



Return on Investment: Prevention in mental health

Parenting interventions for the prevention of anxiety disorders in children

Background

Anxiety disorders affect one in four Australians at some time in their life (1). Of children with a mental illness, half have a diagnosis of an anxiety disorder (2). The prevalence of anxiety disorders is 7% for children aged 4-11 years and is similar for adolescents aged 12-17 years. This equates to a total of 278,000 young people in Australia diagnosed with an anxiety disorder (2). Anxiety disorders involve stress and feelings of worry that are intense and persistent, as well as the perception that situations are much worse than they actually are. In children and adolescents, anxiety disorders can affect the ability to concentrate, sleep and carry out ordinary tasks at home or school. This can lead to negative impacts on academic and social interactions, poor self-confidence, social isolation and limits on their ability to enjoy daily life experiences (3). Children and adolescents with anxiety disorders often feel compelled to avoid stressful situations and in extreme cases avoid social contact altogether. This can impact families if parents need to care for a child with an anxiety disorder. It can also have a direct impact on healthcare costs and losses to work productivity of parents if they are absent from work. Given that the age of onset for anxiety disorders is usually very young (4), even those who receive treatment have often suffered for many years prior to diagnosis (5). If the anxiety disorder is left untreated, it can be associated with depression, suicidal ideation, suicide attempts, increased absenteeism from school or the workplace, reduced career opportunities, secondary substance use including drugs and alcohol and increased health service use (6, 7). Of all the high prevalence mental illnesses in adults, anxiety disorders are the most costly in terms of treatment and productivity losses due to absences from work (8).

Intervention modelled

There is evidence that parental behaviour can increase or decrease the risk for anxiety disorders in children. Parents can play an important role in the prevention of these mental illnesses and parenting programs can have long term benefits on parenting skills and parents' perceptions of their effectiveness in parenting (9). A recent review of parenting interventions for the prevention of anxiety disorders in children found that they had significant effects (10). The parenting intervention examined here prevented anxiety disorders in children at a rate of 21% in the first year after the intervention was completed, increasing to 45% in the second year, decreasing slightly to 42% in the third year (11).

The specific intervention chosen for this analysis is based on four studies (three based in Australia) with a total of 783 participants who participated in a parenting program for the prevention of anxiety disorders in preschool aged children (12-15). The intervention modelled is an early intervention program. Early intervention programs target individuals who already show early signs or low levels of a mental illness. They provide a potentially more cost effective and concentrated means of prevention because the intervention is targeted only toward those at greatest risk (16).

The intervention is based on the Australian 'Cool Little Kids' program (15) comprising group activities where parents are provided with information about the nature of child anxiety disorders, principles of anxiety management, tools that include gradually exposing children to triggers, and methods for parents to manage overprotective responses and their own worries (15). Sessions are held after business hours for attendance by parents who work during the day.

In this intervention, children aged 4 to 5 years attending preschool¹ are screened for signs of anxiety disorders. Preschool teachers distribute a brief screening questionnaire to parents to complete at home. The completed questionnaire is returned and assessed by a coordinating unit, staffed by project officers with psychology qualifications located in each Australian state. Parents who have children meeting the criteria for anxiety disorders are offered a place on the parent education program. At least one parent is encouraged to attend a total of six sessions lasting approximately 90 minutes each, conducted in groups of 6 to 16 families. Sessions are led by a clinical psychologist with experience in treating anxious children.

A previous study conducted in 2015, found the intervention to be cost effective (17). The current analysis will update the 2015 study to include productivity cost savings and return on investment ratios (ROIs). The ROI includes the cost of the intervention in relation to any cost savings (both healthcare cost savings and productivity gains). For an intervention to be considered cost effective, it would need to have a ROI ratio of greater than \$1. This means that the cost savings are greater than the costs of the intervention e.g. a ROI of \$1.50 means that for every \$1 invested \$1.50 will be gained.

Assumptions

The costs of the intervention include the cost of screening and delivery of the intervention. All salary costs include 30% on costs, such as annual leave loading and superannuation.

¹ Preschools have different names in different states and territories but are usually known as preschools, kindergarten or early learning centres and can be

part of long day care. They are generally for children who turn four in the year before starting school.

Screening: One hour of teachers' time is allocated to distribute the screening questionnaire and to receive brief training online. Parents would complete the questionnaire at home and return completed questionnaires to their preschool. Dedicated project officers with psychology training would process the screening questionnaires and notify parents in writing of the results and whether they have been invited to participate in the program (30 minutes per child). Postage and stationary costs are included. These costs are borne by government.

Delivery of the intervention: Delivery of six group therapy sessions by a psychologist using a weighted average of Medicare Benefits Schedule (MBS) items for group therapy sessions. MBS items incur a cost to government of 85% and patients incur 15% of these costs. In this case, unless additional funding is made available, the parents of the participating child will be liable for the 15% gap.

Healthcare cost savings: The average yearly treatment cost for an anxiety disorder was based on data from the economic evaluation of the 'Cool Little Kids' randomised control trial (18). The trial reported visits to healthcare professionals, hospital stays, medications and any out of pocket costs to patients.

Productivity cost savings: Calculation of lost productive time was based on the same trial data, reporting the mean number of days a parent had taken off from both paid work and unpaid work to care for a child with anxiety disorder (18). The hourly rate for employment was based on a weighted average of 2016 average weekly earnings in Australia (19). For unpaid work 25% of the rate for employment was used as a proxy to cost 'leisure time', taking into account the proportion of the population in the workforce.

Alternative scenarios

Alternative scenarios modelled included calculation of time and travel costs for parents in the intervention costs. This included one hour for completing the screening questionnaire, one hour preparation prior to the education sessions, and attendance at up to six sessions lasting 1.5 hours. The hourly cost of parental time was based on a leisure time rate of 25% of the average Australian hourly wage (20) as the sessions would be run during the evening after standard working hours. Travel costs were based on a standardised weighted average cost of a trip to a health professional (17).

Results

Cost effectiveness findings

The total intervention costs were approximately \$3.7M. The cost per preschool child was \$11.20. The intervention has a positive ROI of 2.40 (Table 1). This means that for every \$1 paid to run the intervention there will be a saving of \$2.40. When parental time and travel costs are included, the intervention costs increase to \$5.1M. The increase in costs incurred by the parents totals \$15.50 per child, with the ROI decreasing to 1.70.

The intervention is estimated to prevent **3254 cases of an anxiety disorder over three years, or a total of 335,549 anxiety disorder free days.**

Table 1. Summary of results for a parenting education intervention to prevent anxiety disorders in children

	Parent time and travel costs excluded	Parent time and travel costs included
	3 year outcomes	3 year outcomes
Intervention costs	\$3.71M	\$5.12M
Cost to Government	\$3.68M	\$3.68M
Cost to Individuals	\$35,000	\$1.44M
Cost saving (total)	\$8.26M	*
Healthcare cost savings	\$1.90M	*
Productivity cost savings	\$6.36M	*
Total savings (less costs)	\$4.55M	\$3.14M
ROI	2.40	1.70
Cases of anxiety disorders prevented	3,254	*
Anxiety free days	335,549	*
Savings per case of anxiety disorder prevented	\$1,400	*
Average cost per (enrolled) preschool child	\$11.20	\$15.50

Notes: ROI: return on investment per \$1 invested, * no change to costs or outcomes from the base case

Implementation considerations

While evidence on cost effectiveness is the focus of this project, there are other criteria apart from cost effectiveness that can influence whether and to what degree interventions are likely to be rolled out in routine practice. These criteria are not captured in the technical cost effectiveness results but are very important from a decision making context. Some of these considerations are summarised in the Table below. The colour coding of each criterion is an attempt to visually summarise whether these secondary considerations impact on the results in a positive or negative way (red = negative, amber = uncertain, green = positive). A code of 'green' implies that the secondary consideration strengthens the case for investing in the intervention. A code of 'amber' means that the secondary consideration reduces certainty in the case for investing and a code of 'red' means that these considerations do not support investment in the intervention.

Implementation considerations		Overall Rating
Potential secondary effects	These results are conservative, as they do not capture all the potential benefits to the parents, children and siblings from the intervention. For example, greater confidence in parenting techniques may improve parents' wellbeing and the wellbeing of any other children in the family. Improvement in children's performance at school has also not been included which would further strengthen the economic credentials of this intervention. Finally the (negative) economic consequences in adulthood of childhood anxiety disorders such as: reduced career choices, increased absenteeism, secondary substance use and increased health service use (6, 7) have not been included.	Positive
Equity	Anxiety disorders have been observed to occur more frequently among those in disadvantaged socioeconomic groups (21). Intervening to prevent symptoms earlier in life is likely to reduce inequalities later (22) as there is evidence that socioeconomic inequalities, anxiety disorders and depression increase with age (23). Parents who work outside usual business hours might not be able to participate in the program and parents with low literacy levels may have difficulty completing the screening questionnaire. Those living in rural and remote areas and single parents may not have easy access to this intervention in person, however online programs are available such as BRAVE-Online through the 'Be You' website (24) and the digital form of 'Cool Little Kids' (25). However, online completion rates may be lower than for face to face options.	Uncertain
Strength of evidence	Anxiety disorders have been observed to occur more frequently among those in disadvantaged socioeconomic groups (21). Intervening to prevent symptoms earlier in life is likely to reduce inequalities later (22) as there is evidence that socioeconomic inequalities, anxiety disorders and depression increase with age (23). Parents who work outside usual business hours might not be able to participate in the program and parents with low literacy levels may have difficulty completing the screening questionnaire. Those living in rural and remote areas and single parents may not have easy access to this intervention in person, however online programs are available such as BRAVE-ONLINE through the 'Be You' website (24) and the digital form of Cool Little Kids (25). However, online completion rates may be lower than for face to face options (26).	Uncertain
Acceptability	The quality of evidence supporting the effectiveness of the Cool Little Kids program is strong (i.e. four randomised trials). However, further evidence of effectiveness gathered when programs are implemented in a real world setting is required.	Uncertain
Feasibility	Whilst this is a parenting intervention aimed at building resilience in children, it may elicit distress in some parents who feel that there is something wrong with their child and/or they or the child are being stigmatised. Additional funding may be required for full subsidisation of the program to cover the parental contribution of 15% above the MBS rebate.	Uncertain
Sustainability	There may be shortages in psychologists available to deliver the intervention, especially in rural and remote areas, but this could be partially overcome by the online resource. However, a previous project, initiated in response to bushfires in rural Tasmania, demonstrated successful training of teachers to screen at-risk children. Local therapists then delivered a post disaster emotional health intervention for children at risk. Finally, adding extra tasks for preschool teachers to undertake within a busy curriculum may also be an issue.	Uncertain

Recommendations

Given the positive ROI results found by the current analyses it is recommended that the introduction in preschools of parenting programs for the prevention of anxiety disorders be considered. Before any wide scale roll out, it is recommended that a centrally coordinated roll out to selected preschools be implemented to ensure that there is a large scale evaluation with longer term follow up of outcomes for the children who participate.

Take home messages

For policy makers and funders, parenting programs for the prevention of anxiety disorders in preschool children are relatively inexpensive to run and this analysis suggests they are good value for money. These programs have the potential to prevent costly treatment and productivity losses in adulthood. Further research is required to confirm the extent of the longer term effects of these types of prevention programs.

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