Abstract

In recent years, there has been an increasing focus on prevention of depression among adolescents. This review delineates and evaluates major depression prevention programs for adolescents developed and tested world-wide, according to the three major types, viz. universal, selective, and indicated. Overall, targeted prevention with selective and indicated programs seem to give better results with higher effect sizes than a universal approach. School-based cognitive-behavioural approach interventions have been found to significantly reduce depressive symptoms among adolescents, with some evidence that the intervention provides long-lasting effects. However, further research to ameliorate the understanding of the development and maintenance of depression is essential in order also to improve the effects of prevention and intervention.

Keywords: Adolescent depression; Universal; Selective; Indicated

Introduction

Depression in childhood remains uncommon. When puberty begins, the rate of depression increases sharply [1]. The prevalence rates for depression among adolescents in India range from 3% among school going adolescents (13-19 years) to 11.2% of school drop outs [2]. Adolescent depression is a health concern for the whole community because it is associated with many negative outcomes [3]. Adolescent-onset depression is also strongly associated with chronic and recurrent depression in adulthood [4] that may be difficult to treat. Additionally, there are many obstacles in seeking and attaining treatment for depression in adolescents, such as perceived stigma, availability and cost of services, and lack of trained providers. Due to these reasons, there has been an increasing focus on preventing depression before it becomes so serious that treatment is needed.

Types of prevention programs for adolescent depression

Prevention programs for depression are classified into three subgroups defined according to their target population: universal, selective, and indicated [5].

This review aims to delineate and evaluate the adolescent depression prevention/intervention programs that have been developed and tested worldwide.

Table 1 gives a summary of the most frequently tested universal and targeted programs for adolescent depression, their major components, the setting in which they were implemented, and the facilitators who delivered the programs.

Method

For this review, an Internet search was carried out using the search engines of PubMed, Google Scholar, and Science Direct to locate the relevant literature from 1990 through 2014. The keywords used in various combinations were: adolescent depression, prevention programs, universal, selective, indicated, etc. The search was limited to articles in the English language. Abstract of all the articles was screened, and the relevant articles were selected. Full text articles were evaluated, and the relevant data were extracted. Cross references from these full-text articles also provided few more relevant articles.

Results

Universal depression prevention programs for adolescents

Universal prevention for preventing depression is provided to a general population regardless of risk. Delivering the intervention in the school setting with universal samples tends to result in lower attrition.

The first published, large-scale evaluation of a universal prevention of depression (CWS-A; Table 1) in a school population was reported by Clarke et al. [6]. Having found minimal effects from a brief, three-session psycho-educational intervention on 9th and 10th graders, the authors examined the impact of a five-session program (Table 2). However, no significant benefits were found for depressive symptoms post-intervention or at 12-week follow up, compared with an assessment-only control group.

The Resourceful Adolescent Program (RAP [7]; Table 1) was evaluated in New Zealand, and delivered by the teachers to 9th and 10th graders. Participants reported significantly fewer depressive symptoms at post-intervention but not at the 18-month follow-up [8] (Table 2). The RAP in Australia, delivered to a sample 12-15 year olds, resulted in decreased depressive symptoms and hopelessness at the post-test and at the 10-month follow-up compared with the control group [9] (Table 2). This study was estimated to have an effect size of 0.47 at post-test and 0.34 at 10-months follow-up [10]. However, the students were not randomly assigned to conditions.

Another universal intervention is called the Problem Solving for Life program (PSFL [11] (Table 1). Spence et al. evaluated the effectiveness of the PSFL program among high school students in Australia [11] (Table 2). They found that among adolescents with high levels of depressive symptoms at baseline, a significant decrease in depressive symptoms and increase in problem solving ability occurred for those in the treatment group compared to the control group. The study was remarkable for its sample size, use of diagnoses, exploration of multiple outcomes, and substantial length of follow-up. Unfortunately, the positive effects were present neither at 12-month follow-up nor at subsequent follow-up.
Table 1: Overview of depression prevention/intervention programs.

<table>
<thead>
<tr>
<th>Program/Authors</th>
<th>Target sample/ Country</th>
<th>Sample size (n)</th>
<th>Outcome measures</th>
<th>Control group</th>
<th>Outcome (short- and long-term)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CWS-A Clarke et al. [8]</td>
<td>9th and 10th graders Australia</td>
<td>380</td>
<td>Depressive symptoms</td>
<td>Assessment only</td>
<td>No significant benefits at post-intervention and 12-week follow-up</td>
</tr>
<tr>
<td>Depression in Swedish Adolescents (DISA) Garmy et al. [19]</td>
<td>8th graders Sweden</td>
<td>68</td>
<td>Depressive symptoms</td>
<td>None</td>
<td>Decreased scores at 1-year follow-up but only for girls</td>
</tr>
<tr>
<td>RAP Merry et al. [8]</td>
<td>9th and 10th graders New Zealand</td>
<td>392</td>
<td>Depressive symptoms</td>
<td>Placebo-control</td>
<td>Significant effects at post-intervention but not at 18-month follow-up</td>
</tr>
<tr>
<td>RAP Shochet et al. [9]</td>
<td>12-15 yr olds Australia</td>
<td>242</td>
<td>Depressive symptoms</td>
<td>Assessment only</td>
<td>Significant effects at post-intervention and 10-month follow-up</td>
</tr>
<tr>
<td>PSFL Spence et al. [11]</td>
<td>12-14 yr old 8th graders Australia</td>
<td>1,500</td>
<td>Depressive symptoms, problem solving, negative life events, social functioning, attributional style, general psychopathology</td>
<td>Assessment only</td>
<td>Significant effects at post-intervention but not at 12-month follow-up or follow-up over a 4 year period</td>
</tr>
<tr>
<td>LARS and LISA Pössel et al. [13]</td>
<td>8th graders Germany</td>
<td>324</td>
<td>Depressive symptoms</td>
<td>Active and passive</td>
<td>Significant effects at post-, 6- and 12-month follow-up</td>
</tr>
<tr>
<td>PRP Gilham et al. [14]</td>
<td>USA</td>
<td>3 schools</td>
<td>Depressive symptoms</td>
<td>Active (Penn Enhancement Program, PEP) and passive</td>
<td>PRP not significantly effective compared to both control groups over a 3 year follow-up</td>
</tr>
<tr>
<td>beyondblue Sawyer et al. [18]</td>
<td>Secondary school students Australia</td>
<td>25 schools</td>
<td>Depressive symptoms</td>
<td>None</td>
<td>No effect at post-intervention and 2 year follow-up</td>
</tr>
</tbody>
</table>

Table 2: Evaluation of universal programs for depression.
ups over a 4-year period. This discounted the possibility of any delayed beneficial effects from the intervention. Certain factors potentially limiting the effect size of the intervention in this study included: the large group format, teacher implementation, and significant attrition (about 30% dropout by 12-month follow-up).

A German universal depression prevention program called 'Desire for a Realistic View and Ease in Social Aspects of Everyday Life' (Lust An Realistischer Sicht & Leichtigkeit Im Sozialen Alltag, LARS & LISA [12]) has been found to show significant, positive effects for 8th graders at post-test and 6- and 12-month follow-ups [13] (Table 2). Results indicated that participants with initial minimal depressive symptoms showed no increase in symptom levels, but such a significant increase was found in the control group. Spence and Shortt [10] have, in retrospect, estimated the effect sizes for this study to be 0.49 at post-test and 0.44 at 6-month follow-up. The results for the group with sub-syndromal scores were non-significant at post-test, but significant at 6-month follow-up with an effect size of 0.50. There were, however, no significant changes in dysfunctional automatic thoughts or the social network as a consequence of the intervention. Therefore it is unclear what the active ingredients in the intervention are.

Gillham et al. evaluated the Penn Resiliency Program as a universal intervention program implemented by teachers in three schools [14] (Table 2). This study included both an active and a passive control group. The results for the entire sample showed no effects of the program. PRP prevented the debut of depression compared to the passive control groups, but not compared to the active control group. PRP did also not reduce the levels of depressive symptoms over a 3-year follow-up period. The effects of the interventions seem to depend on if they were administered by members of the research team or others (such as teachers). The study was influenced by low recruitment rates (15 -22% participated) at all schools, and the drop-out rates were high in the follow-up period.

Based on the PRP, Op Volle Kracht ('On Full Power'; OVK) has been developed in Netherlands and its effectiveness is currently being studied in Dutch adolescents (ages 12-14 years) as a universal school-based prevention program [15].

Internet interventions promoting behaviour change are gaining popularity and an evidence base. MoodGYM, an automated CBT-based Internet program designed to reduce and prevent symptoms of depression and anxiety in adolescents has been tested extensively. In a school-based sample of 1,477 teens, MoodGYM was effective at reducing depression and anxiety in adolescents has been tested extensively. The program was delivered to a universal sample of 8th graders in five groups of students by school tutors. The students scored lower on measures of recent depressive symptoms at the 1-year follow-up. However, this improvement was only significant for females. The tutors highlighted the advantages of offering the program on a voluntary basis. They also highlighted practical issues, such as the course being quite time consuming, and emphasised the importance of having full support from the school administration when implementing this sort of program. However, absence of a control group was a limitation of this study.

Evaluation of universal programs

A universal prevention program may positively affect the social environment of at-risk adolescents [20]. It has been argued that selective programs may have larger effects for individual participants, but universal programs have multiple smaller effects on a larger number of participants, which may, in turn, have an enormous effect on the larger society [21]. Furthermore, adolescents with more developed skills in a particular area may serve as models for peers who have less developed skills [22].

On the other hand, a few questions remain unanswered. For example, longer-term follow-up data, which has become the gold standard in clinical research, is not yet available for any of the universal programs presented here. Attempts to replicate the findings have found short term effects, but no effects on the long term [8,23,24]. Some differences related to the effects have also been identified depending on the kind of facilitators administering the interventions.

Unfortunately, most of the programs named in this review are based on adult models that have been adapted to an adolescent population, and thus, developmental psychopathology has not typically been considered in treatment development and implementation. The LARS & LISA universal prevention program represents an exception to this pattern.

A further problem with universal prevention programs is their diversity, that is if and under what circumstances these programs may be integrated into the everyday adolescent experience. The universal programs mentioned in this review are all school-based prevention programs; thus the deciding factor for the applicability of these interventions will depend on whether they can be led by teachers and be integrated into school curricula. The integration of a cognitive-behavioural program into the school setting has been complicated thus far by the fact that the implementation requires broad background knowledge of therapeutic methods. An important future goal, thus, is the adaptation of current programs to fit the needs of the school setting.

Selective depression prevention programs for adolescents

Selective prevention targets individuals at risk for depression as a function of family factors such as parental depression, environmental factors such as poverty, or personal characteristics such as a negative cognitive style. Selective programs have greater attrition than universal prevention programs.

Numerous studies have utilised the Penn Prevention Program (PPP) for selective and indicated samples [25,26] (Table 3). For example, the PPP was delivered to children aged 10-13 years with depressive symptoms and/or family conflict, and a decrease in symptoms was
found post-treatment and every 6-months, till 2 years, but not at 3-year follow-up. The effect sizes were highest for children that reported the highest levels of symptoms, and for those that reported the highest levels of parental conflict. The follow-up at 2 years indicated that the interventions had a significant prevention effect, as the intervention group reported significantly lower depression scores compared to the control group.

A study by Clarke et al. used a combination of selective and indicated approaches [27] (Table 3). Adolescents whose parents had been treated for depression and who had elevated symptoms of depression that fell short of depressive disorder were randomised to intervention using the Coping with Stress program (CWS-A) or to usual care. The intervention consisted of cognitive restructuring, specifically targeting parent-related beliefs, was delivered to groups of 6–10 adolescents by a trained therapist. The results provided indication of a significant preventive effect for several outcome variables, including depression, suicide symptoms, and functioning. The effect size was moderate (0.41), representing a reduction in the risk of developing depression by more than five times that of the control group. The significant preventive effect persisted at 18- and 24-month follow-ups, however, at a diminished level, suggesting that the program’s effect had faded over time.

In an extension of this work, Garber et al. mounted a four-site effectiveness replication trial [28] (Table 3). Assessments were conducted at baseline, after the 8-week intervention, and after the 6-month continuation phase. At month 9, the intervention resulted in reduced incidence overall (21.4% in the experimental group vs. 32.7% in usual care), and especially so for adolescents whose parents were not depressed at baseline.

Targeting children and adolescents whose parent died less than 2 years ago, Sandler et al. developed a multi-component intervention, the Family Bereavement Program (FBP), directed at strengthening children’s coping, strengthening the quality of parenting by the surviving parent, and promoting the surviving parent’s own adjustment [29] (Table 3). Results indicated that the FBP led to improved parenting, coping, and caregiver mental health and to reductions in stressful events at post-test. At 11-month follow-up, the FBP led to reduced internalising and externalising problems, but only for girls and those who had higher problem scores at baseline.

Evaluation of the FBP in a randomised experimental trial found a reduction in girls’ level of depressive symptomatology 11 months following the intervention [30] and a reduction in parents’ depressive symptomatology up to six years after participation [31]. At the six-year follow-up, the odds of the bereaved spouse having a moderate or higher level of depression were 2.38 times higher in the control group than in the FBP group after controlling for the baseline level of depressive symptoms.

Cardemil et al. delivered 12-weekly group sessions of Modified Penn Resiliency Program (PRP) to low income Latino and African-American children [32] (Table 3). In the modified PRP, the ethnicity of the children was changed in the examples, and it focused on problems specific to low-income families and single-parent homes. Beneficial effects were reported for depressive symptoms and negative cognitions but not for self-esteem at post-test and 24-months follow-up for Latino children. The intervention gave significant results for the groups with higher levels of symptoms at the start. The effect size was reported as 1.19 at post intervention and 0.90 at 6-months follow-up. The effect sizes for the low symptom group were .067 at post-test and 0.79 at 6-months follow-up, which was interpreted as a trend toward prevention. The intervention also seemed to have a positive effect both for groups with low and high symptoms. No effects were found for participants with an African-American background. One possible explanation for this may be that the Latin-American groups reported higher levels of depressive symptoms. The sample size was small, particularly in the Latin-American group with only 49 participants distributed across the interventions and control group.

Compas et al. delivered a family-based intervention to parents with a history of depression and their children [33]. Groups of four families at a time received eight sessions weekly and then four follow-up sessions monthly. The intervention provided the families information about depression, the effect of stress and depression on functioning, and ways to reorganise and manage stress. Within the group format, there was emphasis on working with parents to improve parenting skills and to reorganise and manage stress. Within the group format, there was also emphasis on working with parents to improve parenting skills and with children to improve coping skills. In a randomized trial of 111 families, significant differences in child- and parent-reported anxiety and depression scores and other dimensions of functioning were found at 24-month follow-up. Incidence was reduced in the intervention group (14.3%) compared with the control group (32.7%). This study had a high retention rate and involved systematic implementation at two different sites with good fidelity of intervention delivery. The results suggest that this intervention has a preventive effect on depressive symptomatology and on incidence of depression.
Evaluation of selective programs

Overall, we can see that the selective prevention programs effect a larger range of outcomes related to externalizing symptoms and behavioural difficulties [29,31,33], anxiety [33], depressive symptoms [29,31,33], and clinical depression [33]. The interventions do also seem to have the larger effect when directed towards specific risk factors associated with a depressive disorder.

The results from selective prevention programs are, however, unclearly related to variables like gender and symptom level [31], age [34], and whether the parents report or the children or adolescents report themselves [35].

Moreover, not all selective programs have included parental samples, even though the risk factors have been selected based on parent factors. An important gap in research remains if only factors related to adolescents are subjected to intervention and the studies are not designed to effect changes in parental indices (e.g., psychopathology) that conferred risk upon adolescents in the first place. Based on this reason it is possible to question the selective programs as having a somewhat biased focus on the capacity and skills of the adolescent.

In this vein, it is interesting to see that studies with a stronger focus on the parents generally seemed to have a positive effect on the adolescents [29,33], but it is difficult to evaluate the results because none of the programs mentioned here had a condition that only included the parents’ functioning.

That the above mentioned studies have yielded varied results may be because our models for depression are inadequate. If our present understanding of depression is inadequate, it will be difficult to develop good prevention strategies and interventions. Selective interventions seem to work better than universal programs, and it is possible in the near future, for example, to include genetic factors in selective prevention, because genetic components have been shown to be important for depression. Newer research has indicated that a different combination of alleles may influence the risk for developing depression when faced with adversity [36]. However, this would involve some kind of a genetic screening, which is considered ethically controversial.

Indicated depression prevention programs for adolescents

Indicated prevention programs are provided to individuals with sub-clinical signs or symptoms of depression, and thus are a classic ‘early interventions’. They ensure that those receiving the intervention are at greatest risk. Similar to selective prevention, indicated prevention programs usually are conducted in small groups.

Stice et al. used the CWS-A program (Table 1) with high school students with elevated depressive symptoms [37] (Table 4). The students were randomised into one of four conditions: a cognitive-behavioural (CB) group intervention, a supportive-expressive group intervention, a CB bibliotherapy intervention, and an educational brochure control condition. At two-year follow-up, onset of major and minor depression was significantly lower for the CB group (14%) and CB bibliotherapy participants (3%) than for brochure controls (23%).

Yu and Seligman targeted Chinese youth with depressive symptoms or family conflict and delivered Modified Penn Optimism Program (10 weekly, 2-hour sessions), adapted for use with Chinese youth [38] (Table 4). Significantly reduced depressive symptoms, mediated by improvement in explanatory styles, at post-test, 3- and 6-month follow-ups were found.

Puskar et al. examined the effectiveness of a Teaching Kids to Cope Program in a group of adolescents [39] (Table 4). Students from three schools who had elevated symptoms of depression were invited to participate. The intervention, a 10-week psycho-educational group intervention that uses a combination of behavioural and cognitive techniques, was delivered during school time by nurses with psychiatric mental health experience. Results indicated a significant effect for the intervention group, with a drop in depression scores after intervention that was maintained to 12 months.

Kowalenko et al. administered the Adolescents Coping with Emotion (ACE; Table 1) program to Grade 9 female students at-risk for depression [40] (Table 4). Results revealed significantly lower depressive scores, significantly higher coping scores, and significant reduction in negative automatic thoughts. All the effects were observed both at post-intervention and at 6-month follow-up.

Gillham et al. assessed the effectiveness of the PRP in adolescents with elevated depressive symptoms in a primary care setting [41] (Table 4). The adolescents in the intervention condition evidenced an improvement in the attribution style of positive events. The effects of attribution style for negative life events and depressive symptoms were moderated by gender. The program significantly reduced depressive symptoms for girls who had an effect size of 0.31, but not significantly for the boys. The authors report that the intervention did not prevent depressive disorders per se but did prevent depression, anxiety and adjustment disorders when these were combined, and then only in the
high-symptom participants (although this was already targeted to a high-risk group). They concluded that the effects of their program were ‘small and inconsistent’. The study had a high drop-out rate with nearly a third dropping out over the 2-year period.

In the most comprehensive study to date, Sheffield et al. evaluated the impact of universal, indicated and a combination of both approaches using a cognitive-behavioural approach [42]. The 34 participating schools from two sites in Australia were randomised to one of four conditions: a universal program, an indicated program for students with elevated symptoms of depression, a universal program followed by an indicated program for high-risk students and a no-intervention control group. Disappointingly, there was no difference in outcome for any of the interventions compared with the no-intervention control group. There was a significant decline in depression scores in high-risk students irrespective of condition, although this group remained more depressed than their low-risk counterparts. However, the study had several methodological strengths, including a large sample size of 2,470 participants, an independent research team, a randomization to different conditions of interventions, long term follow-up (12 months) and a low drop-out rate.

In the only published Indian study to have utilised indicated samples, the researchers developed and tested a program that was informed by an empirical investigation of the risk factors for depression unique to the Indian cultural context [43] (Table 4). Adolescents with subclinical depression across two schools comprised the intervention and control groups. The intervention group received the 8-weekly Coping Skills Program in same-gender groups, whereas the control group received one interactive psycho-educatory session. The intervention group evidenced clinically significant reductions in depressive symptoms, negative cognitions, and academic stress, and increased social problem solving and coping skills, at both post-intervention and follow-up. No corresponding changes were found in the control group.

Evaluation of indicated programs

Several of the interventions reviewed above show an effect at post-test and at 6-months follow-up. However, these effects seem to disappear long term, with a few exceptions [25,37]. Sheffield et al. [42] found no effects in their study, while Gillham et al. [41] found small and inconsistent effects. Overall, aiming the interventions at groups that have elevated symptoms seems to work better, especially in terms of yielding higher effect sizes, than offering it to a general group.

There is suggestion that indicated interventions make participants feel stigmatised, but there is limited research that has actually examined this issue in a quantitative manner. In one study, students were asked about how stigmatised they felt being selected for an indicated intervention [44]. It was found that the program delivery was associated with significantly greater levels of embarrassment, but effect sizes were small and neither the universal nor the indicated program was associated with marked stigma in absolute terms. In fact, the indicated program was evaluated more positively by both participants and program leaders and effect sizes for these measures of satisfaction were moderate to large.

In another study, the authors took measured steps to overcome stigma, and effect sizes for these measures of satisfaction were moderate to large. It was found that the program delivery was associated with significantly greater depression scores in high-risk students irrespective of condition, although this group remained more depressed than their low-risk counterparts. However, the study had several methodological strengths, including a large sample size of 2,470 participants, an independent research team, a randomization to different conditions of interventions, long term follow-up (12 months) and a low drop-out rate.

Summary and Future Directions

To sum up the evidence overall, it has been found that group cognitive-behavioural approach interventions can significantly reduce depressive symptoms among adolescents, with some evidence that the intervention provides long-lasting effects.

Targeted prevention with indicated and selective programs overall seem to be significantly more effective with higher effect sizes than universal programs. One reason for this finding could be in the universal samples, control participants often do not show high enough level of depressive symptoms at follow-up to demonstrate a preventive effect for the intervention. On the other hand, selective and indicated programs choose participants on the basis of risk status and are thus likely to have higher level of depressive symptoms at baseline, which also demonstrate an increase over time.

Also, the programs reviewed above have variable lengths of follow-up, from 2 months to 24 months. Programs that claim to prevent depression require a longer follow-up than what most programs actually do. This is because not only do the program participants take time to assimilate the skills taught, but also because it may take time for control participants to show increases in depressive symptoms.

However, there is high variability in the findings of the studies reviewed above. One explanation for the varying results is that our models are incomplete in regards to understanding depression. Further research to ameliorate the understanding of the development and maintenance of depression is essential in order also to improve the effects of prevention and intervention. The existing research accentuated cognitive variables such as those that contribute to predicting depression, but based on the findings from the prevention studies, it is probably not the complete picture. Many of the interventions used in above mentioned programs are generated from cognitive therapy, which often focuses on intrapersonal factors. Another possible approach is to include the focus on interpersonal factors in order to enhance the effect of the prevention programs.

It does, however, seem decisive that future emphasis on prevention is based on an empirical and solid theoretical foundation. If interventions are to be implemented, they should be based on actual knowledge of what works and such interventions should be rigorously evaluated. Interventions that are theoretically informed, efficacious, and cost-effective would stand to benefit lakhs of adolescents worldwide who are affected by depression.

References


