

FAMILY-BASED INTERVENTION FOR SUICIDE PREVENTION IN ADOLESCENCES: A SYSTEMATIC REVIEW

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ABSTRACT

Aims: To examine the effectiveness of Family-Based Intervention for suicide prevention in adolescences. **Design:** A systematic review. **Data sources:** Search was performed in MEDLINE, Embase and Cochrane library. **Method:** Literature search was performed during April to May 2020 using inclusion and exclusion criteria. PRISMA guidelines were followed. Identified records were reviewed by title, abstract and by the full text by main researcher then made a quality assessment of the included studies. Included studies were extracted and synthesized. **Results:** In total, 451 articles were retrieved via database searching. Following initial screening, 422 full-text articles were screened, of which six met our inclusion criteria. The review therefore includes findings from six studies which were assessed as high quality. Five studies were RCTs and one study was RCTs trial which delivered in both clinical setting and participants' home. All six studies reported

significant reduction in suicide ideation, self-harm of the teenagers and no completed suicide during the treatment and follow-up period. **Conclusion:** Overall all studies were conducted in high-income countries with refer from emergency departments and psychiatric hospitals. We identified that family-based interventions are powerful evidence to reduce suicidal ideation and self-harm for adolescences. **Implication:** This study ensured rigorous methodology, followed PRISMA recommendations and evaluated quality of identified literature using Cochrane Risk of Bias Tool guidelines. A critical synthesis was performed to produce a conceptualization of evidence. The synthesis represents effective family interventions for suicide prevention of adolescence with suicide risk.

Keywords: adolescence, suicide prevention, family caregiver, family intervention therapy

1. INTRODUCTION

Suicide is global public health issue, accounted for 1.4% of all deaths worldwide, making it the 18th leading cause of death in 2016 (1). Suicide was the second leading

cause of death in young people aged 15-29 years after traffic accidents, and the vast majority (90%) were from low- and middle-income countries (1). The mean proportion of young people was reported in a systematic review of Evans et al., with 9.7% lifetime suicide attempt and 29.9% suicide thoughts (2). Suicide and suicide attempts affect not only the families and friends of those who died, but also for people still survive. Nevertheless, the economic costs, social costs and spiritual costs that one committed

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suicide, attack the whole communities and its nation (3). An estimated of \$93.5 billion have been paid by suicide and suicide attempts in combination of medical costs, direct and indirect costs as loss productivity in families and individual in US during 2013(4).

There is strong evidence that family relationship takes an important consideration in suicide risk. To be illustrated, family factors such as conflict and poor communication, loss of caregiver, parent divorces, and psychopathology in first-degree relatives are risk factors for adolescent suicide; and adolescents' deliberate self-harm are often precipitated by conflicts related to family environment (5, 6). Moreover, previous studies showed that lack of supportive adult relationships was significant associated with adolescents' depressive symptoms and suicidal ideation (7, 8). Several findings highlight the importance and benefit of relationship-focused treatments for teenagers who perceived more negative family interactions (8, 9).

According to the literature, most of the caregivers desire to help their children with severe suicidal ideation, however they lack of the competence in providing safe keeping and emotional support (10, 11). In fact, a few studies have involved caregivers in a suicide prevention approach. According to Sun et al., caregivers were able to play an important part in providing support and detecting warning signs and are potential allies in suicide prevention (12, 13). Based on clinical observations of 13,000 suicidal adolescents and their families in the emergency department, Wharff et al., found that "family connectedness" is one of the most salient protective factors against completed suicide (14). In this perspective, caregiver involvement should be emphasized systematically for those at suicide risk during hospitalization and

before discharge. In contrast, number of studies concentrated on reinforcement the health care networking around the patient as leading strategy but only rely on mental health personnel and emergency services (15, 16). Including caregivers in prevention strategies could strongly improve the comprehension regarding patients 'suicide risk situation (17). It is important to understand whether family-based therapies implications in suicide prevention strategy for young people, specifically whether there are unintended consequences in term of management and prevention suicide risk for teenagers.

Background

Suicidal ideations and behaviors which have defined as suicide attempt or self-harm with clear or unclear suicidal intent. Reason to admit hospital by deliberate self-harm significantly predicts subsequent suicide in adolescences, especially during the period immediately following discharge from psychiatric inpatient treatment associated with highest risk for suicide (18, 19). Suicide prevention programs have approached in different strategies included inpatient settings, outpatient clinics, school and home (19). Of the interest, researchers have called attention to the important of caregiver role in reducing suicidal ideation and behavior and increasing treatment adherence (11, 20, 21). Therefore, caregivers and healthcare providers should strive to create a back-and-forth dynamic which empower caregivers as well as reduce constant burden during caring process (17). Family intervention might help both caregivers and teenagers stabilize and warrant caregivers' competence to manage their children safely at home as well as manage current and future crisis. Hence, the need for hospitalization due to suicide attempt or even fatal would reduce significant (11). Despite the promising

results, some evidences indicated the problem in delivery the treatment and intervention for family caregivers of the young people at risk of suicide (19, 22). Thus, there is a need for developing a unique family-based model approach for management and follow-up adolescences with suicide thought and behaviors. To do that it is important to explore existing family interventions and their effectiveness.

2. RESEARCH METHOD

2.1. Aims

This systematic review aimed to examine the effectiveness of Family-Based Intervention for suicide prevention in adolescences.

2.2. Design

This systematic review was planned, conducted and reported in April to May 2020 according to the Preferred Reporting Items for Systematic Reviews and Meta-analysis (PRISMA) Statement (23).

2.3. Search methods

The search strategy was developed and conducted following PICO framework with the question: Which family-based interventions (I) are effective in reducing suicide risk (O) of adolescence at risk of suicide (P)?

The primary outcomes of interest were the reduction in suicide risk in adolescences.

The secondary outcomes of interest were enhancing family relationship.

The complete search strategy for each database can be found in Table 1. A systematic search of Medline, Embase and Cochrane Library was conducted 1st April to 10th May 2020 with the limiters of English language studies. Time limiters were applied from 2013 – 2020. Studies had to be peer-reviewed and published as full-text: abstract only papers and opinion, discussion or review papers were excluded.

Table 1. Search strategy

	Key words/ Databases	MEDLINE	Embase	Cochrance Library	Other sources
		1 AND 2 AND 3			
1	(suicidal ideation OR suicidal thought* OR suicide attempt* OR parasuicide OR suicidal behavi* OR deliberate self-harm OR self-harm)				
2	(adolescen* OR teen* OR juvenile* OR secondary school* OR youth*)				
3	(family-based intervention OR family therapy OR family psychotherapy OR family intervention OR family treatment OR carer intervention OR significant other intervention OR adult relative intervention OR close relative intervention OR close person intervention)	57	317	62	15
	Total	451			

2.4. Search outcome

In total 451 citations were uploaded into Endnote X7 and after removal of duplicates, the search yielded 422 citations for screening. The researcher assessed titles and abstracts for eligibility using the exclusion and inclusion criteria. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) (23) flow diagram shows the results of the search and screening processes (Figure 1).

2.5. Quality appraisal

An assessment of study quality was conducted. For all RCTs, this was assessed based on the Cochrane Collaboration Risk of Bias Tool (24). In the majority of trials, as is often the case, blinding of participants and therapists was not possible (25). Each trial was therefore assessed with regard to random sequence generation, blinding of participants and personnel, blinding of outcome assessment, ascertainment of deliberate self-harm, outcome assessor blinding, whether analyses were conducted according to the intention-to-treat (ITT) principle, and rates of attrition. For the latter criterion, an attrition rate of 15% or less on the primary outcome at the longest follow-up point indicated low risk of bias.

2.6. Data abstraction

Data were extracted using a standardized data extraction form in Microsoft Excel included study: author, year, country, study design, population, intervention, comparison, outcomes, major findings relevant to the PICO. Two reviewers checked the accuracy of the input data.

2.7. Synthesis

A descriptive analysis of included studies is provided in the text narrative and summarized in the PRISMA flow diagram (Figure 1).

3. RESULTS

3.1. Search results

In total, 451 articles were retrieved via database searching during the time limit from 2013-2019. Following initial screening, 422 full-text articles were screened, of which six met our inclusion criteria. The review therefore includes findings from six studies (6, 8, 11, 26-28) (see Figure 1).

3.2. Study characteristics

All of included studies were randomized controlled trials (RCTs) which conducted in three countries as United States (four studies), Australia (one study) and Ireland (one study). Studies were published between 2013 – 2019. The sample sizes of six studies ranged from 35 (27) to 142 (11) adolescences with suicide risks and their caregivers. Almost studies had both intervention groups and control groups, one pilot study (27) did not have control group. Three studies (50%) were provided at participants' houses which were decided by participants' preference (6, 26, 27). The others were implemented at hospital setting as mental health out-patient clinics, pediatric emergency department and emergency departments (ED) (8, 11, 28).

Adolescence and their caregivers were recruited from ED and psychiatric hospitals. Each study used different standard of adolescence age such as 12-17 (6); 11-17 (28); 11-18 (26, 27); 12-18 (8) and 13-18 (11), overall adolescent participants were from 11 – 18 years old. The majority of adolescences were female (70% - 88.1%). All young people in review studies were recruited based on their suicide attempt, deliberate self-harm and suicide ideation at current state or within 72 hours to three months. Three studies had included criteria for teenagers with comorbid mental health disorders as depression (6, 8, 28) or anxiety

and posttraumatic stress disorder (6).

Caregivers, who were recruited in review studies, were defined coherently as parents (biological or adoptive), primary caregiver (6), primary caretaking parent, caregivers – hereafter referred to as parents (26), primary caregiver other than mother or father as aunt, grandmother, step mother, older sibling (8), caregivers, legal guardian with whom the adolescent resided (11). However, the most common and important for caregivers that they had to live together and supported for teenagers with suicide risk during the intervention and follow-up. One study conducted by Spirito et al., (28) provided intervention for both parents and their children who got diagnosed together with major depressive disorders.

Studies examined the impact of range of interventions, including individual (for only parent and adolescence) or both adolescence and their caregiver in conjoint sessions. Intervention programs which were delivered for both adolescences and caregivers together were Resourceful Adolescent Parent Program (RAP-P), Family-Based Crisis Intervention (FCBI), Safe Alternatives for Teens & Youths (SAFETY Program) and Attachment-based Family Therapy (ABFT) were delivered to delivery separate parents and adolescence mostly sessions then therapists worked with both parents and teens in final sessions. Only Parent-Adolescent-Cognitive Behavior Therapy (PA-CBT) was delivered separately during the intervention program, however all individual sessions concluded with a conjoint meeting between parent and teen to enhance positive communication and a review of the skills learned. Control conditions included treatment as usual (TAU) e.g. routine care, enhanced TAU e.g. an in-clinic parent education session, follow by at least 3 telephone calls supporting motivation or active control group with other intervention program as Adolescent Only

Cognitive Behavior Therapy (AO-CBT), Family-enhanced Nondirective Supportive Therapy (FE-NST). Please see Table 1.

3.3. Intervention programs content

Overall, doses of family psychoeducation treatment in review studies vary from four to twenty sessions within one to two hours per session in the duration of four to sixteen weeks, only one study provided one single session.

RAP-P intervention program was delivered for parents of young adults through four sessions during 4-8 weeks with two hours each session. The intervention was mainly focus on stress management, adolescent development, strategies to promote family harmony and to manage conflict, information to enhance parents understanding of suicidal behavior and practical strategies to help their children minimize their self-injurious behavior (6). SAFETY Program included 20 session over 12 weeks with 9 weeks individual intervention for caregivers and children, then 3 final week brought youths, parents and therapists together to practice safety skills and behavior skills. SAFETY Program's contents were psychoeducation, identify youth and family strengths, emotional thermometer, "safety plan" for reducing "emotional temperature" and suicide attempt risk and "Safety Plan Card" (26, 27). Two studies assessed at the same time points: baseline-assessments after ED-discharge, 3-month post-treatment assessments, and at 6-months, but in studied conducted in 2017 Asarnow et al., added one more time point to measure the effectiveness at 12 month postbaseline (26).

To enhance family functioning in term of support teen reduce suicide risk and understand from adolescences' point of view about different treatments, researchers delivered ABFT and FE-NST during 16

weeks (8). Both treatments shared a common goal of improving the adolescent's ability to rely on adult support for managing suicidal and depressive symptoms. ABFT primarily relies on joint parent-teen sessions that address the rupture and enhance the adolescent's confidence in a parent's availability. The therapist provides a supportive and reflective listener who encourages the adolescent to explore and clarify distressing thoughts and feelings in FE-NST. FE-NST was included five sessions for parents with contents in joint parent-teen safety planning and parent psychoeducation about their adolescent's depressive and suicidal symptoms. The measurements of suicidal and depressive symptoms were collected monthly through Week 16 (posttreatment).

It is interesting to get more information about the comparison of two interventions between PA-CBT and AO-CBT. Moreover, both parents and their children had diagnosis of MDE. Two programs were contained 12 sessions over 12 weeks. Adolescence who participated in AO-CBT and PA-CBT, will receive safety plans, core skills including problem solving, cognitive restructuring, affect regulation, behavioral activation, relapse prevention. Parents in the AO-CBT participated in end of most sessions, especially in safety discussion sessions. Similarly, the adolescent sessions in PA-CBT were essentially the same as those in AO-CBT. Parent sessions comprised the same skills as their children', using the same format for better communication between them about skills. In the PA-CBT condition, all individual sessions concluded with a conjoint meeting between parent and teen. The check-in included an exchange of positive comments between the parent and teen to enhance positive communication and a review of the skills learned (28). Then they all completed all research evaluations at four time points: baseline, mid-treatment

(6 weeks), end of treatment (12 weeks), and 48 weeks follow-up.

Difference with other interventions were delivered from four weeks to 12 weeks, FBCI was a novel, single-session ED-based intervention for suicidal adolescents and their families (11). During 60-90 minutes FBCI program, clinician helped the suicidal adolescent and their parents develop a joint crisis narrative of the problem and taught them cognitive behavioral skill building, therapeutic readiness, psycho-education about depression, and safety planning. The outcome was assessed at five time points over the course of the study: before randomization, after evaluation/intervention in the ED, and via telephone at 3 days, 1 week, and 1-month after the ED visit.

3.4. Study quality

The risk of bias within studies is displayed in Table 2. All studies applied an appropriate study method to address a focused research question. The included studies were critically appraised for methodological quality and risk of bias based on "Cochrane Risk of Bias Tool" (29). The majority of these studies used random sequence generation and used adequate allocation concealment strategies (6, 8, 11, 26). Of the six studies that four assessed outcomes by interview face to face, one study used self-report and the other one applied both self-report and interview via telephone. Almost studies reported assessor blinding (6, 8, 11, 26, 27). All six studies reported conducting intention-to-treat (ITT) analysis. Four studies reported less than 15% drop out and were classed as low risk (27). Two interventions included SAFETY program (26) and FBCI (11) which were assessed as low risk of bias for all domains.

3.5. Effectiveness of the intervention

For the primary outcome of reduce suicide ideation, suicide thought, suicide behavior in adolescences, all six studies

reported reduction in suicidality of the young. In RAP-P intervention, the result showed greater reductions in adolescents' suicidal behavior and psychiatric disability, compared to RC alone (6). There was evidence of a significant reduction in suicide ideation, suicide attempt and hopelessness between baseline and three-month follow-up, even though one suicide attempt (3.1%) at the 3-month and another by 6-month (6.2%) cutting with intention of relieving distress and no intent to die (27). Adolescents in both conditions demonstrated significant improvement in suicidal ideation from baseline to end of treatment, remained low throughout follow-up (28). Compared to E-TAU, the SAFETY treatment lowered the probability of a suicide attempt and an estimated suicide attempt risk of 0.33 in the E-TAU group at the 3-month follow-up point and between 3-6 months, one suicide attempt in SAFETY but seven suicide attempts in E-TAU (26). On average, adolescents reported a significant decrease in suicidal ideation from the beginning to end of treatment. On average, this rate of change corresponded to a total decline of 29.26 points on the Adolescents' suicidal ideation scale (SIQ-JR) between baseline and posttreatment. Adolescents from traditionally underserved (non-White or lower income) families showed greater reductions in suicidal ideation in both treatments (8). Finally, no completed suicide was reported in all six studies during the study period in either condition.

In relation to suicide attempt or self-harm, reduction of admission rate had been reported in four studies during and after the intervention programs. Four youths (12.5% of the sample) were seen in the ED and hospitalized during the 3-month follow-up period due to deliberate self-harm (27). Continue their study of SAFETY program, the authors reported the probability of survival to the 3-month posttreatment

point without an ED visit for suicidality was significantly lower for E-TAU compared to SAFETY youths and there were no statistically significant for hospitalizations between intervention and control group (26). Three adolescents in PA-CBT group were psychiatrically hospitalized during intervention phase one for emotional distress after revealing sexual abuse occurred in the family, one for suicidal ideation and cutting, and one for being unable to contract for safety were addressed in study of Spirito et al., (28). In FBCI study, results of a randomized controlled trial of FBCI versus TAU show significant reductions in inpatient hospitalization rates in the FBCI group compared with those demonstrated in their TAU counterparts (11).

Secondary outcome in enhancing family relationship refer to family functioning were found in two studies (6, 8). Family focused interventions had showed positive improvement in family functioning and thus reduce adolescent depressive symptoms in both studies. However, this positive result had no significant relationship with reduction in suicidality of teenagers.

Regarding to the measurement tools to assess suicide risk of adolescence, researchers applied six different questionnaires in six studies. Australian researchers (6) used Adolescent Suicide Questionnaire-Revised (ASQ-R) which was developed from the original ASQ widely applied with Australian secondary school students. ASQ-R included nine items to document suicide ideation, plans, and threats, deliberate self-harm, and suicide attempts. Four items measured frequency (0=never to 3=all of the time), and 5 items measured recency (0=never, 1=in the last 12 months, to 3=in the last month). These items were summed to form a total ASQ-R score for each adolescent at each time point (Cronbach alpha=0.74). Four studies in United States applied four differences

measurements to assess adolescences with suicidality. In RCTs trial conducted by Asarnow et al., in 2015, Suicidal behaviors (Columbia Suicide History Form) was applied for coding timing, method, and lethality of suicidal/self-harm behavior. Research team have previously developed quality assurance procedures indicated strong quality (Mean =1.2, SD=0.54, 3-point scale 1=good to 3=poor). In addition, to assess suicidal behavior and ideation and passive suicidal ideation authors used self-report on the 17-item Harkavy Asnis Suicide Survey (HASS) (27). However, in the next RCTs in 2017, authors applied Columbia Suicide Severity Rating Scale (C-SSRS) to assess suicide attempt and self-harm which contains probes and scales for rating severity of suicidal behavior plus a parallel scale assessing nonsuicidal self-injury (NSSI) and the Suicide History Interview (26). Suicidal Ideation Questionnaire-Junior (SIQ-JR) was employed to assess adolescents' suicidal ideation by Zisk et al., (8). This is a 15-item self-report measure with statements such as "I thought about killing myself" and "I thought about how I would kill myself." Each item is rated on a 7-point scale that assesses the frequency of these suicidal thoughts (1=absence of the thought,7=the thought has occurred almost every day for the past month). Authors reported in their current sample, the SIQ-JR demonstrated good internal consistency (Cronbach alpha = .84). In study of Wharff et al., they used Reasons for Living Inventory for Adolescents (RFL-A) to measure the presence of adaptive qualities and associated protective factors of suicidal adolescent populations (11). The RFL-A is a 32-item self-reports contains 5 subscales: family alliance, suicide-related concerns, peer acceptance and support, self-acceptance, and future optimism. The RFL-A had reported high levels of internal consistency with respect to subscales and

total scores (α values ranging from 0.89 to 0.95) as well as concurrent and known-groups validity. Finally, Ireland researchers applied Beck Suicide Scale (BSS) for both adolescents and parents in their study. Internal consistency for this sample on the BSS were excellent (α =0.90 for both adolescent measures; α =0.93 and 0.95 for parents, respectively).

4. DISCUSSION

This review examined six studies of family-based intervention designed to reduce suicide risks among adolescences. All of studies were conducted in high income countries and participants with suicide ideations or attempts were referred from ED and psychiatric hospitals. Intervention settings, content, therapists were varied across programs. The average of participants from 11 to 18 years old with female dominant, suggesting that the finding from the interventions may be most applicable to young people under 18 years old and their caregivers. Overall, all the programs identified in review reported significant effects on suicidal ideation, suicide attempts or deliberate self-harm, especially no completed suicide during the intervention and follow-up period. Small to large effect sizes were reported by the effective programs with short- and long-term effectiveness evidence. This result could be explained due to the drop-out rate more than 15% in more than a half of studies. This highlights the importance of sufficiently powering studies to detect expected intervention effects.

Family had strong evidence of ability to provide a safe and containing environment for their child during hospitalization and in the community (11, 13). Intervention included both individual and conjoint meeting reported effects for both suicide ideation and attempts which maintained during follow-up process. However, very

few studies were identified family function or caregivers' competence of suicide management as the primary outcome; this may be an area for further program development and to examine the potential association and the mechanisms contribute to the effects.

This review suggested strong evidence for implementation of family-based suicide prevention program in ED, psychiatric hospital, pediatric hospital and home of participants. All of these settings were found to be effective for adolescences with suicide ideation and attempts. The most effectiveness and applicability program in this review was FBCI which was 60-90 minutes single-session-ED-based for adolescents and their families in ED setting (11). This result suggested a widely application for every teenager who admitted to the ED due to suicide behaviors. Family-based intervention especially in crisis offer a promising alternative to traditional inpatient care while enhance family empowerment and adhering to objective of the growing community-based movement (11). In additional, to reduce barriers to treatment attendance and to strengthen understanding of the home and community environment, SAFETY program was strongly suggested for further implementation at teenagers' home. These results show a good strategy which target suicide prevention and early intervention program for young people and their family members during crisis in ED or psychiatric setting and at participants' home. With multi approaches for selective and indicated interventions in this review, there is a need to further explore universal program in this population.

There are some limitations to the current review that should be addressed. This review excluded studies did not include suicide outcome measures but may have had positive effects as seeking behavior, literacy and attitudes. It is also possible

that some studies were not captured by our search strategy and therefore not identified in our review. Another limitation of this review is that the measurement of suicidal ideation, suicide attempts and deliberate self-harm differed widely among studies with self-report measurement and face-to-face interview. As a result, the quality of the data collection may vary between studies. There is a suggestion for further practical training program to enhance general nurses' abilities of suicide risk identification, assessment and manage this population. Finally, our searching criteria did not include non-English language so that there might be other effective programs not appear in our result.

5. CONCLUSION

Even though there are not many family-based suicide prevention programs for adolescences with suicidality available for the implementation in hospital setting or at participants' home, there is powerful evidence on their efficacy. The intervention implementation process should take into account intervention specifics, development process, culture context where intervention is going to develop and characteristics of environment where the intervention should be implemented. In addition, the intervention must be handed by healthcare professional that has appropriate knowledge and skill for prevention, management and promotion of suicidality and mental health disorders. There is a need for investing in nursing education to ensure the best care and support strategy for reducing suicide rate of adolescences.

6. IMPLICATION

This review provided a robust evidence for implication of family-based suicide prevention program for every teenager who admitted to the ED, psychiatric hospital, pediatric hospital due to suicide behaviors.

Family-based intervention especially in crisis offer a promising alternative to traditional inpatient care while enhance family empowerment and adhering to objective of the growing community-based movement. These results show a good strategy which target suicide prevention and early intervention program for young people and their family members during crisis in ED or psychiatric setting and at participants' home. Finally, all interveners were very little nurses' involvement while nursing professionals are first-line gatekeepers of patients reduce the risk for health condition. Suicide is an issue that illustrates the needs for holistic care which involves discovering the purpose and meaning of the suicidal patients' lives and their families, and helping to integrate body, mind and spirit (30). In addition, the core concept of nursing education is holistic care and daily nursing practice offer nurses the most opportunities to identify early signs of mental distress or suicidal ideations in different medical settings. More effort would be needed for nurses to integrate suicide prevention into clinical practice and nursing education.

REFERENES

1. WHO. Suicide in the world: Global Health Estimates. 2019.
2. Evans E, Hawton K, Rodham K, Deeks J. The prevalence of suicidal phenomena in adolescents: a systematic review of population-based studies. *Suicide Life Threat Behav.* 2005;35(3):239-50.
3. Cutcliffe JR, Stevenson C. Never the twain? Reconciling national suicide prevention strategies with the practice, educational, and policy needs of mental health nurses (Part one). *Int J Ment Health Nurs.* 2008;17(5):341-50.
4. Shepard DS, Gurewich D, Lwin AK, Reed Jr GA, Silverman MM. Suicide and Suicidal Attempts in the United States: Costs and Policy Implications. *Suicide and Life-Threatening Behavior.* 2016;46(3):352-62.
5. Brent DA, Greenhill LL, Compton S, Emslie G, Wells K, Walkup JT, et al. The Treatment of Adolescent Suicide Attempters Study (TASA): Predictors of Suicidal Events in an Open Treatment Trial. *Journal of the American Academy of Child & Adolescent Psychiatry.* 2009;48(10):987-96.
6. Pineda J, Dadds MR. Family intervention for adolescents with suicidal behavior: a randomized controlled trial and mediation analysis. *Journal of the American Academy of Child and Adolescent Psychiatry.* 2013;52(8):851-62.
7. Newman B, Newman P, Griffen S, O'Connor K, Spas J. The relationship of social support to depressive symptoms during the transition to high school. *Adolescence.* 2007;42(167):441-59.
8. Zisk A, Abbott CH, Bounoua N, Diamond GS, Kobak R. Parent-teen communication predicts treatment benefit for depressed and suicidal adolescents. *Journal of consulting and clinical psychology.* 2019;87(12):1137.
9. Cottrell DJ, Wright-Hughes A, Collinson M, Boston P, Eisler I, Fortune S, et al. Effectiveness of systemic family therapy versus treatment as usual for young people after self-harm: a pragmatic, phase 3, multicentre, randomised controlled trial. *The Lancet Psychiatry.* 2018;5(3):203-16.
10. Sun F-K, Long A. A theory to guide families and carers of people who are at risk of suicide. *Journal of clinical nursing.* 2008;17(14):1939.
11. Wharff EA, Ginnis KB, Ross AM, White EM, White MT, Forbes PW. Family-Based Crisis Intervention With Suicidal Adolescents: A Randomized Clinical Trial. *Pediatric emergency care.* 2019;35(3):170-5.
12. Sun F-K, Long A, Huang X-Y, Chiang

C-Y. A grounded theory study of action/interaction strategies used when Taiwanese families provide care for formerly suicidal patients. *Public health nursing (Boston, Mass)*. 2009;26(6):543.

13. Sun F-K, Chiang C-Y, Lin Y-H, Chen T-B. Short-term effects of a suicide education intervention for family caregivers of people who are suicidal. *Journal of clinical nursing*. 2012;23(1-2):91.

14. Wharff EA, Ginnis KB, Ross AM. Family-based Crisis Intervention with Suicidal Adolescents in the Emergency Room: A Pilot Study. *Social Work*. 2012;57(2):133-43.

15. Hunt IM, Kapur N, Webb R, Robinson J, Burns J, Shaw J, et al. Suicide in recently discharged psychiatric patients: a case-control study. *Psychological medicine*. 2009;39(3):443.

16. Milner AJ, Carter G, Pirkis J, Robinson J, Spittal MJ. Letters, green cards, telephone calls and postcards: systematic and meta-analytic review of brief contact interventions for reducing self-harm, suicide attempts and suicide. *The British journal of psychiatry : the journal of mental science*. 2015;206(3):184.

17. Valérie Le M, Christophe L, Michel W, Sofian B. Viewpoint: Toward Involvement of Caregivers in Suicide Prevention Strategies; Ethical Issues and Perspectives. *Frontiers in Psychology*. 2018;9.

18. Nock MK, Green JG, Hwang I, McLaughlin KA, Sampson NA, Zaslavsky AM, et al. Prevalence, correlates, and treatment of lifetime suicidal behavior among adolescents: results from the National Comorbidity Survey Replication Adolescent Supplement. *JAMA Psychiatry*. 2013;70(3):300-10.

19. Jo R, Eleanor B, Katrina W, Nina S, Allison M, Dianne C, et al. What Works in Youth Suicide Prevention? A Systematic Review and Meta-Analysis.

EClinicalMedicine. 2018;4:52-91.

20. Diamond GS, Wintersteen MB, Brown GK, Diamond GM, Gallop R, Shelef K, et al. Attachment-Based Family Therapy for Adolescents with Suicidal Ideation: A Randomized Controlled Trial. *Journal of the American Academy of Child & Adolescent Psychiatry*. 2010;49(2):122-31.

21. Huey SJ, Henggeler SW, Rowland MD, Halliday-Boykins CA, Cunningham PB, Pickrel SG, et al. Multisystemic Therapy Effects on Attempted Suicide by Youths Presenting Psychiatric Emergencies. *Journal of the American Academy of Child & Adolescent Psychiatry*. 2004;43(2):183-90.

22. Husky MM, Olfson M, He J-p, Nock MK, Swanson SA, Merikangas KR. Twelve-Month Suicidal Symptoms and Use of Services Among Adolescents: Results From the National Comorbidity Survey. *Psychiatric Services*. 2012.

23. Liberati A, Altman DG, Tetzlaff J, Mulrow C, Gøtzsche PC, Ioannidis JPA, et al. The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: explanation and elaboration. *Annals of internal medicine*. 2009;151(4):W65.

24. Higgins JP, Altman DG. Assessing Risk of Bias in Included Studies. *Cochrane Handbook for Systematic Reviews of Interventions* 2008. p. 187-241.

25. Hawton K, Witt KG, Taylor Salisbury TL, Arensman E, Gunnell D, Townsend E, et al. Interventions for self-harm in children and adolescents. *The Cochrane database of systematic reviews*. 2015(12):Cd012013.

26. Asarnow JR, Hughes JL, Babeva KN, Sugar CA. Cognitive-Behavioral Family Treatment for Suicide Attempt Prevention: A Randomized Controlled Trial. *Journal of the American Academy of Child & Adolescent Psychiatry*. 2017;56(6):506-14.

27. Asarnow JR, Berk M, Hughes JL, Anderson NL. The SAFETY Program: A Treatment-Development Trial of a Cognitive-Behavioral Family Treatment for Adolescent Suicide Attempters. *Journal of Clinical Child & Adolescent Psychology*. 2015;44(1):194-203.

28. Spirito A, Wolff JC, Seaboyer LM, Hunt J, Esposito-Smythers C, Nugent N, et al. Concurrent treatment for adolescent and parent depressed mood and suicidality: feasibility, acceptability, and preliminary

findings. *Journal of child and adolescent psychopharmacology*. 2015;25(2):131.

29. Higgins JP, Altman DG, Gøtzsche PC, Jüni P, Moher D, Oxman AD, et al. The Cochrane Collaboration's tool for assessing risk of bias in randomised trials. *BMJ*. 2011;343:d5928.

30. Boswell C, Cannon SB, Miller J. Students' perceptions of holistic nursing care. *Nursing education perspectives*. 2013;34(5):329-33.

Figure 1: Prisma flow chart

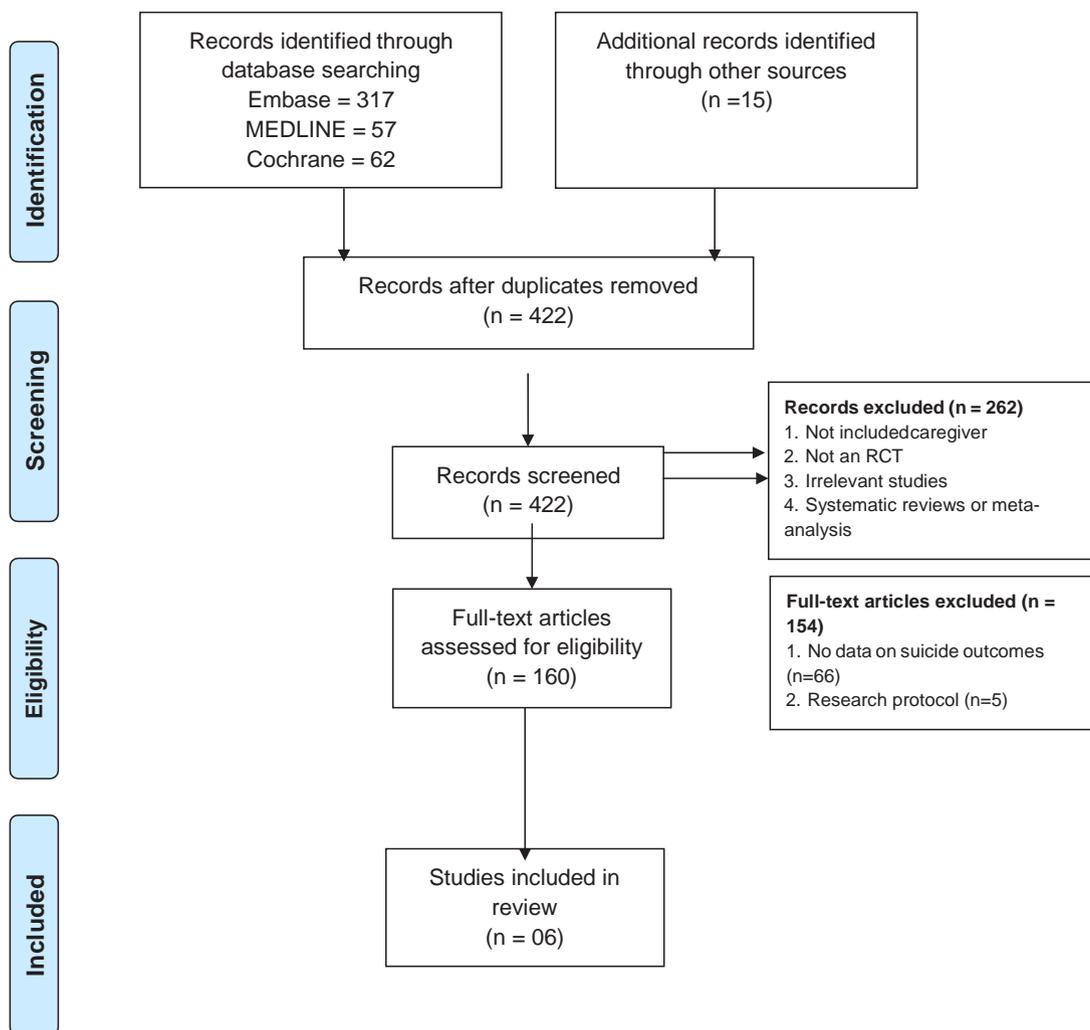


Table 2: Characteristic of included studies

N	Author/ Country	Design/ Participant	Criteria	Intervention	Measurements	Outcomes
1	Jane Pineda, Mark R. Dadds, 2013, Australia	RCT; pre-treatment, 3m, 6m N=48; I=24 C=24	Inclusion: Adolescents 12-17 ys; depression, PTSD, anxiety SI, SA or DSH within the last 2 months; one parent (biological or adoptive) was primary carer; an average or above-average intellectual level; basic English language abilities Exclusion: psychosis; developmental disorders	*RAP-P: 4 sessions, 2h/ session per 1-2w up to 2.5 months interactive psychoeducation program for parents *Routine Care: crisis management, safety planning, individual psychoeducation, nonspecific counseling, supportive therapy, cognitive- behavior therapy, pharmacological treatment RAP-P + RC Delivery together parent and adolescence RC No parents' involvement	+ Adolescence: Adolescent Suicide Questionnaire- Revised (ASQ-R); Strengths and Difficulties Questionnaire (SDQ) + Parents: SDQ *Clinician: Health of the Nation Outcomes Scale for Children and Adolescents (HoNOSCA) Family Assessment Device (FAD)	*PO: adolescent suicide-self harm risk and psychiatric impairment and the *SO: family adjustment
2	Joan Rosenbaum Asarnow et al., 2015; USA	RCT pilot; baseline, 3m, 6m, follow-up N=35; no control group	Inclusion: youths 11-18ys; SA in past 3m; stable living situation; parents participate. Exclusion: no contact information available for follow-up; psychosis; substance abuse/ dependence; not English- speaking; no family to participate	Length: 20 sessions over 12 weeks (incl: 1x family session then individual (16 x youth-only & parent-only), then up to 16xfamily session) * SAFETY Program 1) psychoeducation 2) identify youth and family strengths; 3) emotional thermometer; 4) "safety plan" for reducing	+ Baseline, 3-months: Diagnostic Interview Schedule for Children & Adolescents (NIMH DISC IV); suicidal behaviors (Columbia Suicide History Form); Harkavy Asnis Suicide Survey (HASS) Youth & parent: Center for Epidemiological Studies- Depression Scale (CES-D), Beck	*PO: reduce suicidal behavior *SO: reduce youth & parent depression, hopelessness, social adjustment

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				<p>“emotional temperature” and SA-risk; 5) “Safety Plan Card” Developed by Henggeler (2002)</p> <p>SAFETY Program Delivery individual then together parent and adolescence</p>	<p>Hopelessness Scale (BHS); Social Adjustment Scale-Self Report for Youth (SAS-SR), Treatment Satisfaction Scale, The Service Assessment for Children and Adolescents (SACA) Youth: Drug Use Screening Inventory (DUSI) Parent: Child Behavior Checklist (CBCL) + 6-months follow-up: parent telephone-interviews DISC, SACA.</p>	
3	Joan Rosenbaum Asarnow et al., 2017; USA	<p>RCT; baseline, 3m, 6m, 12m;</p> <p>N = 42 I=20; C=22</p>	<p>Inclusion: 11-18ys; recent SA or NSSI (past 3m); repetitive SH (≥3 lifetime); stable family situation, one parent participated</p> <p>Exclusion: symptoms interfering (psychosis, substance use); inability to speak English</p>	<p>*12 weeks SAFETY program, 3m; skill-building based on CBFA; 3 final weeks brought youths, parents, therapists together to practice “safety” skills and behaviors skill (consolidation, relapse prevention, linkage to needed services) 2 therapists for 1 family, one for youth, other for parents; SAFETY Program Delivery 9 sessions individual parent and teen, 3 session together parent and adolescence</p> <p>*E-TAU: treatment as usual enhanced by an in-clinic parent</p>	<p>Columbia Suicide Severity Rating Scale (C-SSRS); Mood & psychosis disorders (DISC IV); The Service Assessment for Children and Adolescents (SACA); Center for Epidemiological Studies– Depression Scale (CES-D); The Drug Use Screening Inventory (DUSI); Youth Self-Report (YSR) and parent report (Child Behavior Checklist (CBCL)</p>	PO: incident suicide attempts

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				education session, follow by ≥ 3 telephone calls supporting motivation; actions to obtain follow-up treatment.		
4	Abigail Zisk et al., 2019, USA	RCT, monthly assessments through week 16 (posttreatment) N=129 ABFT=66; FE-NST=63	*Inclusion: 12-18ys, severe SI ≥ 31 SIQ-JR; moderate depression ≥ 20 BDI-II *Exclusion: risk of harm to self/others, psychotic symptoms, severe impairment in cognitive functioning; antidepressant medication within 3 weeks of the initial assessment; not willing caregiver to participate; not speak English	16 weeks, five tasks ABFT: conversations about perceived attachment ruptures, improvement in the parent – adolescent relationship. FE-NST: safety planning, understanding adolescent depression, assessing suicide risk, enhancing advocacy and resource development, and increasing problem-solving ABFT Delivery 3 task together parents and teen, 2 tasks separate FE-NST Delivery only parents 4 tasks, together parent and teen 1 task	+ Baseline: cooperative communication (GPACS), parent–adolescent dyads were video-recorded 10-min conflict discussion, Self-Report of Family Functioning Conflict scale (SRFF), + Monthly symptom assessments: BDI-II, Suicidal Ideation Questionnaire-Junior SIQ-JR	PO: suicidal and depressive symptoms
5	Elizabeth A. Wharff et al., 2019, USA	RCT; pre, post, 3days, 1week, 1m N=142	*Inclusion: 13-18ys, SA in 72 hours, a parent noted direct behaviors indicating suicidality, presence of a consenting parent/ legal guardian with whom the adolescent resided, parent/ guardian agreed to participate.	FBCI: one session, 60-90mins, research clinician helped the suicidal adolescent and parents develop a joint crisis narrative of the problem and taught them cognitive behavioral skill building, therapeutic readiness,	Reasons for Living Inventory for Adolescents (RFL-A), Family Empowerment Scale (FES) Client Satisfaction Questionnaire (CSQ-8) Parents/ guardians answered two questions at each follow-up time point.:	*PO: suicidality, family empowerment *SE: parent satisfaction

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			Exclusion: lack fluency English, not medically stable, cognitive limitations, active psychosis, required physical or medication restraint in the ED	psycho-education about depression, and safety planning FBCI Delivery together parent and adolescence TAU: standard psychiatric evaluation and clinical/discharge recommendations	“Since your initial visit to the ED, has your child required another crisis evaluation?” and “Since your initial visit to the ED, has your child been psychiatrically hospitalized again?”	
6	Anthony Spirito et al., 2015, Island	RCT; baseline, mid-treatment (6w), end of treatment (12w), 48w follow-up N = 24 PA-CBT = 16 AO-CBT = 08	Inclusion: adolescent and parent dyads lived together, spoke English. Adolescence: 11–17 ys; current MDE; Clinical Depression Severity Rating Scale (CDRS) >=65; current or past suicidality (BDI-II) or (K-SADS-P) Parent: either current or past MDE; BDI >= 15 with a current MDE, >= 10 with a past MDE. Exclusion: bipolar disorder, substance use disorder, developmental/ cognitive delays, psychosis	12 sessions over 12 weeks *AO-CBT: safety plans, core skills including problem solving, cognitive restructuring, affect regulation, behavioral activation. * PA-CBT: same as in AO-CBT. Parent sessions comprised the same skills as adolescent sessions. Medication management: met with the study psychiatrist for medication management. PA-CBT Intervention for parent and adolescence separate but each session had one conjoint meeting. AO-CBT: Delivery only for Adolescents. Parents participated only in the end-of-session and involved in safety concerns sessions	+ Adolescence: Beck Suicide Scale (BSS), BDI-II, Hopelessness Scale for Children (HSC), The McLean Screening Instrument for Borderline Personality Disorder (MSI-BPD), The Childhood Trauma Questionnaire (CTQ) + Parent: BSS, BDI-II, Beck Hopelessness Scale (BHS), MSI-BPD, + Middle + End treatment of PA-CBT : Client Satisfaction Questionnaire (CSQ), The Working Alliance Inventory (WAI) + Clinician rate: K-SADS & The Structured Clinical Interview for DSM-IV – Patient Version (SCID-I/P); CDRS	*PO: suicidality, depression

Notes: ED = Emergency Department; ITT = intention-to-treat; IQR = Interquartile Range; MA = meta-analysis; MH = mental health; NR = not reported; TAU = treatment as usual; SA = suicide attempt; SD = standard deviation; SH = self-harm; SI = suicidal ideation; SRB = suicide-related behavior; PTSD = posttraumatic stress disorder; NSSI = non-suicidal self-injury; major depressive episode = MDE; PO: primary outcome; SO: secondary outcome; I = intervention; C = control

Table 3. Risk of bias for included studies

Study	Random sequence generation	Blinding of participants and personnel	Blinding of outcome assessment	Less than 15% drop-out rate	ITT analysis undertaken	Ascertainment of DSH repetition
(6)	Yes	No	Yes	No	Yes	Interview
(27)	NR	No	Yes	Yes	Yes	Interview
(28)	NR	No	NR	Unclear	Yes	Interview
(26)	Yes	No	Yes	Yes	Yes	Self-report
(11)	Yes	Yes	Yes	Yes	Yes	Self-report + interview via phone
(8)	Yes	No	Yes	No	Yes	Interview

NR: not report, DSH: deliberate self-harm, ITT = intention-to-treat