leaders felt little control.

In terms of the experience of being a peer educator, the evaluation found that the peer leaders had little understanding of the philosophy surrounding peer education. They saw their role as that of a 'surrogate teacher' and their aim to provide information rather than to facilitate discussion. The author argued that this reflects the need for further ongoing training so that peer educators act as facilitators rather than 'experts'.

The peer leaders reported several occasions where they had given information or been approached for advice outside of the seminars in informal contexts. There were some difficulties with these informal contacts: peer leaders only felt comfortable giving information/advice to

close friends and others were unsure about whether their advice would be seen as 'interfering'. This highlighted the need for further clarification and training around the sorts of roles peer educators are willing to adopt. These findings also have implications for developing peer education on a more informal basis. The author argues that since one of the underlying rationales for peer education is that young people say they feel more comfortable learning and talking about sex with their friends, research needs to be conducted on the sorts of conversations about sex that are already taking place to inform how peer eduction can build on already existing mechanisms for the exchange of information between peers. A linked piece of research by Walker (1994) examined this question and conducted interviews with young people, some of whom were peer educators within this project, about how they talk about sex with each other. This report offers several recommendations about how peer education can fit into natural networks and emphasises in particular that peer education could better operate within already existing friendship groups and involve already existing ways of communicating such as story-telling and sharing anecdotes. This report also highlighted the importance and challenges of male peer educators.

The reviewers judged this intervention to have only two of the seven quality assessment criteria. Particular problems were no clearly stated aims and objectives and a lack of a clear description of the sample and methods used in the evaluation. In contrast to the primarily quantitative data collected in some of the included process evaluations (e.g. Ozer *et al.* 1997), the material collected in this evaluation provides a rich data set on the views of the young people who took part in this intervention and presents fruitful areas for further study.

Newman *et al.* **(1991)** evaluated a smoking prevention programme, partly delivered by peers, implemented in UK secondary schools with young peopler (aged 12-13). The intervention was based on teaching young people the skills necessary to resist social pressures to smoke. The evaluation aimed to assess the implementation of the intervention under 'normal' classroom conditions (i.e. with no involvement of research teams and no extra resources apart from teachers manuals) and the acceptability of the intervention to teachers'. This process evaluation, carried out in the context of a trial to assess the effectiveness of the intervention, sent out questionnaire to 39 teachers in all 19 intervention schools.

The results showed that the intervention was positively received by teachers, especially the use of peer leaders. Nearly half of the teachers said they liked using peer leaders and reported good pupil response to the change in style of teaching. However, results also highlighted a conflict between the use of peer leaders and teachers' knowledge of 'best practice' in the classroom. For example, peer leaders were not always used to lead activities, depending on the teachers' judgement of their ability or behaviour. The authors recommend that this conflict

could be overcome through adequate training of both teachers and peer leaders.

The evaluation was judged by the reviewers to meet only three of the seven quality assessment criteria. Particular problems were not providing a clear description of the sample of teachers used to evaluate the intervention and not including sufficient original data to mediate between evidence and interpretation.

Orme and Starkey (1999) evaluated two peer-delivered intervention to equip young people with the skills and information to make informed choices about drug use in the South West of England. These two interventions were described by the authors as short-term pilot projects. The first intervention was implemented in college and youth club settings and is described in a later section. The second intervention was based in two secondary schools with 18 young people from years 11-13 (aged 16-18 years) acting as peer leaders. The peer leaders in each school were supported by the school health education co-ordinator. The young people attended a weekend residential course for training and then went on to work as peer educators over three months. They delivered lessons to younger pupils in years seven, eight and nine, (aged 11-14 years). In one school the peer educators followed agreed lesson plans, in the other the peer leaders were able to have more freedom to write their own lesson plans.

The evaluation examined organisational issues involved in the delivery of the intervention and the views of the peer educators on the training and support they received. The results suggested that the peer educators felt they had benefitted greatly from the training they received and taking part in the project (which developed knowledge, confidence, assertiveness and interpersonal skills) and felt that they had received adequate support from teachers in delivering the intervention. However, 56% of the peer leaders felt that the training was not sufficiently adequate to enable them to work as peer educators and requested further training. The results also highlighted some possible problems with implementing peer-delivered health promotion within school-based settings. The authors summarised these problems as follows: " difficulties in controlling other young people; problems in dealing with personal questions about their own experiences; being undermined by the teacher present trying to take control; constraints on the message they were allowed to deliver; and a lack of trust from other young people, who some felt were viewing them more as teachers than as peers" (Orme and Starkey, 1999:12). The authors interpret these results in the context of two important issues relating to peer-delivered health promotion - those of credibility and empowerment. They argue that more attention should be paid to selecting peer leaders who are likely to be credible to the target audience and to the credibility of the messages that they deliver; peer education projects need to recognise that the experience of being a peer educator can be disempowering if the professional ethos around

the project means that peer leaders deliver 'adult' messages.

This process evaluation was judged to meet three of the seven quality assessment criteria. Particular problems were the lack of a clear description of the sample and methods used in the evaluation and the lack of sufficient original evidence to mediate between evidence and interpretation. However, this may be an unfair judgement as within this report, the authors refer to two unpublished reports which may contain more information about these aspects of the evaluation. We were unable to obtain these reports within the time available for this review.

Interventions in college settings

There were five interventions implemented in college settings. Two of these focused on the processes involved in training peer leaders only and these are reported in a later section. Of the three remaining, two of these focused on sexual health on one upon drug use.

Richie *et al.* **(1990)** evaluated a classroom-based intervention for college students on the prevention of HIV. Such an intervention was implemented in response to a recognition that an already existing peer education programme, in which peer educators acted as a resource for students to draw on for sexual health advice, was not attracting many students. The evaluation examined the acceptability and the accessibility of the intervention and the views of the peer educators on their training. This process evaluation was judged to meet four of the seven quality assessment criteria. Particular problems were lack of detail on the methodology used and the lack of an explicit theoretical framework and/or literature review.

The majority of students rated the intervention as 'good' or 'excellent', felt it had slightly or greatly increased their understanding of HIV and rated the use of peer educators as one of the things they liked about the intervention. Analysis of data on the accessibility of the intervention revealed that the lowest request for the intervention came from the college of engineering. The majority of peer educators rated their training as good or very good. Overall the authors concluded that more young people were needed to become peer educators and that all parts of the university need to be encouraged to participate to increase accessibility of the intervention.

Strouse *et al.* **(1990)** evaluated the use of peer leaders to facilitate discussion groups in the context of an introductory course on human sexuality offered to students at a University in Michigan, USA. The intervention provided twice weekly sessions consisting of one lecture and one group discussion session, run by peer leaders. Attendance at the group sessions was a course requirement. The aim of the course was to provide young people with the knowledge and skills to make good sexual decisions. The authors argued that group discussion are particularly useful for learning sexual decision-making skills as they

allow values and feelings about sexual issues to be raised. Using peers to lead the discussion groups was judged to be a potentially effective strategy for promoting co-operative discussion and learning within the groups.

Potential peer leaders were screened by university staff. The qualities required for selecting peer leaders were genuineness, sensitivity, self awareness, maturity, perceptiveness, flexibility, warmth and being a good listener. Potential leaders also had to have had some previous experience working within a human service organisation.

The evaluation examined the acceptability of the intervention to the target group, through the use of self-completion questionnaires. These were completed by 417 students and the results suggested that the discussion groups were well received with 42% rating them as the best feature of the course. The majority (98%) of students rated the peer leaders as superior or above average in their handling of the group, although there was some dissatisfaction with the handling of some of the value laden issues such as abortion. Although the authors did not collect any formal data on the peer leaders' views, they did report that the peer leaders felt they had benefitted positively from the experience. They reported an increase in self-confidence and self esteem and improved leadership and communication skills. Although the data presented are not very in-depth, the authors felt justified in concluding that there was a high level of satisfaction with the course. The reviewers judged this intervention to meet only three of the seven quality assessment criteria. Particular problems were the lack of a clear description of context sample and methods and failure to include sufficient original evidence to mediate between evidence and interpretation.

In the first intervention evaluated by **Orme and Starkey (1999)** young people were trained (two weekend residential courses and two 'dry run' days) to develop and deliver their own drug education projects to other young people in youth clubs and colleges in the South West of England. Seventy young people from across the county were trained to become peer leaders. The peer leaders were supported by dedicated workers for five hours per week. The intervention took an explicit harm minimisation approach to drug use and the peer leaders developed presentations on a wide variety of legal and illegal drugs using a variety of media such as plays, video, music and games.

The evaluation examined the views of peer leaders on the training and support they received and the views of the target group on the acceptability of the intervention. The views of the peer educators and target group were elicited using self-completion questionnaires. In addition to these formal data collection techniques, the authors report the use of observation of peer leader training sessions and project activities and interviews with project workers. All 14 project workers responded to the questionnaire, 66% of the peer leaders responded and views of the target group were elicited from 239 young people.

The majority of the peer educators reported that the training they had received throughout the project had been good and they reported several personal benefits from being a peer leader: increased knowledge; interpersonal skills (e.g. communication skills, self-confidence); group work skills; task completion skills (including decision-making skills and reliability); and awareness of the need for a balanced approach to giving out information on drugs.

In terms of the views of the target population, the authors report that they showed strong support for the concept of peer education in that 83% thought it was a 'good' approach. Commonly cited reasons were: they could relate more to young people; peer educators understood the way young people think; and the peer educators didn't lecture or talk down to them. The authors concluded that these positive reactions show the potential of peer education for drug prevention work. A particular problem with the organisation of the project was its length. Many peer leaders felt that the project continued for too long and the authors argue that this may have had an impact on group motivation and task completion (only about half of the groups of peer leaders achieved the required number of presentations to young people). In addition, some of the peer leaders dropped out before the end of the project. The authors argue that this raises issues of whether the project is cost-effective.

The reviewers judged this process evaluation to meet three of the seven quality assessment criteria. Particular problems were the lack of a clear description of the sample and methods used in the evaluation and the lack of sufficient original evidence to mediate between evidence and interpretation. However, this may be an unfair judgement as within this report, the authors refer to two unpublished reports which may contain more information about these aspects of the evaluation. We were unable to obtain these reports within the time available for this review.

Interventions implemented in community settings

Three interventions were implemented in community settings. Two of these focused on sexual health, the other on drug use.

Guy and Banim (1991) evaluated an HIV prevention intervention implemented in Youth Training Centres in the UK with young people aged 16-18 years. The intervention was developed with young people as equal partners and consisted of a morning session on factual information about HIV delivered by adults and an afternoon session on sexuality and sexual relationships using participatory teaching approaches, delivered by peer educators. The study evaluated the acceptability of the intervention, through questionnaires and focus groups with the target population and the training the peer leaders received. The evaluation was judged to meet four of the seven quality

criteria. Particular problems were that the aims of the evaluation were not explicitly stated and a clearer description of characteristics of the sample used in the evaluation could have been provided.

The results showed that the intervention was welcomed by participants (they had previously very little training around HIV) and was judged to be appropriate, with the peer leaders being judged to be credible and easy to relate to as compared to the adult providers. Participants reported that they carried on discussing issues raised after the intervention. Focus groups with peer leaders throughout their training revealed that becoming a competent peer leader was very much a developmental process and it was only after several sessions that they were able to adapt to their role as educators and believe in their performances. On the basis of the evaluation the authors went on to make the following recommendations relating to peer educators: they must be credible and preferably have an interest in the topic of intervention; involving them as partners is crucial for their commitment; and support is especially needed at the beginning of the project.

Peers *et al.* **(1993)** evaluated three peer-delivered interventions as part of the HEA 'Community youth project on HIV/AIDS' initiative. All projects aimed to increase awareness of HIV/AIDS in young people aged 16 to 25 by providing peer education in community settings. A primary aim was to use peer education as a form of community development and for professionals involved in health promotion and youth work to work in partnership with young people. Intervention activities, implemented by young people, included mass media 'products' (e.g. video, magazine) designed by the peer educators, group work with marginalised young people and performing plays. The evaluation examined the accessibility of the 'products', the implementation of intervention activities through case studies of the three projects and interviews with peer educators and project managers, the views of the peer leaders on their training and the acceptability of the intervention activities with focus group with the target population. In addition, the evaluation also sought to examine whether and how community development can be achieved through peer education. This evaluation was judged to have three of the seven quality assessment criteria. Particular problems were a lack of clarity in terms of describing the sample and data collection methods used and a lack of explicit aims for the evaluation. This evaluation was judged to be particularly useful for highlighting the challenges in working in partnership with young people.

The results showed that the 'products' the peer educators designed were accessible (around 40% were aware of them) and that overall the materials produced by the peer educators were rated as more persuasive and relevant to young people's needs. However, the authors emphasised that peer education is not an easy or cheap option. In particular, using peer education as a means of community development in which young people are treated as equal partners was found to be challenging. For example, when peer educators were given absolute autonomy, concerns were raised over the quality and quantity

of materials produced. The authors recommend that more rigorous planning and prior establishment of working relationships with young people should be ensured before peer education initiatives are undertaken. In particular they recommend that partnerships with young people should provide the necessary discipline, organisation and control from adults whilst ensuring peer educators feel a sense of ownership over the project.

Ward *et al.* **(1997)** evaluated a community based project in North-West London in which young people were trained to pass on 'harm reduction' messages and related information on drug use to other young people they encountered within their everyday lives. The harm reduction approach and outreach model makes this intervention different from the majority of peer-delivered health promotion interventions focused on drug use identified for this review . The study evaluated the training the peer educators received through questionnaires to the peer educators and processes of implementation through monitoring the contacts peer educators made.

The results showed that the intervention could be implemented and it was accessible to a wide audience. The 27 peer educators recorded 383 contacts and of these, half of these were described as friends and the other half were made up of acquaintances and family members. Only 2% were with young people whom the peer educators had not previously known. The contacts reflected the age and ethnic group of the peer educators. Activities were undertaken in different settings with a wide range of individuals. The main activities were giving out information leaflets or conversations about general drug use. Many conversations initiated were about curiosity rather than concern over personal drug use. Peer educators were rarely in drug using situations in which they could apply their knowledge. Problems encountered were retention of peer educators (only 28% of those recruited continued to be peer educators for up to a year) and failure to reach young people using drugs (most peer educator contacts were with non-drug users).

The evaluation was judged to meet five of the seven quality assessment criteria. A particular problem was the lack of theoretical framework/ and or literature review to inform the intervention. However, this process evaluation gave very clear details on the sample used in this evaluation.

Peer-training interventions

Four evaluations focused on the training given to young people to become peer educators. These all targeted different health areas: sexual health, alcohol use, general health promotion and drug use. Two were implemented in school settings and two in university settings.

Fife Healthcare NHS Trust (1996) reported on a three year peer education project on sexual health. It was implemented in one urban and one rural school and one further education college. The specific aims of the intervention were to enable young people to become effective educators of their own peers through increasing their knowledge, understanding and skills related to sex and sexuality. Thus, the intervention (and evaluation) focused upon the impact of the peer education on peer educators themselves rather than on the wider target audience.

The intervention was developed using the principles of the health-promoting school and involved all the key stakeholders: young people themselves, parents, teachers, head teachers and governors and the community. Although at first, becoming a peer educator was open to all young people (aged 15 to 17), selection criteria were subsequently applied to increase the likelihood of committed and enthusiastic volunteers becoming peer educators. They were thoroughly trained and supported by teachers and a co-ordinator throughout the project. The training included two residential weekends. As the project developed, the peer educators became involved in many other initiatives, including national conferences, youth clubs, seminars, a European Workshop and World Aids Day. Following training peer educators delivered sessions to groups of young people in schools and youth clubs.

The process evaluation examined organisational factors influencing the implementation of the peer education project, the skills of the peer educators and peer educators views on the acceptability of the project. These processes were examined using a variety of qualitative methods including interviews, focus groups and observation.

The results of the process evaluation highlighted two major organisational problems, which may partly be explained by the school-based context of the intervention. Firstly, although it was intended to recruit peer educators from high risk groups, the majority of peer educators were high academic achievers. The authors argue that this was difficult to avoid due to the school setting and using selection criteria to screen potential peer educators. Another problem was the lack of young men who became peer educators. Secondly, some challenges arose in trying to work in partnership with the young people. The role of the project co-ordinators was crucial to the success of the peer training and the intervention in general. Particularly important were their skills with young people and their genuine participative approaches. The evaluator reports on some of the difficulties with co-ordination style and ideology. One co-ordinator posed problems for the project as she was 'very liberal' and worked in a genuine equal partnership, allowing the peer educators to develop the intervention as they wished. Others, including the steering group for the project and teachers, found this problematic. This posed tensions which were difficult to resolve. The authors suggests that it may be helpful for others to consider in advance of the initiation of the project "how far the

peer educators themselves may influence the direction of events, and, if the project cannot give any direct support, in what ways the peer educators' own suggestions and initiatives will be sensitively and effectively handled" (Fife Healthcare NHS Trust, 1996: 38).

The results showed that, compared to other forms of sex education the peer educators had received, peer education was thought to be superior. It was felt to be "more fun", "more open" and "comfortable and easy". The peer educators perceived themselves as having benefitted greatly from taking part and described many examples of personal change. In particular, young women felt that had increased their assertiveness skills and the young men felt more able to express emotion.

This evaluation was judged by the reviewers to meet only three of the seven criteria for quality assessment. Particular problems were a lack of clearly stated aims and objectives and a lack of detail in description of methodology. However, it is a very comprehensive description of the life of the project and contains much useful information on setting up a similar project. The evaluators make some important recommendations for others who may be considering such an intervention. These include the advice that: definitions should be clarified at the beginning; peers are educators rather than trainers; clear expectations should be held about all the project stakeholders; key decision-makers should be kept informed; the impact of the setting itself should not be underestimated; formal agreements are useful; and the skills of the co-ordinator(s) are crucial.

Massey and Neidigh (1990) evaluated the functioning of the organisation of a peer-delivered intervention to promote responsible drinking amongst students at a university in Florida in the USA. This intervention was originally set up to be run by students for students. The authors carried out two 'waves' of evaluation. Firstly, the impact of organisational factors on the functioning of the programme was evaluated. The results of this led to an intervention to improve the functioning of the peer-delivered programme. Secondly, the impact of this intervention on the functioning of the programme was evaluated. The first evaluation was carried out in response to informal observations which highlighted conflict between university administrators who held decision-making power and the student representatives. In addition the peer leaders appeared to be concerned that the programme was perpetuating their own irresponsible drinking.

Both waves of evaluation measured the knowledge, attitudes and drinking behaviour of the peer leaders; administered the Group Environment Scale to measure group functioning and carried out semi-structured interviews to elicit information about peer leader perceptions of the problems and suggestions for change. The results of the first evaluation showed that the there were problems with the psycho-social atmosphere of the group, particularly in terms of group cohesiveness and order and organisation. Although the peer leaders endorsed

responsible attitudes towards drinking, they had a high rate of alcohol consumption and experienced negative effects of alcohol (hangovers), and their knowledge of alcohol was not much higher than the general student population.

These results led to the formulation of three changes that were introduced to increase peer leaders' commitment to the programme; to implement structural changes in the decision-making procedures in order to enhance the peer leaders' control; to increase socialising among students in order to improve group cohesiveness; and to provide training workshops to increase knowledge. After implementation of these changes, the second evaluation was carried out. It was found that although there were no improvements in knowledge and no change in level of drinking amongst the peer leaders, group cohesiveness increased and peer leaders gradually adopted to their position of control and responsibility for the programme. Peer leader concerns had also shifted from organisational issues to ensuring they had adequate training. The authors recommended that re-assessments of the intervention should be made to ensure its continued functioning.

This process evaluation was judged to have met three of the quality assessment criteria. Particular problems concerned the lack of a clear description of context (what kinds of activities the peer leaders actually delivered was not described), a lack of description of the characteristics of the sample used in the evaluation, and not enough qualitative data presented to mediate between evidence and interpretation.

Croll *et al.* **(1993)** evaluated peer educators' presentation skills as a means of assuring the quality of the current peer-delivered health promotion programmes at Penn State University in the USA. The university health services offered peer education programmes in several different health areas (sexual health, alcohol and other drugs, fitness, nutrition) to promote positive health behaviours amongst students. To deliver these programmes, a diverse pool (e.g. academic courses, ethnic background and sexual orientation) of students were recruited and underwent an intensive training programme. The peer educators were awarded university credits for volunteering. These peer educators then delivered presentations and workshops around the campus.

A total of 24 peer educators were rated by other experienced peer educators and professionals on three components of presentation skills judged by the authors to be important in ensuring quality in peer education. These three components were knowledge (assessed by criteria such as preparation and ability to respond to questions); delivery (assessed by criteria such as enthusiasm, use of effective communication techniques and asking appropriate and challenging questions); and sensitivity (assessed on criteria such as establishing comfort and trust in the group and using nonsexist and culturally

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sensitive language). The results found that the peer educators were competent in most areas with only four scoring below the minimum standard score of 85%. Although ratings on the knowledge component were consistently high across all peer educators, some did have problems with delivery and sensitivity. The authors argue that these findings suggest the need for ongoing training of peer educators and report that they have used these results to tailor further training and to target individual peer educators for more training.

This process evaluation was judged to have met only two out of the seven quality assessment criteria. Particular problems were the lack of a clear description of context and sample, and the lack of original data to mediate between evidence and interpretation. The reviewers commented that although the results of this process evaluation are consistent with others which suggest that training of peer educators should be ongoing, they concluded that this study has little further to contribute. Lack of detailed reporting on the background and context of the intervention, characteristics of peer educators and results make it difficult to draw any more conclusions from this study. It could be useful in offering guidance for others in what factors should be assessed when examining peer educators skills.

Chaiken (1990) evaluated an intervention with a rather different aim to that of other peer-delivered health promotion initiatives discussed in this review. The intervention, implemented by the 'Girls Club of America' aimed to prevent substance abuse amongst high risk young women through building their capacity to become adults who are confident, economically independent and personally fulfilled. The intervention, 'Friendly PEERsuasion' provided the young women with training in leadership and communication skills, heightened their awareness of the choices they could make and the consequences of these for the future, and offered training in resistance skills and ways of coping with stress. To reinforce this training, the young women were then required to plan and deliver educational activities for younger children. Thus, this programme (and evaluation) focused on the experience of being and being trained to become a peer educator as the primary intervention strategy.

The intervention was implemented and evaluated in one secondary school in Birmingham, Alabama, with predominantly ethnic minority young women aged 11 to 15. They were trained in 14 twice weekly sessions. The evaluation examined the accessibility of the intervention, factors influencing the implementation of the intervention and the acceptability of the intervention. Data on these processes were collected from monitoring attendance records, gathering views on the intervention from the programme participants and through informal observations of project staff. The young women themselves were involved in some of this data collection.

The results suggested that the intervention was accessible to young women at high risk of substance abuse (the majority were from low

income families, a high number reported substance use by other members of their family, 23% reported that they had a sibling who had dropped out of school). In terms of implementation, good co-operation was established between school officials and intervention staff, although not all planned activities were carried out in all sessions. In terms of acceptability, attendance at sessions was high and the majority of participants reported that they liked and learned from the activities, despite some girls being judged to be 'tardy' by intervention staff.

The reviewer judged this process evaluation as meeting five of the seven quality assessment criteria. The reviewers felt that this intervention was context and culture specific, depending particularly on the philosophy of the 'Girls Club' movement in the USA. The reviewers also felt that there was a lack of critical reflection within the evaluation. The authors conclude: "Except for a few minor problems, the process of implementing the Friendly PEERsuasion in Birmingham schools has been carried out by the Girls Club Staff in an exemplary manner. All people involved are proud of the program and relatively confident about its success" (Chaiken, 1990:131). This makes it difficult to draw out any lessons to be learned for others considering implementing this kind of intervention. However, as the authors note, this type of intervention, in which the focus is solely on using peer-delivered health promotion to improve the health status of the peer leaders, needs to be evaluated in terms of its effectiveness in changing health outcomes.

DISCUSSION

Can peer-delivered health promotion be effective?

This systematic review has found some evidence to support the effectiveness of peer-delivered health promotion for young people. However, although many evaluations of peer-delivered health promotion interventions were located for this review, very of few of these were of sufficient methodological quality to generate potentially reliable results about the effectiveness of such interventions in changing health-related outcomes. As only a small number of studies could be interpreted as generating reliable conclusions, the evidence for the effectiveness of peer-delivered interventions must be interpreted within this context.

This section of the report focuses on what we can learn about effective peer-delivered health promotion from the outcome evaluations judged to be methodologically 'sound'. Later sections of the discussion will focus on the lessons to be learnt from other studies concerning factors which may *potentially* increase not only the effectiveness but also the appropriateness and successful implementation of peer-delivered health promotion. These factors will be discussed in the context of other strategies for promoting the health of young people in order to guard against unrealistic expectations of peer-delivered health promotion and the uncritical adoption of this method.

There were more 'sound' outcome evaluations which demonstrated peer-delivered health promotion to be effective than ineffective. In fact, only one study (Vartiainen *et al.*, 1998) did not demonstrate any positive effect. Moreover, more than half of the 'sound' outcome evaluations demonstrated a positive effect of peer-delivered health promotion on at least one behavioural outcome. In addition, when the effectiveness of peer educators in delivering the same intervention was compared to that of teachers, none of the sound outcome evaluations demonstrated peer educators to be *less* effective. They were found to be more effective than teachers in two outcome evaluations (Jordheim, 1976; Orpinas *et al.*, 1995).

The specific characteristics of an effective model of peer-delivered health promotion are, however, unclear. Due to the small number of 'sound' outcome evaluations, it was difficult to find any relationships between the different characteristics of peer-delivered health promotion and effectiveness (e.g. age of peer leaders, method of recruitment, use of partnerships). This problem was compounded by the relative lack of specific detail provided in reports about the characteristics of the peer educators, how the peer educators were recruited and what kind and length of training was provided. In addition, only three of the outcome

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evaluations carried out integral process evaluations to illuminate the processes at work.

Despite these problems, which are discussed in more detail later, it is possible to give examples of the conditions under which peer-delivered health promotion has been found to be effective/ineffective. These examples fall into three of the categories of peer-delivered health promotion outlined in the introduction by Svenson (1998a) and Turner and Shepherd (1999).

Firstly there have been examples of effective peer-delivered health promotion using 'formal' or 'pedagogical' techniques in which information is presented or skill development is facilitated in formal group settings. Within this category, the interventions varied according to how much young people were involved in the development of the intervention and to how much control peer leaders had over the content of what they were delivering. Secondly, there has been one example of effective peer-delivered health promotion using a 'diffusional' and 'community-mobilisation' model.

Within school settings, most interventions of this type were focused on the prevention of smoking in younger age groups (11 to 13 years). Three of the four studies evaluating the effectiveness of interventions aiming to prevent the onset of smoking and using peer leaders to teach skills to resist peer and other social influences (e.g. advertising, family) to smoke were effective in reducing the number of 11-13 year olds who began to smoke (Armstrong *et al., 1990;* Elder *et al., 1994;* McAlister *et al.*, 1980). However, when a similar intervention was implemented in Finland, no positive effects were demonstrated (Vartiainen *et al.*, 1991). In addition the results of the study carried out in Australia (Armstrong *et al.*, 1990), suggested that the effect of the intervention was restricted to females who were non-smokers before the intervention began. Despite this evidence of positive effects on smoking, at least for some groups, it is difficult to determine whether the effects of the intervention were due to the peer education element or to the type of intervention (teaching resistance skills). The Australian study, however, found no differential effectiveness according to whether teachers or the same age peer leaders delivered the social influences curriculum. Thus, there is some evidence to suggest that *same age* peer-leaders may not be the essential component of this type of intervention.

These findings have some similarities with the findings of previous systematic reviews examining the relative effectiveness of different intervention types within one topic area. In particular, the question raised by some of the outcome evaluations concerning whether it is the use of an intervention focused on social influences or the use of peer leaders *per se* which contributes most to the effectiveness of the intervention resonates with the findings of two meta-analyses of drug prevention programmes for young people aged 11 to 18. Tobler (1992) found that 'peer programmes' which were based on fostering positive peer influence and support and included refusal skills training or life

skills training, produced the largest effect sizes on drug use (see also Black *et al.*, 1998). The success of these programmes was not found to depend on the use of peer leaders. Although peer leaders were found to be more effective than teachers, programmes facilitated by mental health professionals, who were competent in group processes (able to guide rather than dominate, and facilitate dialogue) were the main factor associated with the success of these programmes. As Tobler noted, "A peer leader does not make a peer program. Peer leaders may or may not be able to facilitate the necessary interaction. In many cases, the peer leader benefits more from his (sic) active role than do the group members" (Tobler, 1992:21). Bangert-Drowns (1988) in a meta-analysis which also examined the effectiveness of school-based drug education programmes, found more favourable results in support of peer leaders. Those programmes which used peer leaders had a significantly higher effect size for attitudes and drug use (despite low overall effect sizes for drug use). However, again, the type of instructional strategy also appeared to be important, with group discussion gaining better results than lecture formats.

In addition to the prevention of smoking, peer-delivered health promotion within school-based settings has also been demonstrated to have a positive effect on males' (aged 11 to 12) aggressive behaviour (Orpinas *et al.*, 1995), and on the practice of testicular self examination in males aged 15-16 (Best *et al.*, 1996). In the latter evaluation, as in some of the smoking prevention interventions, adult health educators were found to be equally effective as peer educators. A further school-based programme which aimed to raise awareness of asthma within the school community demonstrated a significant increase in knowledge about asthma but did not increase the quality of life of students with asthma (Gibson *et al.*, 1998).

This type of 'formal' peer delivered health promotion has also shown some success on 'proxy' outcome measures in college settings. HIV lectures or skill development workshops delivered by peer-leaders were equally effective in increasing self efficacy in and intentions to practice safer sex (Basen-Engquist, 1994). Compared to adult health educators, peer educators were found to be effective in increasing knowledge and positive attitudes in the context of STD prevention (Jordheim, 1976). The results of these two evaluations suggest that the use of peer leaders is directly related to the effectiveness of these interventions, at least for 'proxy' outcome measures.

Within community settings, both the 'pedagogical' and 'community mobilisation' models of peer-delivered health promotion have been effective. The studies which reported on peer-delivered health promotion in community settings focused on the promotion of sexual health in an older age group (18+). DiClemente and Wingood (1995) demonstrated increased consistent condom use in African American women as a result of an intervention based on both individual behaviour change theories and socio-cultural theories. An innovative approach which attempted to engage the entire young gay male

community in one Californian town to support the practice of safer sex, demonstrated a significant reduction in unprotected anal intercourse compared to a control community (Kegeles *et al.*, 1996). These interventions used a very different peer-delivered approach to the school-based interventions for smoking prevention described above. They both tried to target some of the wider social and cultural determinants of health behaviour, both involved the target population in the development of the interventions and both targeted groups of young people which have traditionally been neglected in school-based research. These studies, therefore, not only demonstrate that these models of peer-delivered health promotion can be effective for changing health-related outcomes but also could be said to demonstrate principles of 'best practice' within health promotion which have been advocated in recent overviews of peer-delivered health promotion (Svenson, 1998a; Wilton *et al.*, 1995). Issues surrounding principles of 'best practice' within peer-delivered health promotion are discussed further below.

Whilst the above discussion illustrates the conditions under which peer-delivered health promotion has been found to be effective in positively changing health outcomes for the young people who were the recipients of the interventions, from the outcome evaluations included in this review, we were unable to draw any conclusions on whether peer-delivered health promotion has results in positive changing health outcomes in the peer educators themselves. There are two reasons for this. Firstly, we excluded any outcome evaluation which solely examined the effects of training to become a peer educator on the peer educators themselves, as the review question was primarily concerned with the effects on the recipients of peer education. Secondly, although some included outcome evaluations identified for this review did examine the effects of being a peer educator on the peer educators themselves in addition to the effects on the target population, the methodology used to do this could not be considered to be able to generate reliable conclusions about the effect on peer educators. Ideally, to assess rigorously the effects of this, volunteer peer educators would need to be randomly assigned to either go on to deliver an intervention to their peers or not. To our knowledge, there is no research which has done this.

This an important research gap for two reasons. Firstly, some approaches to peer education rest on the assumption of a 'diffusion effect' for the sustainability of the intervention i.e. that peer educators will continue to educate others beyond the parameters of the intervention. Secondly, a pertinent finding from the process evaluations was the *potential* positive effects on peer educators of training to become and being a peer educator. These studies documented a wide range of self-reported skill development amongst the peer educators. This suggests that training to be a peer educator and the experience of being a peer educator as an intervention strategy *in itself* is worthy of exploration as being a potentially effective health promotion strategy for young people. If this strategy is to go on to be rigorously evaluated,

however, the issue of cost would need to be carefully considered, as many studies suggested that peer educators need substantial training and on going support to successfully develop and become a peer educator. These issues are returned to below, in a discussion of the parallels between the findings of this review and the findings of reviews of educational peer tutoring projects.

Can peer-delivered health promotion be appropriate ?

There are very strong 'common sense' arguments which suggest that using peers to deliver health promotion is a highly appropriate strategy to use with young people. As outlined in the introduction to this report, peers are thought to be able to act as positive role models and to be able to convey information in a more relevant and credible manner than adults. Further, the use of peer leaders is considered to be a strategy to enable health promotion to meet the relevant needs of young people by working in partnership with them to define and tackle their own health needs (e.g. Svenson, 1998a; Turner and Shepherd, 1999). This section will outline to what extent the findings of this review are able to support these arguments surrounding the appropriateness of peer-delivered health promotion.

The appropriateness of peer-delivered health promotion was judged from a number of different study types asking different research questions. Evidence for appropriateness was looked for in data from the results of needs assessments aimed at determining what type of intervention would be most likely to be acceptable and effective with the target population; in process evaluations which examined the accessibility of interventions, views on acceptability and/or factors influencing implementation; and in 'sound' outcome evaluations which examined whether peer-delivered health promotion is effective.

Studies which had carried out formal needs assessments prior to the implementation of peer-delivered health promotion indicated that using peer leaders would ensure that the messages delivered in the intervention would be consistent with the values and context of young people's lives (e.g. Mathie and Ford, 1993 [excluded outcome evaluation]; Kegeles *et al.*, 1996 [included outcome evaluation]. For example Mathie and Ford (1993) found that seasonal workers in the South West of England attached a high priority to their social lives and involvement in sport and health promotion must be framed according to these priorities. Thus the main finding from the needs assessment studies was that using peers to deliver health promotion would ensure the relevance and appropriateness of health promotion material and messages to young people.

A problem in addressing whether peer-delivered health promotion is appropriate through the evidence from needs assessment work is that formal needs assessments were very rarely carried out. Only 8% of all

the included outcome evaluations and only five of the 15 included process evaluations carried out an assessment of felt need. Of those that did, none actually directly asked young people what kind of intervention they would like, but rather focused on collecting data on whether they wanted information on particular topic areas or on knowledge, attitudes and behaviours within particular health areas. Implementing a peer-delivered intervention was therefore 'inferred' from what young people reported. In addition, it was often not clear from reports whether or how the results of the needs assessment informed the development of the intervention.

It is difficult from the process studies to make any judgement about appropriateness because the evaluations did not fully address all aspects related to appropriateness and were not linked back to any needs assessment. It is hard to tell, therefore, whether the interventions met the needs of the target group. The questions asked in the evaluations tended to be about satisfaction e.g. ratings of what was most liked about the intervention. In general, the process evaluations found a high level of satisfaction with the interventions. For example, young people found them 'fun', they said that difficult issues were more easily talked about with peer leaders and some said that they preferred being taught by peer leaders rather than teachers. Negative comments from the target group were rarely documented. These findings have to be viewed cautiously, as there were many problems with the way that questionnaires were designed in that the questions asked often did not allow for negative responses. In addition inadequate detail on the characteristics of the sample used in the process evaluations made it difficult to assess whether the views obtained were representative of all those who took part in the intervention.

The process studies did shed some light on the accessibility and acceptability of peer education, in particular in terms of gender issues and in terms of reaching young people at enhanced risk of adverse health outcomes. Many of the interventions evaluated in the process evaluations experienced difficulties in recruiting and retaining male peer educators. In terms of the young people receiving the peer-delivered interventions, some process evaluation reported that female only sessions were more successful than male only or mixed groups. When process evaluations reported negative views on the interventions from young people, it tended to be young men who were more likely to express negative opinions. Although some interventions were able to recruit young people from traditionally hard-to-reach groups (Chaiken, 1990; Fox et *al.*, 1993) to become peer educators, the majority of interventions evaluated by the process evaluations (and the outcome evaluations) used selection criteria which meant that peer leaders tended to be 'high achievers'.

The characteristics of peer leaders appear to be important for the appropriateness of peer-delivered health promotion in terms of, for example, how credible they are perceived to be by young people. Some of the process and outcome evaluations tried to assess the

most successful qualities or characteristics of peer leaders delivering a 'pedagogical' model within school settings. Elder *et al.* (1994) found that predictors of 'good performance' were characteristics such as 'outgoing', 'adventurous' and 'analytic personality' and that recruitment strategies should focus on these rather than upon predictors of how well peer leaders will adhere to programme protocol (e.g. academic ability). Ozer *et al.* (1997) found that similarity (in terms of gender and ethnic group) was not related to how much positive regard young people had for peer leaders. These findings suggest the need for a more considered approach to the selection of peer leaders for these types of school based programmes. As well as using the findings of the studies included in this review, such an approach could also draw on the recommendations of an outcome evaluation which was excluded from this review. Shiner and Newburn (1996) in their evaluation of a drug awareness programme implemented in London, UK, identified three types of credibility. They argue that 'person-based' credibility (arising from sex, age, ethnic origin) may be less important than the peer leaders having 'experience based' credibility (arising from the peer leader's experience with the health/social issue in question) and 'message-based' credibility (arising from what the peer leader is saying or the way that it is being said).

Strategies to recruit and retain peer leaders who are likely to be credible to different groups of young people should, therefore be considered to be crucial. From the process and outcome evaluations included in this review, recruitment strategies were dominated by adult defined selection criteria. Few studies were able to recruit and retain male peer educators and the peer educators in many of the outcome and process evaluations could be described as 'high achievers'. Although one outcome evaluation directly tried to evaluate the effectiveness of different recruitment strategies (Wiist and Snider, 1991), none of the evaluations, evaluated the processes and/or outcomes associated with different methods of recruiting and retaining peer educators in a rigorous or systematic way.

Clues to the appropriateness of peer-delivered health promotion were also found from the 'sound' outcome evaluations. In several of these, the effects of the intervention were limited to certain sub-groups within the sample. In addition, some of the outcome evaluations, especially the school-based smoking prevention programmes, tested the intervention using samples which were predominantly white and middle class. Examining the characteristics of sub-groups suggests that these interventions were only effective for those people who were less likely to engage in negative health behaviours which the interventions aimed to prevent. For example, in a school-based smoking prevention study, Armstrong *et al.*(1990) found that the long term effects at seven years' follow up of a smoking prevention intervention was limited to females who were non-smokers at the age of 11. Similarly, Kegeles *et al.* (1996) found that high risk-taking men were less likely to have attended the intensive intervention activities, and Orpinas *et al.* (1995) found that the positive effects of a violence prevention curriculum could

not be generalised to older students who reported higher aggression at baseline. The process evaluation of this study also found that males who had a negative evaluation of the programme had higher ratings of aggressive behaviour.

These findings suggest that the kinds of peer-delivered health promotion implemented in the 'sound' outcome evaluations in this review may not be acceptable to all groups of young people, especially those who could be considered at higher risk. The process studies confirm the view that peer-delivered health promotion may not be appropriate for high-risk groups. Even specially tailored recruitment procedures may not achieve the involvement of hard-to-reach and high-risk groups of young people. Thus, at the moment, the evidence suggests that peer education is orientated towards high-achieving pupils. Peer educators may be modelling adult agendas and normative values. Those already excluded are likely to remain excluded if this agenda remains dominant.

Clearly, peer education may vary in effectiveness and appropriateness as a health promotion strategy, according to, for example, cultural setting and health topic. However, most evaluation to date has been on a single-country basis and most studies do not address the issue of appropriateness (or effectiveness) according to subcultures in particular settings. Several ongoing evaluations both within and outside of peer-delivered health promotion may shed light on these issues (see 'Evaluations in progress' below). In particular, the final findings from the multi-country evaluation of the European Network of Health Promoting Schools should provide valuable information upon the appropriateness of schools as a setting for health promotion (see Crosswaite *et al.*, 1996 for a description of this initiative in a UK context).

Before going on to discuss the main issues to arise from this review it is important to make explicit the parameters within which the findings of this review are applicable. Although the mapping section of this report (see p 29) included all types of peer-delivered interventions within a health context, to go on to be included in the process and outcome evaluation sections, studies had to meet additional inclusion criteria. For example, these criteria excluded reports not written in the English language and those which evaluated interventions in which the level of involvement of the peer leaders was minimal. In particular, our inclusion criteria excluded 'peer-counselling' interventions from the USA and Canada as well as other types of interventions which have the primary aim of helping young people deal with their immediate personal and social problems. The results of this review therefore must be interpreted within these parameters. There is thus clearly scope for conducting a similar review to this which focuses upon these types of peer-delivered interventions.

Taken together, the common findings from the outcome and process evaluations suggest that there are three important issues to be addressed within peer-delivered health promotion. The issues are: 1)

Theoretical justifications for peer-delivered health promotion;
2) Training of peer leaders; and 3) Partnerships and empowerment.

Theoretical justifications for peer-delivered health promotion

The reports of both the process and outcome studies allowed us to identify the models and theories, and how these related to key intervention components, which researchers and/or practitioners used to justify and support peer-delivered health promotion. These are often quoted in studies as constituting 'evidence' that peer education is not only appropriate but the most effective way of teaching a range of health promotion topics, especially sex education and HIV/AIDS, and for accessing and motivating young people. However, neither the outcome or process studies provide evidence that these models and theories are the most appropriate, and neither do they provide 'evidence' that the described combinations work. The models and theories therefore remain to be tested.

Whilst the use of theory may well be important for helping to define a framework for helping to focus the content of the intervention on to the theoretical determinants of health and health behaviours (e.g. enhancing self-efficacy, teaching skills to resist social pressure) or style of delivery (e.g. didactic versus interactive presentation), these should not be the 'sole' tool used to plan an intervention. Carrying out a rigorous needs assessment with the target group and working in partnership with them to develop the intervention should also be key tools in the health promotion planning process. As several authors note, an over reliance on theory, especially individualistic psychological theory, can actually serve to neglect the needs and views of the target population (Bunton et al., 1991; Green et al., 1994). Much more work, therefore, needs to be carried out to examine in more detail the exact contribution of theory to the development of effective health promotion interventions (see Milburn (1995), Campbell (1998) and Turner and Shepherd (1999) for work already started on this issue).

Training peer leaders

Despite the amount of training given to peer leaders varying in the studies included in this review from one hour to intensive courses delivered over several months, the importance of giving adequate training and support to peer leaders was emphasised in many studies. Although, the length of training given to peer leaders did not relate to the effectiveness of the resulting intervention in the 'sound' outcome evaluations (see p 56), it is arguable that studies offering only one to two hours of training to peer leaders are likely to leave peer leaders feeling unprepared which will consequently have an effect on the quality of the intervention that is delivered.

Many studies directly examined the views of peer leaders on the training they received (e.g. Fox *et al.,* 1993 [included process evaluation]) whilst others attempted to relate the success of the training, as measured by ratings of peer leader performance, to the impact of the intervention on young people (e.g. Young *et al.,* 1988 [included outcome evaluation]). Some common findings from both the process and outcome evaluations in this respect were that, although peer leaders generally rated their training very positively in terms of increasing their own knowledge, skills and general personal development, they often felt that their training did not adequately prepare them for some of the problems they encountered in delivering the intervention, particularly in relation to managing groups of young people in classrooms within the school setting. Further, when interventions were implemented in school settings, peer leaders were better received by their target audience when they were perceived as well prepared, confident about maintaining class control, encouraging participation and being able to work in a team with other peer leaders.

These findings suggest that training should not end when peer leaders begin to implement the intervention. *Ongoing* training and support sessions need to be provided within any particular programme to help peer leaders deal with the realities of being a peer leader and to work through any unexpected problems which arise. The importance of such ongoing training was clearly illustrated in a process evaluation of peer-delivered safer sex education workshops in the UK (Guy and Banim, 1991 [included process evaluation]). In this study focus groups with peer leaders throughout their training revealed that becoming a competent peer leader was a developmental process and it was only after several ongoing support sessions that the peer leaders were able to adapt to their role.

This, of course, raises the issue of cost. Providing such training and support can be extremely labour-intensive for project staff; some studies lacked both financial and human resources to do this. These findings undermine one of the commonly held assumptions of peer-delivered health promotion that it can be a cost-effective option.

The 'ideal' training programme to emerge from the process and outcome evaluations includes: the personal development of the peer educators; skills for understanding the target group's needs and practising skills for working with groups; and teaching and facilitation skills.

Many processes used for training peer leaders are grounded in counselling and facilitation approaches rather than standard teaching practice. However, when the peer training is translated into action, the peer educators are often taught standard teaching practice methods, thus turning them into mini-teachers. This is a contradiction which needs further exploration and attention. The standard teaching practice approach may not be helpful in the design and delivery of peer education. This may help to illuminate why peer educators appear to

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develop more than the recipient target group in some studies. As do many counsellors in training, peer educators develop as a result of the counselling support elements of their training, resulting in feelings of self-efficacy and empowerment.

Partnerships and empowerment

As outlined in the introduction, one reason for the popularity of peer-delivered health promotion is its potential to be responsive to the self-defined needs of young people, rather than being driven by an adult agenda. Peer-delivered health promotion has thus been advocated as a strategy whereby adults can work in partnership with young people. However, as demonstrated by the mapping section of this report, the majority of peer-delivered interventions do not demonstrate these principles. Interventions were more likely to be implemented on the basis of expert opinion and any involvement of young people in the development of the intervention was rather limited. Thus, what emerges from this review is the lack of rigorous needs assessment and the absence of the involvement of young people throughout all stages of the development of the intervention.

As process evaluations were more likely to evaluate interventions developed in partnership with young people than outcome evaluations, these issues were explored in more depth in the included process evaluations. Many of the included process studies quoted empowerment as being of particular importance. Empowerment, or empowering young people, involves equitable partnerships and a change in the professional client/pupil relationship; a change from teaching to facilitation, which in turn demands an understanding of group dynamics and an empathy for the lives young people lead and the problems they may face.

Church (1995), Green (1992) Rowling (1997) and Weston (1986) have all documented the inherent problems and difficulties with empowerment and partnership approaches. Empowerment is intended to bring about enhanced personal growth, by raising awareness, by supporting young people to harness their own personal power and attributes, and be more efficacious and thus powerful in making choices and changing behaviour. This, of course, may happen, but not always the way professionals intend, and the choices made may be contrary to the adult agenda.

Many of the process evaluations show a significant gap between theory and practice in relation to empowerment and partnerships. There is a lack of evidence to support the activation of these partnerships in practice and throughout the intervention. Massey and Neidigh (1990) document a successful partnership, and the Fife Healthcare NHS Trust project (1996) described the breakdown of such a partnership, with the adults re-taking control when the peer educators began to set the agenda. Young people in turn then resist or ignore the intervention and

are often left feeling let down. The trust is shattered. Egan (1989) has
much positive advice about sustaining such relationships; they need to
be built on respect and genuineness, trust and support with defined
structures and boundaries negotiated with all stakeholders. Above all
they need to be based on the needs of the young people themselves,
developed by them at their own pace, the goals and objectives being
clearly set by them. Top-down as well as client-led interventions can
engender empowerment providing the development and philosophy are
shared and clear.

To some extent, these difficulties in working in equal partnerships with
young people reflect the implications of the way this population group
are socially and culturally constructed as a distinct group,
characterised by their 'non-adult' status (Mayall, 1994, Moore and
Kindness, 1998). As the above process evaluations highlight, the
prevailing discourses of childhood, which position children and young
people without agency, make it difficult for adults, on both a structural
and personal level, to hand over power to young people. A recent
expert working group on promoting the health of children and young
people has begun some work on this issue, recommending a new
research agenda which takes into consideration the social construction
of childhood and young people. This agenda specifically calls for a re-
evaluation of particpatory approaches to health promotion, working in
partnership with young people and peer education (HEA, 1998)

Peer tutoring: a parallel case?

Although a full examination of the educational literature on peer tutoring
is beyond the scope of this review, a brief consideration of salient
issues may be useful, as there are overlaps with those arising in peer-
delivered health promotion research.

The key factor in peer-tutoring for facilitating learning is considered to
be the equal relationship between tutor and tutee which is non-
authoritarian and engenders mutual respect, providing an opportunity
for the open exploration of ideas (Damon, 1984). Meta-analyses
combining the results of many experimental studies have found that
peer tutoring is effective in increasing cognitive abilities (e.g. in reading,
mathematics) for both tutors and tutees (e.g. Cohen *et al.*, 1982; see
Fitz-Gibbon, 1992 for an overview). A note of caution is, however,
offered by Fitz-Gibbon (1992) who argues that these results may
reflect a lack of studies comparing the effectiveness of peer-tutoring
with feasible alternative teaching strategies, rather than the
effectiveness of peer tutoring *per se.* Peer-tutoring is also argued to
have a positive impact on 'non-cognitive' abilities such as personal and
social factors (e.g. increasing the motivation to learn, promoting social
skills, increasing self-esteem and fostering interpersonal relations)
(see Foot *et al.*, 1990). Evidence for these effects of peer tutoring,
although promising, is, however, still lacking (Fitz-Gibbon, 1992).

Similarly more research has been called for to examine the optimal conditions for the effectiveness of peer tutoring (Topping and Ehly, 1998). Interrelated issues in this literature are questions as to whether peer tutors should be the same age or older than the tutees, the level of structuring and monitoring required in peer-tutoring programmes, and whether tutor-tutee roles should be fixed or interchangeable. For example, although there is some evidence that cross-age tutoring may be more effective than same-age tutoring, using same-age tutors may offer organisational advantages. In classwide peer tutoring programmes, in which all participants alternate tutor and tutee roles, use of same-age tutors has had some support (Fitz-Gibbon, 1992).

An important distinction between 'learning-by-tutoring' projects, in which the primary aim is to engender positive outcomes within the tutor, and 'tutorial service' projects, in which the primary focus is on the tutee, has been called for within the peer tutoring literature (Fitz-Gibbon, 1992). These differences in focus have implications for the type of programme implemented, the type of training required for the peer tutors and the expected outcomes of the programme. Fitz-Gibbon (1992) argues that in 'tutorial service' projects, peer tutors teach a topic they are already familiar with and so are not expected to show learning gains. This call fits in with the findings of this review which suggest that some projects, although intending to use peer leaders to provide an intervention to a wider audience, focus their evaluation on the effects on the peer leaders only. In developing and implementing a peer-delivered health promotion project, researchers and practitioners need to be clear about whether they are trying to bring about positive changes in peer leaders or recipients or both.

Evaluating effectiveness

One of the main methodological findings of this review is that there is a considerable lack of rigorous evaluation of effectiveness. Many outcome evaluations failed to meet the minimum four methodological criteria necessary to deem a study potentially able to produce reliable results about the effectiveness of an intervention. Of particular concern to this review, was the lack of any soundly evaluated outcome evaluations from the UK. This relates the initial small pool of outcome evaluations using an experimental design conducted in the UK as compared to the USA and perhaps reflects the absence of a tradition in this country for carrying out experimental research to evaluate social interventions (see Oakley, 1998 for a fuller discussion). Common problems with outcome evaluations were employment of non-equivalent control or comparison groups and failure to report all pre-intervention data. These findings are similar to the findings of other systematic reviews examining a variety of different approaches to health promotion amongst young people. For example, previous reviews of sexual health interventions for young people and men who have sex with men and a review of the effectiveness of workplace health promotion, conducted at the EPI-Centre have found similar

proportions of outcome evaluations to be 'sound', and a similar scarcity of sound outcome evaluations conducted in the UK (Oakley et al., 1996; Peersman *et al.*, 1996; Peersman et al., 1998). Recent reviews in the HEA's effectiveness series (e.g White and Pitts, 1997) have come to similar conclusions.

These findings are consistent with earlier reviews in the health promotion field. For example Flay's (1985) review of the social influences approach to smoking noted variability in study quality, and the common problems of high attrition rates and failure to report pre-intervention data. In a review of the effectiveness of drug programmes, Bangert-Drowns (1988) found that only 33 outcome evaluations met a set of minimum methodological standards for a meta-analysis. The same messages emerge in recent non-systematic reviews of the effectiveness of peer-delivered health promotion. For example, Milburn (1995) and Fenell (1993) both note that there is a lack of clear evidence on effectiveness due to lack of rigorous research.

One lesson to be learned from this review is that, although RCTs are arguably the best method for generating potentially reliable data on the effectiveness of interventions, using this design does not automatically mean that results are reliable. Of the 49 included outcome evaluations in this review, 29 were RCTs. Only seven were classified as 'sound'. Of the remaining 22, 17 did not present the necessary pre-intervention data and in five the intervention and control groups were deemed by reviewers to be non-equivalent on the basis of statistically significant differences either on baseline outcome measures or on important socio-demographic variables (e.g. social class, education level). Although random allocation to control and intervention groups should ensure that any differences observed between them are due to chance, we felt that we were unable to ignore the observed differences between intervention and control groups in these studies. The premise of random allocation only holds if the procedure is carried out using 'truly' random methods; even then significant differences can occur by chance. It is striking that in none of the RCTs which were deemed to have non-equivalent groups, did the authors report their methods for randomly allocated groups; thus the reviewers were unconvinced that observed differences were due to chance.

In terms of failure to report pre-intervention data, many of the outcome evaluations either did not report *any* pre-intervention data or only reported pre-intervention data for participants who remained in the study at follow-up (i.e. did not present data on drop-outs). This led to two problems for the evaluations. Firstly, the equivalence of the intervention and control group could not be independently judged by the reviewers. Secondly, the reviewers could not be sure that any observed changes (or no changes) in outcomes between baseline and follow-up extended to the whole sample or just to a particular sub-group (i.e. those who remained in the evaluation). This problem was compounded by the lack of studies presenting data on attrition rates, especially in terms of reporting whether those who dropped out of the

evaluation differed from those who remained in the evaluation on baseline outcome measures or socio-demographic variables.

As this discussion illustrates, some of these problems could be resolved by contacting authors. We are currently contacting authors to request pre-intervention data for all participants and information regarding their method of random allocation. Although this is proving to be a substantial task, it does have the potential to increase considerably the evidence-base available to answer questions about the effectiveness of peer-delivered health promotion.

The finding that the evidence-base for peer-delivered health promotion is currently very limited raises an interesting issue concerning the validity of implementing peer-delivered interventions based on claims which argue that research has shown it to be an effective method. Of particular note is that a number of outcome evaluations which were deemed to be 'not sound', were studies which are routinely cited by other authors as demonstrating the effectiveness of peer-delivered heath promotion. For some of these, reporting of pre-intervention data was problematic. For example, a report (Perry *et al.*, 1989) comparing the effectiveness of peer and teacher delivery of an intervention to delay the onset of alcohol use in young people in four countries did not present pre-intervention data on alcohol use; two reports comparing peer delivery to teacher delivery of smoking prevention interventions (Murray *et al.*, 1984; Perry *et al.*, 1983) did not report pre-intervention data on smoking rates; and a report evaluating the effectiveness of 'life skills' training for smoking prevention only reported pre-intervention data for those participants who completed follow-up (Botvin and Eng, 1982). In other studies, non-equivalent groups were problematic for the interpretation of results. A particular problem in this respect was that in these outcome evaluations, the intervention groups tended to be significantly higher than the control groups on measures of risk behaviours. For example in a non-randomised trial of a smoking prevention intervention, baseline smoking rates were higher in the peer-delivered intervention groups (Johnson *et al.*, 1986); in the non-randomised trial of the North Karelia Youth Project there were more smokers in the intensive intervention group (Vartiainen *et al.*, 1998); and in the RCT of Project Northland there were higher smoking and alcohol rates and more American Indians in the intervention group (Perry *et al.*, 1996). This raises serious questions about methods of allocation to control and intervention groups.

Despite these methodological problems, which make it difficult to draw reliable conclusions about the effectiveness of peer-delivered health promotion, these evaluations do present several valuable lessons to build on. Often these studies evaluated complex community interventions and employed the relatively innovative methodology of using communities or schools rather than individuals as the unit of allocation. As Flay (1985) noted of trials conducted in the late 1970s and early 1980s (some of which are included in this review with long-term follow-ups), perhaps the greatest contribution of these studies is

to improving research methodology in terms of "approaches to random assignment of large, aggregated units (schools) to conditions, obtaining informed consent, tracking of individuals over time, minimising attrition and measurement " (Flay, 1985:91).

Such attention to ensuring rigorous evaluation of effectiveness has not, however, been matched by an equivalent effort examining processes within outcome evaluations. Although there is a growing consensus of the need for outcome evaluations with integral process evaluations, only three of the 12 'sound' outcome evaluations in this review also measured processes. There is therefore an urgent need for evaluations to incorporate both process and outcomes.

Evaluating process

The critical appraisal of process studies undertaken in this review is a preliminary attempt to move towards agreed criteria for assessing the quality of 'qualitative' and non-experimental quantitative research. It has had two major advantages in terms of the review: clarifying the role and purpose of process evaluations in relation to methodological quality, and illuminating some of the problems about these evaluations, particularly the lack of faith in them as 'evidence'. The main gain from the analysis of these has been increased understanding of the importance of methodological rigour and of the theoretical components researchers and practitioners combine to justify and support peer education. Other gains have been greater understanding of why peer-delivered health promotion may be successful or unsuccessful. As already noted, much of this kind of information was lacking in the outcome evaluations as very few included integral process evaluations. One of the major limitations of the evidence of the process evaluations was that it was mostly confined to evaluating the perceptions of peer-delivered health promotion from the viewpoint of the peer educators or the adult professional involved in the setting up the project.

Reflecting on our experience in critically appraising the process evaluations, we encountered two major difficulties, the first at the level of applying inclusion criteria, the second at the level of applying the quality criteria. Firstly, in terms of inclusion criteria, a substantial proportion of the evaluations that we initially located had to be excluded on the basis that they did not report on a 'formal' evaluation. Although they undertook some critical reflection on the experience of implementing peer-delivered health promotion and did carry out an evaluation, the methods and results were not clearly or systematically presented which would make it difficult for the reviewers to systematically assess its quality and extract any learning points from it. For example, many process evaluations did not make it clear what the evaluative research questions and methods were and the results section often did not actually present any results but rather made a series of evaluative comments in support of the intervention (e.g. McGuiness, n.d [excluded process evaluation]; Palmer et al., 1989

[excluded process evaluation]).

Secondly, in terms of applying the quality criteria, there were difficulties for the two reviewers in applying the criteria in the most standardised way possible. Many of the quality criteria used in this review involved the reviewer making a judgement as to whether different aspects of the research were 'clear' or 'adequate'. Lack of specification in the original four sets of quality criteria which were used (Boulton et al., 1996; Cobb and Hagemaster, 1987; Mays and Pope, 1995; Medical Sociology Group, 1996) about what exactly constituted 'clear' or 'adequate' posed a problem for trying to negotiate a shared definition between the two reviewers and between studies. Overall the agreement for the two reviewers in applying the quality criteria ranged from 87% for 'Inclusion of sufficient original data to mediate between data and interpretation' to 60% for 'clear description of sample'. To reach agreement, the reviewers had to not only look to themselves to resolve disagreement (in terms of differences in research and other professional experience), but also across all of the studies. For example, both reviewers had high expectations of what should constitute a report having provided a 'clear' description of the sample. However, we were soon having to make relative judgements as such detail was often at best minimal and at worst completely lacking.

A further important question was the utility of the criteria themselves to accurately assess the quality of studies. In this respect, the criteria which required data analysis to be carried out by more than one researcher was found to problematic. This criteria was initially chosen to represent a way of establishing the reliability and validity of the data analysis. Only three process evaluation actually met this criteria and furthermore, how employing more than one researcher in the analysis of data led to more reliable or valid results was never demonstrated or explained by the authors of these three evaluations. Indeed, exploring the complexities of how researchers 'construct' and interact with data is currently under much debate within the qualitative research literature (see, for example, Mauthner et al., 1998). Further work on should explore other ways of assessing whether the data analysis can be considered to be 'trustworthy'. Related to this point is the question of whether the evaluator should be part of the overall project team or whether they should take on the role of a 'neutral' and 'detached' observer. Although the 'role' of the evaluator was never made clear in the reports included in this review, the part the evaluator plays in the construction of the data, findings and conclusions of the evaluation needs to be considered in the future.

In addition, other quality issues, which were not addressed by the criteria we used were found to be important. In particular, as noted above, the privileging of young people's views, which Popay et al. (1998) have identified as being an important quality criteria in the assessment of qualitative health services research, was found to be a major problem for the process evaluations.

Although the criteria we used to assess the process evaluations came from within the qualitative literature, some of our process evaluations collected mainly quantitative data. Using 'qualitative' criteria to assess the quality of process evaluations did not mean that we assumed that all process evaluations used qualitative research. On the contrary, our 'choice' of qualitative criteria reflected the fact that already established criteria, which could be used to assess evaluations which use a variety of methods, qualitative or quantitative, do not exist. The fact that we could only choose either a set of 'quantitative' or 'qualitative' criteria also reflects the deeply ingrained polarisation of these methods within the social and health sciences. However, it became increasingly apparent that the criteria we used were equally applicable to quantitative data as they were to qualitative data. Indeed, within the qualitative literature, the four sets of criteria which we drew on have been criticised for being 'quantitative' in nature (see Oakley (forthcoming) for a discussion comparing 'quantitative' and 'qualitative' criteria for assessing the quality of 'qualitative research'.) From our experience of using these criteria, we would argue that they represent a useful way of initially screening the quality of all research, whether qualitative or quantitative.

Future work on developing quality criteria for assessing process evaluations will need to take into account the different research questions and the different research methods being used within process evaluations. It could be argued that in addition to the criteria used here, which are useful for initially assessing the quality of all types of research (whether qualitative or quantitative), further specific criteria are required which take into account the particular research question which the process evaluation aims to address and the particular method used to address the question. For example an evaluation which used participant observation to examine the barriers and facilitators to successful implementation of an intervention would need to be assessed using different quality criteria to a process evaluation using a quantitative survey method to elicit the views of the target population on the intervention they received.

Finally, it is important to consider briefly the 'type' of reports which were included as process evaluations within this review. A third of the process evaluations were written up in unpublished reports or in the form of articles for non peer reviewed journals. Although our inclusion criteria, that a process evaluation had to report on a 'formal' evaluation (see page 24), meant that all included reports were about a piece of evaluative research, this raises several related issues. Firstly, unpublished reports could be considered to be at a distinct disadvantage to those published in peer-reviewed journals. Secondly, not all the included process were primarily written for a research audience. Thirdly, many of the process evaluations (unpublished or published) were 'project-led' evaluations rather than 'research-led' evaluations. Thus, it could be argued that the criteria we used to assess the quality of these process evaluations did not take in to account the practical and resource constraints that these evaluations

were under. There is thus clearly some scope for further work to examine ways of quality assessing the value of research which is subject to such constraints.

As a result of our exercise in developing initial criteria for assessing the quality of process studies, there are a number of clear suggestions which can be made about how these studies might better be undertaken and written up in future.

1. The literature review/theoretical framework

i) The literature review needs to draw on other national and international literature and experience (especially known best practice) and use this to inform the development of the intervention.

ii) It needs to be appropriately and adequately referenced.

iii) It should state the extent of the problem and be supported through relevant epidemiological, social/psychological, environmental or other appropriate evidence.

iv) It should include information about how the intervention is likely to make an impact on the problem.

v) It should include an explicit acknowledgement and discussion of any relevant theoretical framework.

2. Aims and objectives

i) The aims and objectives need to be explicitly stated, including how the intervention will be developed, that is, the intended goals for each component of the intervention.

ii) These goals should state what is to be done, how it will be achieved and how it will be evaluated (how will anyone know whether it has

been done or not and whether it was successful or not, what methods will be used to determine this?)

iii) It should be possible to check the *integrity* of the intervention by tracing the results and conclusions back to these stated objectives and evaluative research questions.

3. The context

i) All stakeholders, alliances and partnerships need to be described.

ii) The setting in which the intervention is to be implemented should be described, highlighting any unique features, facilitators or barriers which might help or hinder the intervention. Any incentives given to participants or others should be described.

iii) The needs assessment research should be described so that reviewers can assess the types of partnerships used and the extent to which the intervention was based on normative or felt need.

4. Sample description

i) Socio-demographic details of the sample used should be described in detail.

ii) The number of researchers and practitioners involved and any other alliances or partnerships/stakeholders should be stated.

5. Methods

i) A published report should include a clear and detailed explanation of methodology used to answer the evaluation questions set. It should clearly describe the data collection methods, including any indicators or quality criteria used for assessing whether the goals and targets set for the evaluation have been reached.

ii) Any confounding factors, possible bias, or problems of the methods chosen, should be explained and their possible effects on the data clarified. These should be returned to in the results section.

6. Analysis of data

i) The role and responsibility of researchers in the data analysis, the results and conclusions should be discussed.

ii) There needs to be is a clear description of how many researchers-practitioners are involved, what their role in the data analysis is and the experience they bring to this analysis.

7. Sufficient original evidence

i) There should be clear tables and diagrams with sufficient explanatory information for readers to come to their own conclusions.

ii) There should be a traceable journey from data analysis to results, conclusions and recommendations, one which other researchers can make sense of.

iii) There should be sufficient data or quotations for readers and reviewers to make considered judgements about the results and conclusions.

iv) Any problems with the data collection methods, the analysis and how this was carried out, the possible effects on the final conclusions and recommendations, should be highlighted.

Evaluating process and outcome: Crossing the divide

This review represents a first attempt to include and quality assess process evaluations as well as outcome evaluations in a systematic way. Therefore this review reflects a point of consensus, arising from the debate concerning appropriate methodology for systematic reviews within health promotion, regarding the need to base decision-making within health promotion upon the results of both rigorous outcome evaluations and rigorous process evaluations. Whilst well-designed outcome evaluations are able to answer questions about whether interventions lead to changes in health outcomes, process evaluations are able to answer other closely related questions around, for example, the acceptability of health promotion interventions, barriers to successful implementation and examining why interventions work or do not work.

A further area of development within systematic review methodology is the need to address the issue of the quality of interventions. The inclusion and quality assessment criteria used in this review demanded that *evaluations* (either of process or outcome) of interventions be of a high quality (or at least reach a minimum level of quality). However no attempt was made to assess the quality of the *interventions* being evaluated. This raises two issues. Firstly, evaluations judged to be of high quality in this review does not mean that the intervention itself was of a high quality. In the case of outcome evaluations, it does, however, allow us to assess reliably whether the intervention was effective in changing health outcomes. Secondly, interventions of a high quality which were either not evaluated or evaluated in such a way that they did not meet the inclusion and/or quality assessment criteria, would have been 'lost' to the review. Future systematic reviews and debates should consider whether the role of a systematic review is to assess the quality of interventions as well as their evaluations, and if so, what criteria could be used to do this and how could this be achieved in a systematic and explicit way. Explorations of how systematic reviews of evaluative research complement recent initiatives in compiling examples of 'best practice' in health promotion also need to be undertaken.

At the same time, it needs to be emphasised that an intervention judged to be of a high quality does not mean that the intervention will be effective in bringing about positive changes in health outcomes. A systematic assessment of the quality of interventions could be used to identify interventions which should then be rigorously evaluated according to both process and outcome. Such evaluations should not dismiss the value of using randomised controlled trials, with integral process measures. Whilst we accept that the RCT cannot answer all the important questions which are relevant to decision-making in health promotion and that researchers and practitioners are subject to funding and other resource constraints, these should not be used to argue that

the RCT is an inappropriate tool for evaluating the effectiveness of health promotion. Choice of research method needs to be based upon a particular method's ability to best answer the research questions of interest (see Oakley (1998) for a fuller discussion of these issues).

Evaluations in progress

Peer-delivered health promotion is a flourishing industry, and much work in this field is currently going on. In this final section we discuss briefly some of this ongoing research which is being carried out in the UK. This research is important as it addresses some of the issues which have been raised by this review.

Based on the pilot by Charleston et al. (1996), a peer-delivered sex education programme is currently being evaluated within a large multi-centre randomised controlled trial in schools in England. This study is systematically collecting process data to illuminate the findings of the trial. This parallels a teacher-delivered sex education trial currently underway in Scotland. As there is currently a lack of information regarding whether and how different providers have differential impact, the results of these studies together will provide important information on the differences between teachers and peers as deliverers of sex education.

One of the issues raised by this review was the different types of peer-delivered health promotion which have been implemented. Whilst the 'pedagogical' model has been implemented in a wide variety of settings and within different age groups, the 'diffusional' or 'community mobilisation' model has so far been restricted to older young people within community settings. However, Bloor et al. (1998) recently conducted a pilot study for a peer-delivered smoking prevention intervention for young people in a school setting using such an approach. This intervention involves selecting 'key opinion leaders' within schools to promote no smoking within informal contacts with their peers. The main trial for this is now underway and again incorporates an integral process evaluation.

CONCLUSIONS

The aim of the review described in this report was to survey what is known from available evidence about the effectiveness and appropriateness of peer-delivered health promotion for young people. Overall the review found that there was lack of rigorous evaluations of both process and outcome. Many of these studies gave little information on the specific characteristics of the peer-delivered health promotion they evaluated and there was only a limited attempt to examine young people's views on the interventions that were delivered to them. There is thus, clearly room for both outcome and processes studies to increase the extent to which they evaluate interventions based on information about what young people themselves say they need, and which are developed with some sort of partnership between the target group and the intervention providers.

Although the review did find some evidence for the effectiveness of peer-delivered approaches in producing positive changes in health behaviour, a clear picture of success is still to be determined. In particular, much more work is needed in trying to gain a clearer understanding of the different processes involved in peer-delivered health promotion and how these relate to the success or otherwise of these interventions and, to assess the extent to which success in one context is highly specific or could be generalised to other contexts and groups of young people. Further, while many studies placed a good deal of emphasis on the importance of various theories in developing effective health promotion, the exact contribution of these theories is still unclear.

The current evidence-base for peer-delivered health promotion is therefore limited. Although one of the main recommendations to arise from the results of this review is that greater care should be taken to develop and test interventions using sound methodological principles, our review findings did suggest many specific recommendations for future research and practice within peer-delivered health promotion. More generally, recommendations have also been made for the development of health promotion for young people and for systematic review methodology.

APPENDIX 1: SEARCH STRATEGIES

Search strategies for commercially available electronic databases covered: EMBASE (1980 to September 1998); ERIC (1992 to September 1998); Medline (1965 to September 1998); PsycLIT (1970 to September 1999) and the Social Science Citation Index (1981 to September 1999). Separate search strategies were developed for each of the databases. Access to EMBASE, ERIC, Medline and PsycLIT was through the SPIRS operating system and for the Social Science Citation Index through BIDS.

For EMBASE, ERIC, Medline and PsycLIT terms in upper-case are from each database's controlled vocabulary system (thesaurus) and terms in lower-case are free text terms. Since the Social Science Citation Index does not have a controlled vocabulary, free-text terms were used only.

EMBASE

Terms for peer education

#01   Peer*
#02   educat* or promot* or intervention* or program* or train* or counsel* or advis* or lead* or tutor* or advocat* or teach* or taught* or help* or instruct* or manag* or assist* or led or deliver* or directed* or involve* or participat* or approach* or implement*

#03   #1 near6 #2

#04   teen* counsel* or teen* leader* or teen* adviser* or teen* tutor or teen* trainer* or teen* instructor or teen* led or teen* delivered or teen* directed or teen* planned or teen* implemented or teen* instructed or teen* promoted or teen* trained

#05   adolescent* leader* or adolescent* led or adolescent* delivered or adolescent* directed or adolescent* planned or adolescent* implemented or adolescent* instructed or adolescent* promoted or adolescent* trained

#06   student* leader* or student* led or student* delivered or student*directed or student* planned or student* implemented or student* instructed or student* promoted or student* trained

#07   pupil* led or pupil* delivered or pupil* directed or pupil* planned or pupil* implemented or pupil* instructed or pupil* promoted or pupil* trained

#08   young people led or young people delivered or young people directed or young people planned or young people implemented or young people instructed or young people promoted or young people trained or young people taught or young people educated

Combining all previous searches

#09   #3 or #4 or #5 or #6 or #7 or #8

Exclusion Terms

#10   PEER-REVIEW/ all subheadings
#11   exp MEDICAL-EDUCATION/ all subheadings

#12   #10 or #11

Final result

#13   #9 not #12

ERIC

Terms for peer education

#01   PEER-COUNSELING in DE
#02   PEER-GROUPS in DE
#03   PEER-RELATIONSHIP in DE
#04   PEER-INFLUENCE in DE
#05   PEER-TEACHING in DE
#06   CROSS-AGE-TEACHING in DE
#07   #1 or #2 or #3 or #4 or #5 or #6
#08   Peer*

#09   health educat* or promot* or intervention* or program* or train* or counsel* or advis* or lead* or tutor* or advocat* or help* or instruct* or manag* or assist* or led or deliver* or directed* or involve* or participat* or approach* or implement*

#10   #7 with #9
#11   #8 near6 #9

#12   #10 or #11

#13   teen* counsel* or teen* leader* or teen* adviser* or teen* tutor or teen* trainer* or teen* instructor or teen* led or teen* delivered or teen* directed or teen* planned or teen* implemented or teen* instructed or teen* promoted or teen* trained

#14   adolescent* leader* or adolescent* led or adolescent* delivered or adolescent* directed or adolescent* planned or adolescent* implemented or adolescent* instructed or adolescent* promoted or adolescent* trained

#15   student* leader* or student* led or student* delivered or student* directed or student* planned or student* implemented or student* instructed or student* promoted or student* trained

#16   pupil* led or pupil* delivered or pupil* directed or pupil* planned or pupil* implemented or pupil* instructed or pupil* promoted or pupil* trained

#17   young people led or young people delivered or young people directed or young people planned or young people implemented or young people instructed or young people promoted or young people trained or young people taught or young people educated

#18   #13 or #14 or #15 or #16 or #17

#19   #12 or #18

Terms for health promotion and prevention of disease

#20   HEALTH-EDUCATION in DE
#21   HEALTH-MATERIALS in DE
#22   WELL-BEING in DE
#23   PUBLIC-HEALTH in DE
#24   DISEASE-CONTROL in DE
#25   HEALTH-PROGRAMS in DE
#26   PREVENTION- in DE
#27   HEALTH-NEEDS in DE
#28   PATIENT-EDUCATION in DE
#29   HEALTH-PROMOTION in DE
#30   PREVENTIVE-MEDICINE in DE
#31   HEALTH-ACTIVITIES in DE
#32   BEHAVIOR- in DE
#33   BEHAVIOR-CHANGE in DE
#34   BEHAVIOR-MODIFICATION in DE
#35   BEHAVIOR-THEORIES in DE
#36   SOCIAL-BEHAVIOR in DE
#37   BEHAVIOR-STANDARDS in DE
#38   BEHAVIORAL-SCIENCE-RESEARCH in DE
#39   BEHAVIOR-PATTERNS in DE
#40   KNOWLEDGE-LEVEL in DE
#41   ATTITUDE-CHANGE in DE
#42   BELIEFS- in DE
#43   ATTITUDES- in DE
#44   #42 or #43
#45   RISK- in DE

#46   AT-RISK-PERSONS in DE
#47   SEXUALITY- in DE
#48   ACQUIRED-IMMUNE-DEFICIENCY-SYNDROME in DE
#49   PREGNANCY- in DE
#50   PREGNANT-STUDENTS in DE
#51   ABORTIONS- in DE
#52   FAMILY-PLANNING in DE
#53   CONTRACEPTION- in DE
#54   EARLY-PARENTHOOD in DE
#55   UNWED-MOTHERS in DE
#56   VENEREAL-DISEASES in DE
#57   ALCOHOL-EDUCATION in DE
#58   SEX-EDUCATION in DE
#59   DRINKING- in DE
#60   ALCOHOL-ABUSE in DE
#61   ALCOHOLISM- in DE
#62   DRUG-EDUCATION in DE
#63   SUBSTANCE-ABUSE in DE
#64   DRUG-ABUSE in DE
#65   DRUG-USE in DE
#66   ILLEGAL-DRUG-USE in DE
#67   DRUG-ADDICTION in DE
#68   SMOKING- in DE
#69   TOBACCO- in DE
#70   NUTRITION-INSTRUCTION in DE
#71   EATING-HABITS in DE
#72   OBESITY- in DE
#73   BODY-WEIGHT in DE
#74   FOOD- in DE
#75   DIETETICS- in DE
#76   FIRST-AID in DE
#77   ACCIDENT-PREVENTION in DE
#78   STRESS-MANAGEMENT in DE
#79   MENTAL-HEALTH-PROGRAMS in DE
#80   MENTAL-HEALTH in DE
#81   ANOREXIA-NERVOSA in DE
#82   BULIMIA- in DE
#83   SELF-CARE-SKILLS in DE
#84   COPING- in DE
#85   ANXIETY- in DE
#86   RESISTANCE-PSYCHOLOGY in DE
#87   SKILL-DEVELOPMENT in DE
#88   SELF-EFFICACY in DE
#89   SELF-ESTEEM in DE
#90   CANCER- in DE
#91   PHYSICAL-EDUCATION in DE
#92   PHYSICAL-FITNESS in DE
#93   PHYSICAL-ACTIVITIES in DE
#94   PHYSICAL-ACTIVITY-LEVEL in DE
#95   RECREATIONAL-ACTIVITIES in DE
#96   CRIME-PREVENTION in DE

#97   DROPOUT-PREVENTION in DE
#98   DELINQUENCY- in DE
#99   DELINQUENCY-PREVENTION in DE
#100   VIOLENCE- in DE

#101   #20 or #21 or #22 or #23 or #24 or #25 or #26 or #27 or #28 or
       #29 or #30 or #31 or #32 or #33 or #34 or #35 or #36 or #37 or
       #38 or #39 or #40 or #41 or #42 or #43 or #44 or #45 or #46 or
       #47 or #48 or #49 or #50 or #51 or #52 or #53 or #54 or #55 or
       #56 or #57 or #58 or #59 or #60 or #61 or #62 or #63 or #64 or
       #65 or #66 or #67 or #68 or #69 or #70 or #71 or #72 or #73 or
       #74 or #75 or #76 or #77 or #78 or #79 or #80 or #81 or #82 or
       #83 or #84 or #85 or #86 or #87 or #88 or #89 or #90 or #91 or
       #92 or #93 or #94 or #95 or #96 or #97 or #98 or #99 or #100

Final Result

#102   #19 and #101

MEDLINE

Terms for peer education

#01   PEER-GROUP/ all subheadings
#02   Peer*
#03   educat* or promot* or intervention* or program* or train* or
       counsel* or advis* or lead* or tutor* or advocat* or teach* or
       taught* or help* or instruct* or manag* or assist* or led or
       deliver* or directed* or involve* or participat* or approach* or
       implement*

#04   #1 with #3

#05   #2 near6 #4

#06   teen* counsel* or teen* leader* or teen* adviser* or teen* tutor
       or teen* trainer* or teen* instructor or teen* led or teen*
       delivered or teen* directed or teen* planned or teen*
       implemented or teen* instructed or teen* promoted or teen*
       trained

#07   adolescent* leader* or adolescent* led or adolescent* delivered
       or adolescent* directed or adolescent* planned or adolescent*
       implemented or adolescent* instructed or adolescent*
       promoted or adolescent* trained

#08   student* leader* or student* led or student* delivered or
       student*directed or student* planned or student* implemented
       or student* instructed or student* promoted or student* trained

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#09   pupil* led or pupil* delivered or pupil* directed or pupil* planned or pupil* implemented or pupil* instructed or pupil* promoted or pupil* trained

#10   young people led or young people delivered or young people directed or young people planned or young people implemented or young people instructed or young people promoted or young people trained or young people taught or young people educated

Combining all previous searches

#11   #4 or #5 or #6 or #7 or #8 or #9 or #10

Exclusion Terms

#12   exp PEER-REVIEW/ all subheadings
#13   exp MEDICAL-EDUCATION/ all subheadings
#14   peer* review*

#15   #12 or #13 or #14

Final result

#16   #11 not #15

PSYCLIT

Terms which exactly locate peer-delivered interventions

#01   PEER-COUNSELING in DE
#02   PEER-TUTORING in DE

#03   #1 or #2

Less exact terms to locate peer-delivered interventions

#05   PEER-PRESSURE in DE
#06   PEER-RELATIONS in DE
#07   PEERS- in DE
#08   #5 or #6 or #7
#09   educat* or promot* or intervention* or program* or train* or counsel* or advis* or lead* or tutor* or advocat* or teach* or taught* or help* or instruct* or manag* or assist* or led or deliver* or directed* or involve* or participat* or approach* or implement*

#10   #8 with #9
#11   peer*

#12   #11 near6 #9
#13   #10 or #12

Alternative free text terms for peer-delivered health promotion

#14   teen* counsel* or teen* leader* or teen* adviser* or teen* tutor or teen* trainer* or teen* instructor or teen* led or teen* delivered or teen* directed or teen* planned or teen* implemented or teen* instructed or teen* promoted or teen* trained

#15   adolescent* leader* or adolescent* led or adolescent* delivered or adolescent* directed or adolescent* planned or adolescent* implemented or adolescent* instructed or adolescent* promoted or adolescent* trained

#16   student* leader* or student* led or student* delivered or student* directed or student* planned or student* implemented or student* instructed or student* promoted or student* trained

#17   pupil* led or pupil* delivered or pupil* directed or pupil* planned or pupil* implemented or pupil* instructed or pupil* promoted or pupil* trained

#18   young people led or young people delivered or young people directed or young people planned or young people implemented or young people instructed or young people promoted or young people trained or young people taught or young people educated

#19   #14 or #15 or #16 or #17 or #18

#20   #13 or #19

Terms for health promotion and disease prevention

#21   explode HEALTH-EDUCATION in DE
#22   KNOWLEDGE-LEVEL in DE
#23   HEALTH-KNOWLEDGE in DE
#24   HEALTH-PROMOTION in DE
#25   PREVENTION-- in DE
#26   PREVENTIVE-MEDICINE in DE
#20   RISK-MANAGEMENT in DE
#21   RISK-PERCEPTION in DE
#22   RISK-TAKING in DE
#23   HEALTH-BEHAVIOR in DE
#24   HEALTH-ATTITUDES in DE
#25   explode LIFESTYLE in DE
#26   explode PHYSICAL-ILLNESS-ATTITUDE-TOWARDS in DE
#27   BEHAVIOR-MODIFICATION in DE
#28   BEHAVIOR-CHANGE in DE

#29   BEHAVIOR-THERAPY in DE
#30   DECISION-MAKING in DE
#31   CHOICE-BEHAVIOR in DE
#32   ACQUIRED-IMMUNE-DEFICIENCY-SYNDROME in DE
#33   AIDS-ATTITUDES-TOWARD in DE
#34   HUMAN-IMMUNODEFICIENCY-VIRUS in DE
#35   VENEREAL-DISEASES in DE
#36   PSYCHOSEXUAL-BEHAVIOR in DE
#37   SEXUAL-ABSTINENCE in DE
#38   SEXUAL-INTERCOURSE-HUMAN in DE
#39   PREMARITAL-INTERCOURSE in DE
#40   ADOLESCENT-PREGNANCY in DE
#41   PREGNANCY-in DE
#42   ADOLESCENT-FATHERS in DE
#43   ADOLESCENT-MOTHERS in DE
#44   UNWED-MOTHERS in DE
#45   explode FAMILY-PLANNING in DE
#46   FAMILY-PLANNING-ATTITUDES in DE
#47   SEXUAL-ATTITUDES in DE
#48   SEXUAL-RISK-TAKING in DE
#49   INDUCED-ABORTION in DE
#50   SMOKELESS-TOBACCO IN DE
#51   TOBACCO-SMOKING IN DE
#52   DRUG-ABUSE-PREVENTION IN DE
#53   EXPLODE DRUG-ABUSE IN DE
#54   ALCOHOL-DRINKING-ATTITUDES IN DE
#55   DRUG-USAGE-ATTITUDES
#56   ALCOHOL-DRINKING-ATTITUDES
#57   SOCIAL-DRINKING
#58   DRINKING-BEHAVIOR
#59   DIETS- IN DE
#60   EXPLODE EATING IN DE
#61   FOOD-INTAKE IN DE
#62   NUTRITION IN DE
#63   WEIGHT-CONTROL IN DE
#64   OBESITY IN DE
#65   FOOD-PREFERENCES IN DE
#66   FOOD- IN DE
#67   EATING-ATTITUDES IN DE
#68   EXPLODE STRESS- IN DE
#69   STRESS-MANAGEMENT IN DE
#70   ANXIETY-MANAGEMENT IN DE
#71   EXPLODE ANXIETY IN DE
#72   SLEEP IN DE
#73   SLEEP-DISORDERS IN DE
#74   COPING-BEHAVIOR IN DE
#75   SELF-ESTEEM IN DE
#76   SELF-CONFIDENCE IN DE
#77   SOCIAL-SKILSS IN DE
#78   SOCIAL-SKILLS-TRAINING IN DE
#79   COMMUNICATION-SKILLS-TRAINING IN DE

#80   SKILL-LEARNING IN DE
#81   ASSERTIVENESS-TRAINING IN DE
#82   SELF-PERCEPTION IN DE
#83   SELF-EFFICACY IN DE
#84   HUMAN-RELATIONS-TRAINING IN DE
#85   JUVENILE-DELIQUENCY IN DE
#84   PREDELINQUENT-YOUTH IN DE
#85   CRIME-PREVENTION IN DE
#86   VIOLENCE- IN DE

#87   #21 or #22 or #23 or #24 or #25 or #26 or #27 or #28 or #29 or
       #30 or #31 or #32 or #33 or #34 or #35 or #36 or #37 or #38 or
       #39 or #40 or #41 or #42 or #43 or #44 or #45 or #46 or #47 or
       #48 or #49 or #50 or #51 or #52 or #53 or #54 or #55 or #56 or
       #57 or #58 or #59 or #60 or #61 or #62 or #63 or #64 or #65 or
       #66 or #67 or #68 or #69 or #70 or #71 or #72 or #73 or #74 or
       #75 or #76 or #77 or #78 or #79 or #80 or #81 or #82 or #83 or
       #84 or #85 or #86 or #87

#88   #20 and #87

#89   #88 or #3

Exclusion Terms

#90   PEER-EVALUATION in DE
#91   Peer* Review*
#92   #90 or #91

Final Result

#93   #89 not #92

SOCIAL SCIENCE CITATION INDEX

Terms for peer education

#01   peer* educat*
#02   peer* health educat*
#03   peer* leader*
#04   peer* led*
#05   peer* health promot*
#06   peer* counsel*
#07   peer* tutor*
#08   peer* teach*
#09   peer* train*
#10   peer* deliver*
#11   peer* instruct*
#12   peer* advis*
#13   peer* implement*
#14   peer*program*

#15   peer* interevention*
#16   peer*approach*
#17   peer*advocat*
#18   peer* outreach
#19   peer* manag*
#20   peer* direct*

#21   #1 or #2 or #3 or #4 or #5 or #6 or #7 or #8 or #9 or #10 or #11 or #12 or #13 or #14 or #15 or #16 or #17 or #18 or #19 or #20

#22   teen* counsel* or teen* leader* or teen* adviser* or teen* tutor or teen* trainer* or teen* instructor or teen* led or teen* delivered or teen* directed or teen* planned or teen* implemented or teen* instructed or teen* promoted or teen* trained

#23   adolescent* leader* or adolescent* led or adolescent* delivered or adolescent* directed or adolescent* planned or adolescent* implemented or adolescent* instructed or adolescent* promoted or adolescent* trained

#24   student* leader* or student* led or student* delivered or student* directed or student* planned or student* implemented or student* instructed or student* promoted or student* trained

#25   pupil* led or pupil* delivered or pupil* directed or pupil* planned or pupil* implemented or pupil* instructed or pupil* promoted or pupil* trained

#26   young people led or young people delivered or young people directed or young people planned or young people implemented or young people instructed or young people promoted or young people trained or young people taught or young people educated

#27   #22 or #23 or #24 or #25 or #26

Final Result

#28   #21 or #27

APPENDIX II: Non-evaluated interventions

There were 62 reports describing 61 separate non-evaluated intervention studies.

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APPENDIX III: Excluded outcome evaluations

The 84 excluded outcome evaluations were described in 94 reports.

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> Svenson G, Johnson K (1993) Utilising Peer Education and Target Group Empowerment to Induce a Diffusional Behaviour Change on a University Campus.

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APPENDIX IV: Included outcome evaluations

The 49 included outcome evaluations were described in 78 reports.

<<EPIC number>> is the unique identifier of the report on EPIC, the EPI-Centre's effectiveness database.

Abernathy TJ, Bertrand LD (1992) Preventing cigarette smoking among children: results of a four-year evaluation of the PAL program. Canadian Journal of Public Health 83(3):226-229.
<<EPIC 4060>>

Arkin RM, Roemhild HF, Johnson CA, Luepker RV, Murray DM (1981) The Minnesota smoking prevention program: a seventh-grade health curriculum supplement. Journal of School Health 51(9):611-616.
<<EPIC 4052>> *This reports on 2 separate outcome evaluations. See Murray et al (1984) <<EPIC 4053>> for links to both.*

Armstrong B K, De Klerk N H, Shean R E, Dunn D A, Dolin PJ (1990) Influence of education and advertising on the uptake of smoking by children. Medical Journal of Australia 152(3):117-124.
<<EPIC 4047>> **linked to**

> Shean RE, de Klerk NH, Armstrong BK, Walker NR (1994)   Seven-year follow-up of a smoking prevention program for children. Australian Journal of Public Health 18(2):205-208.
> <<EPIC 4048>>

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<<EPIC 4023>>

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<<EPIC 4021>> **linked to**

> Botvin GJ, Baker E, Filazzola AD, Botvin EM (1990) A cognitive-behavioral approach to substance abuse prevention: one-year follow-up. Addictive Behaviour   15(1):47-63.
> <<EPIC 4022>>

Botvin GJ, Eng A (1982) The efficacy of a multicomponent approach to the prevention of cigarette smoking. Preventive Medicine 11(2):199-211.
<<EPIC 4017>>

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<<EPIC 4020>>

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<<EPIC 4030>>

DiClemente RJ, Wingood GM (1995) A randomized controlled trial of an HIV sexual risk-reduction intervention for young African-American women. Journal of the American Medical Association 274(16):1271-1276.
<<EPIC 2317>>

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<<EPIC 4049>> *linked to*

> Young ROL, De Morr C, Wildey MB, Gully S, Hovell MF, Elder JP (1990) Correlates of health facilitator performance in a tobacco use prevention program: implications for recruitment. Journal of School Health 60(9):463-467.
> <<EPIC 4050>>
>
> Elder JP, Wildey M, de Moors C, Sallis JF, Eckhardt L, Edwards C, Erickson A, Golbeck A, Hovell M, Johnston D, Levitz MD, Molgaard C, Davis-Hearn M, Goldman AI, Woodruff SI (1993) The long-term prevention of tobacco use among junior high school students: classroom and telephone interventions. American Journal of Public Health 83:1239-1244.
> <<EPIC 4051>>

Gibson PG, Shah S, Mamoon HA (1998) Peer-led asthma education for adolescents: impact evaluation. Journal of Adolescent Health 22:66-72.
<<EPIC 4026>>

Howard M, McCabe JB (1990) Helping teenagers postpone sexual involvement. Family Planning Perspective 22(1):21-26.
<<EPIC 2123>>

Hurd P, Johnson C, Pechacek T, Bast L, Jacobs D, Luepker R (1980) Prevention of Cigarette smoking in Seventh Grade Students. Journal of Behavioural Medicine 3(1):15-28.
<<EPIC 4057>> *linked to*

> Luepker R, Johnson CA, Murray D, Pechacek T (1983) Prevention of cigarette smoking: Three-year follow-up of an education program for youth. Journal of Behavioural Medicine 6(1):53-62.
> <<EPIC 4058>>

Johnson CA, Hansen WB, Collins LM, Graham JW (1986) High-school smoking prevention: results of a three-year longitudinal study. Journal of Behavioural Medicine 9(5):439-452.
<<EPIC 4024>>

Jordheim A (1976) A comparison study of peer teaching and traditional instruction in venereal disease education. Journal of the American College Health Association 25(5):286-289.
<<EPIC 4007>>

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APPENDIX V: Excluded process evaluations

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APPENDIX VI: Included process evaluations

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APPENDIX VII: Description of the characteristics of 'sound' outcome evaluations

EPIC No Reference	Country	Population	Setting	Objectives	Peer leaders	Other providers	Programme Content
(4047) Armstrong, *et al.* (1990) Shean *et al.* (1994)	Australia	Mixed sex; year 7 school students; modal age = 12	Secondary education	To prevent the onset of smoking	Same age, selected by classmates	Teacher	Five session social influences curriculum which covered normative beliefs about smoking; immediate physiological effects; practising refusal techniques for social pressure to smoke; arguments for non-smokers rights; identifying advertising and family influences to smoke; voluntary public commitment to non-smoking.
(2057) Basen-Engquist (1994)	USA	Mixed sex; 82% white, 98% heterosexual, mean age = 21.9	University	To increase HIV preventive behaviour	No details given	None	Three hour workshop to discuss safer sex strategies, role-play communicating about safer sex and learning how to use a condom. Encouragement and feedback was given by peer leaders
(4023) Best, *et al.* (1996)	USA	Male; 66% white; 65% working class; aged 15 to 16	High school	To educate high school males about testicular cancer and self-examination	Older male college students	Health professional	Lecture on testicular cancer and self-examination, a booklet summarising the lecture and/or a slide show and/or practice sessions for testicular self-examination.
(2317) DiClemente and Wingood (1995)	USA	African-American women aged 18 to 29.	Community Centre	To promote consistent condom use, HIV knowledge and skills for the practice of safer sex	Two African-American women	None	Five weekly two hour group sessions: emphasising gender and ethnic prode; HIV risk reduction strategies, training in sexual assertiveness and communication skills, how to use a condom, training in cognitive coping skills.
(4049) Elder *et al.* (1994) Young *et al.* (1990) Elder *et al.* (1993)	USA	Mixed sex, multi-ethnic young people aged 11 to 15	Junior high school	To prevent or delay the onset of tobacco use	6 male and 36 female volunteer college undergraduates, mean age 21.9 years.	None	Classroom sessions including rehearsing methods of resisting peer pressure to smoke; public committments. mobilising students as anti-tobacco activists; and learning ways to encourage others to stop smoking and follow-up phone calls to deliver tailored smoking prevention message. Delivered over 3 years.
(4026) Gibson (1998)	Australia	Mixed sex students under 16, recruited in area of high unemployment, 90% non-English speaking	Suburban high schools	To improve asthma knowledge, attitudes and quality of life in students with asthma. To improve knowledge and attitude concerning asthma amongst their peers	One year older than target group	None	Class sessions including group discussions, videos, games and problem solving. Development of performances (e.g. songs, debates) to present to younger students, staff, parents and community guests.

EPIC No Reference	Country	Population	Setting	Objectives	Peer leaders	Other providers	Programme Content
(4007) Jordheim (1976)	USA	Mixed sex college students	Urban community college	To decrease the rate of sexually transmitted diseases	Recruited from a public health course in the same college	Health educator	Presentation and small group discussions on the prevention of STDs
(2248) Kegeles *et al.* (1996)	USA	Gay and bisexual males aged 18 to 29.	Gay bars, community	To increase safer sex practices	Same age, volunteer gay men	None	'Formal' and 'informal' outreach to diffuse safer sex message and recruit men into the project; small group work to discuss and rehearse skills for safer sex; a publicity campaign; and the distribution of safer sex materials and condoms.
(4000) Macri *et al.* (1997)	Greece	Mixed sex, middle class, aged 12 to 13	Urban secondary school	To reduce intentions to smoke and smoking behaviour	Same age volunteers	None	Series of one hour class sessions in which peer leaders presented and discussed anti-smoking materials they had developed.
(4042) McAlister *et al.* (1980a) McAlister *et al.* (1979) Telch *et al.* (1982) Perry *et al.* (1980b) Perry *et al.* (1980c)	USA	Mixed sex, middle class aged 12-13	Junior high school	To prevent the use of tobacco, alcohol and marijuana	6 male and 12 female high school students chosen by teachers and project staff	None	Ten hours of structured classroom sessions designed to foster a commitment to non-smoking and 'inoculate' students against social pressures to smoke. Activities included practising resiting pressures and making public commitments to not smoke.
(4028) Orpinas, *et al.* (1995)	USA	Mixed sex, 64% Hispanic, aged 11 to 12	Urban middle school	To decrease impulsive and aggressive behaviour. To increase anger management and conflict-resolution skills	Same age selected by classmates	Teacher	Series of classroom based sessions, delivered over 6 weeks, which covered factors associated with violence, training students in empathy, anger management and interpersonal problem solving skills.
(4070) Vartiainen *et al.* (1990) Vartiainen *et al.* (1986)	Finland	Mixed sex young people aged 11 to 15	Secondary education	To prevent smoking (in the context of a wider programme to prevent non-communicable diseases)	Same age, chosen by their classmates	Teacher	Seven classroom sessions addressing the functional meaning of smoking; training in skills to resist peer pressure; influence of advertising and family and public commitments not to smoke.

APPENDIX VIII: Description of methodology of sound outcome evaluations

EPIC No Reference	Design	Nr conditions/ Sample size	Follow-up interval	Participation rate Attrition	Authors' judgement about effect	Reviewers' judgement about effect
(4047) Armstrong, *et al.* (1990) Shean *et al.* (1994)	Randomised controlled trial (RCT)	45 schools assigned to 3 groups I1: peer-delivered = 757 I2: teacher-delivered = 828 C: Control = 781	7 years	Participation: Not stated Attrition: at 7 years, overall = 63%	Effective for smoking for female non-smokers at baseline.	Reviewers agreed with authors
(2057) Basen-Engquist (1994)	RCT	209 students assigned to 3 groups: I1: workshop I2: lecture C: control	2 months after the intervention	Participation: 100% Attrition: overall = 17%	Effective for increasing self efficacy in using condoms and intentions to use condoms in the future (skill development workshop and lecture) Ineffective for use of condoms and communication with partners about safer sex	Reviewers agreed with authors.
(4023) Best, *et al.* (1996)	RCT	8 high schools assigned to 9 groups (8 intervention groups= 897 and 1 control group = 433). Intervention groups varied by educational method and delivery by peer or health professional.	18 months after the intervention	Participation: not stated Attrition: Not stated	Effective in all intervention groups for knowledge, attitudes and practice of testicular self-examination.	Effective for practice of testicular self-examination and knowledge. Unclear for attitudes.
(2317) DiClemente and Wingood (1995)	RCT	3 groups I: skill development =53 I: information = 35 C: control = 40	3 months after the intervention	Participation: not stated Attrition: I = 9%; C = 38%	Effective: Skill development group demonstrated increased consistent condom use; greater sexual self-control and assertiveness; and increased partner acceptance of condom use. Ineffective: knowledge, condom use skills.	Reviewers agreed with authors
(4049) Elder *et al.* (1994) Young *et al.* (1990) Elder *et al.* (1993)	RCT	2 groups I = 11 schools C= 12 schools	3 years concurrent with intervention	Participation: not stated Attrition: overall = 27%	Effective for smoking: prevalence of tobacco use lower in the intervention group Effective for skills: refusal skills higher in intervention group	Effective for smoking Unclear for skills.
(4026) Gibson (1998)	Non-randomised trial (trial)	2 schools assigned to 2 groups I = intervention = 585 C= control = 530	2 months after the intervention	Participation: not stated Attrition: unclear	Effective for increasing knowledge about asthma Ineffective for attitudes towards asthma and increasing the quality of life of students with asthma.	Reviewers agreed with authors.

EPIC No Reference	Design	Nr conditions/ Sample size	Follow-up interval	Participation rate Attrition	Authors' judgement about effect	Reviewers' judgement about effect
(4007) Jordheim (1976)	trial	2 groups I = peer-delivered = 50 C= comparison group, teacher delivered = 50	Not stated	Participation: not stated Attrition: I = 4%; C = 6%	Effective for attitudes towards taking a test for STDs and knowledge Ineffective for attitudes towards STD prevention and intentions to practice preventive behaviours	Reviewers agreed with authors
(2248) Kegeles *et al.* (1996)	RCT	2 groups; 1 city assigned to each group I = 191 C = 109	1 year after baseline	Participation: of 'high risk' men ranged from 10% to 85% in different component of intervention Attrition: I = 35%; C = 19%	Reduction in unprotected anal intercourse; fewer problems experienced in resisting unsafe sex when aroused; increase in sexual communication skills. Ineffective for reducing perceived barriers to safer and reported frequency of talking about safer sex to partner	Reviewers agreed with authors
(4000) Macri *et al.* (1997)	RCT	2 groups; 1 school assigned to each group I = 237 C= 90	13 months after baseline	Participation: 100% Attrition: I = 17%; C = 44%	Effective for smoking behaviour Ineffective for attitudes Ineffective for intentions Harmful for knowledge	Unclear
(4042) McAlister *et al.* (1980a) McAlister *et al.* (1979) Telch *et al.* (1982) Perry *et al.* (1980b) Perry *et al.* (1980c)	trial	2 groups; 1 school assigned to each I=353; C=317	3 years concurrent with intervention	Participation: not stated Attrition: I = 17%; C=20%	Effective for smoking: smoking rates were higher in the control group	Reviewers agreed with authors
(4028) Orpinas *et al.* (1995)	trial	4 schools assigned to 3 groups (no numbers stated) I1: peer assisted I2: teacher delivered C: control	3 months after the intervention	Participation: 97% Attrition: overall = 14%	Effective for some groups only: males in peer-assisted group and teacher-delivered group reduced self-reported aggressive behaviour Ineffective for knowledge, attitudes and self-efficacy	Reviewers agreed with authors
(4070) Vartiainen *et al.* (1991) Vartiainen *et al.* (1986b)	trial	36 schools allocated to 3 groups: I1: peer delivered = 832 12: teacher delivered = 1755 C: control group = 1666	4 years concurrent with intervention	Participation: 98% Attrition: Not relevant (series of cross sectional surveys within I and C groups)	Ineffective for smoking: daily smoking rates increased in all groups	Reviewers agreed with authors

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