Research in the Integration of Behavioral Health for Adolescents and Young Adults in Primary Care Settings: A Systematic Review

Laura P. Richardson, MD, MPH[a,b], **Carolyn A. McCarty, PhD**[a,b], **Ana Radovic, MD, MSc**[c,d], and **Ahna Ballonoff Suleiman, DrPH**[e]

[a]University of Washington Department of Pediatrics

[b]Seattle Children's Research Institute Center for Child Health, Behavior and Development

[c]University of Pittsburgh School of Medicine Department of Pediatrics

[d]Children's Hospital of Pittsburgh of UPMC

[e]University of California Berkeley Institute for Human Development

Abstract

Despite the recognition that behavioral and medical health conditions are frequently intertwined, the existing health care system divides management for these issues into separate settings. This separation results in increased barriers to receipt of care and contributes to problems of under-detection, inappropriate diagnosis, and lack of treatment engagement. Adolescents and young adults with mental health conditions have some of the lowest rates of treatment for their conditions of all age groups. Integration of behavioral health into primary care settings has the potential to address these barriers and improve outcomes for adolescents and young adults. In this paper, we review the current research literature for behavioral health integration in the adolescent and young adult population and make recommendations for needed research to move the field forward.

Introduction

In the United States, approximately 20% of adolescents and young adults have a mental health or substance misuse disorder,[1–3] and these disorders account for a significant portion of the burden of disability for individuals in this age group.[4] These behavioral disorders are associated with other areas of risk including higher rates of suicide,[5] injury,[6] risky sexual activity and unwanted pregnancy,[7,8] and low educational or work achievement.[9] Despite the recognition of the significant short and long-term impacts of behavioral health disorders on development, and the availability of effective treatments, only about one-third of adolescents with a diagnosable behavioral disorder receive appropriate care.[10] Rates of mental health treatment decrease further as adolescents transition into young adulthood.[11] Of particular concern, only half of adolescents who meet criteria for "severe" impairment from a mental health disorder report having received care[10] and only 40% of 18–25 year olds with a

Corresponding Author: Laura Richardson, laura.richardson@seattlechildrens.edu, Seattle Children's Adolescent Medicine, M/S CSB-200 PO Box 5371, Seattle, WA 98145 Phone: (206) 987-2028, Fax: (206) 987-3959.

serious mental illness that impairs functioning report receiving treatment.[12] On average, 10 years pass from the initial onset of a mental health disorder and seeking treatment, with younger age at onset associated with longer delays in treatment.[13]

One approach to reducing delay in treatment and improving treatment delivery is the development of models aimed at improving recognition and treatment for behavioral health disorders in primary care settings through the integration of behavioral health services into medical settings.[14–16] In the United States, it is estimated that 84% of adolescents have an outpatient visit and 66% have a well check-up annually[17] and 70% of young adults report having a source of primary care.[18] Among adolescents who are seen in primary care settings, 14–38% have been found to meet criteria for a mental health disorder.[19–21] Several studies have also shown high rates of mental health comorbidity among individuals with chronic medical illnesses commonly seen in primary care,[22,23] which when present, is associated with higher levels of medical symptom burden,[24–26] health care costs,[24] and worse medical outcomes.[27] A recent meta-analysis of integrated behavioral health trials across pediatric age groups found that they had a small to moderate effect improving the outcomes of mental health and substance use disorders (d=042; 95% CI, 0.29–0.55, p<0.001).[28] Thus, the integration of care has the potential to improve outcomes for both behavioral and physical health. In this article, we aim to specifically review research regarding models of integrated behavioral health in primary care settings among adolescent and young adult populations with the aim of describing needed areas of research.

Review of the Literature

To assess the current state of the literature, we conducted a systematic review of the literature using MEDLINE and PsycINFO to identify research studies examining integrated behavioral health interventions for the treatment of mental health and substance use disorders among adolescent and young adult populations in primary care settings. Literature searches contained four categories of search terms, all of which were joined by "and" conditions:

> Age group designation: "adolescent", "young adult", or "college"

> Variations of integration and/or setting: "primary care", "school", "collaborative care", "integrated care", or "coordinated care"

> Variations of "mental health care", "psychotherapy", "behavioral health", or "mental health"

> Variations of diagnosis: "depression", "anxiety", "disruptive behavior", "eating disorder" or "substance"

To be included, studies had to be focused on older adolescents and/or young adults (study population predominantly within the age range of 13–25 years), examine patient outcomes, have a comparison group, offer a an integrated or health care provider-led intervention for a behavioral health condition in primary care, be published in English, and be conducted in 2004 or later. Studies of adult populations that did not specifically examine young adults separate from the older adult population were not included. For the purposes of this review,

we considered school-based health clinics and college health clinics to be primary care settings. We excluded studies that recruited from the primary care setting but did not have evidence of collaboration or care delivered in that setting, as well as those conducted in the broader school setting such as classroom or campus-wide interventions. We only included those focused on treatment or secondary prevention in at-risk individuals. As the intent was to look at alcohol and illicit drug misuse, tobacco use interventions were not included.

In total, when duplicates were excluded, the systematic searches identified 1,086 potential articles of which 1,032 did not meet inclusion criteria based on review of the title or abstract (Figure 1). We conducted full text article reviews for the remaining 54 articles plus an additional 3 articles identified via bibliographies of identified literature for a total of 57. Of these 57, 36 articles were excluded. The reasons for exclusion included: pilot or feasibility trial with no comparison group (19 studies), repeat use of a study sample without the presentation of new patient outcomes (8 studies), intervention not in a primary care setting (7 studies), not intervention trial (2), and no behavioral outcomes provided (1). Based on full text review, 21 trials were identified for inclusion. As detailed in Table 2, studies meeting inclusion criteria were conducted in multiple countries including the U.S. (N=10), Australia (N=3), New Zealand (N=3), South Africa (N=1), and multiple countries (N=2, US and Canada, and US and Czech Republic). All included studies were reviewed for quality by two independent reviewers using the US Preventive Services Task Force Quality Rating Criteria for Randomized Controlled Trials and Cohort Study Criteria (accessed in Appendix C by Goy et al.[29]). Differences in scores were subsequently reconciled via discussion between reviewers.

To promote accurate comparison, studies identified in our review were organized into three groups with increasing levels of integration. Groups were determined a priori based on the framework outlined in the 2010 report on *Evolving Models of Behavioral Health Integration in Primary Care:* "coordinated care", "co-located care", and "integrated care" (briefly described below and as outlined in Table 1).[30,31] In "coordinated care models", primary care providers work with community-based behavioral health specialists to provide care. The behavioral health specialist may serve as an advisor to the primary care provider without seeing the patient or can provide direct care with a coordinated exchange of information. Educational interventions that aim to enhance primary care provider skills with support and oversight by mental health providers also fit into this category. In "co-located care models", primary care and behavioral health providers are located in the same setting to simplify the referral process, enhance communication between providers, and remove patient barriers to care. "Integrated care" refers to models of care with a shared treatment plan between providers with both behavioral and health elements. These models often involve a multidisciplinary team working together using a pre-defined protocol and a "population-based approach" to tracking outcomes in order to assure improvement for the entire patient panel.

Our review identified a total of 21 randomized controlled trials with behavioral health outcome measurement among adolescents and young adults: 17 in the category of "coordinated care", 0 in the category of "co-located care", and 4 in the category of

"integrated care". Results are discussed by category below and details of specific studies within each category are provided in Table 2.

"Coordinated Care" Research

Our review identified 17 studies meeting the criteria for "coordinated care". Eight studies described interventions in which enhanced behavioral health care was provided by the primary care provider.[32–39] One study examined provider communication skills training aimed at increasing patient and family engagement in behavioral health care and found improvements in parent-reported child functioning for minority, but not White, youth.[32] Five studies examined the effectiveness of provider training in screening, brief motivational interviewing, and referral for substance misuse among adolescent[33,34] and young adult populations[35–37] and found the use of these methods to be effective in reducing alcohol or other substance misuse, increasing patient's readiness to change substance misuse behaviors and/or decreasing consequences of substance misuse. One additional study found that training providers to implement a behavioral health contract paired with consultation among college students reduced the frequency of drinking and driving but not overall substance misuse.[38] A final study found that screening coupled with access to a telephone-based parenting intervention was associated with reductions in child aggressive and delinquent behaviors and attention problems.[39]

Seven studies examined technological approaches to providing behavioral health care in the primary care setting.[40–48] Four examined computer-facilitated brief intervention for substance misuse for adolescent and young adults either with[40] or without[41–43] brief advice from the primary care provider and found such strategies to be effective in reducing substance misuse. In one of these studies, even a single dose of computer-facilitated motivational interviewing showed sustained effects for a year.[42] The remaining three studies used technological interventions to improve outcomes for depression. One study examined the use of mobile health symptom-tracking technology for adolescent and young adult depression and found significant improvements in provider-reported skills and patient-reported emotional self-awareness but not in mental health outcomes or treatment engagement.[44,45] The second study found a cognitive behavioral therapy-informed computer game to have comparable effectiveness to in-person counseling in reducing depressive symptoms among adolescents.[46] The third study found that adolescents with depressive symptoms who received motivational interviewing from their providers were more likely to participate in a web-based cognitive behavioral therapy program designed to prevent worsening of symptoms than those who received only brief advice.[47,48]

Finally, there were two studies employing the integration of self-administered manualized cognitive behavioral therapy into primary care management of Bulimia Nervosa among predominantly young adult women.[49,50] In one study, manualized treatment was associated with significant reductions in bulimic behaviors compared to wait-listed controls.[49] The second study did not find any reductions in bulimic behaviors associated with the manualized treatment, but did find reductions in bulimic behaviors among individuals in medication treatment arms.[50]

"Co-Located Care" Research

Our search did not identify any randomized trials examining outcomes for "co-located care" models. We found only two studies that examined behavioral outcomes for youth receiving "co-located care", both used technological solutions to create virtual co-location and are included here for reference. One retrospective study of a convenience sample of youth who had received a telehealth behavioral consultation found improved behavioral outcomes at 3 months post-consultation.[51] Additionally, a large cohort study of the provision of telephone access to mental health specialists in primary care found high rates of completion of recommended mental health consultation and reduced symptoms over time for referred youth.[52]

"Integrated Care" Research

We identified four studies meeting the criteria of "integrated care" in the adolescent and young adult age group all of which focused on adolescent depression.[53–56] Two studies examined adaptations of adult collaborative care models and involved depression care managers in primary care practices who helped primary care providers with depression assessment, symptom tracking, evidence-based treatment delivery, and advancement of treatment based on pre-specified algorithms and with input from psychiatric consultants. Both found that the collaborative care was associated with increased treatment engagement and significantly improved outcomes for depression among adolescents compared to usual care.[53,54] A third study examined the addition of a brief psychotherapy protocol for antidepressant-treated adolescents in primary care and found that psychotherapy was associated with only mild non-significant reductions in depressive symptoms.[55] The authors noted that youth in the intervention arm were more likely to choose to prematurely discontinue antidepressants than those receiving usual care and hypothesized that this discontinuation may have attenuated the effects of the intervention. The final study examined the integration of interpersonal therapy delivered by trained therapists for teens with depression seen in the school-based health clinic setting. They found benefit of interpersonal psychotherapy over treatment as usual particularly in youth with high levels of conflict with mothers and social dysfunction with friends.[56]

Discussion and Recommendations

While behavioral health disorders have a significant impact on the functioning and impairment of adolescents and young adults, our literature review revealed a relatively small number of research studies testing behavioral health integration in this population. This limited body of literature is particularly surprising in light of the extensive array of collaborative care studies addressing these conditions in adult populations[57–59] and points to the need for further development and testing of interventions among the adolescent and young adult populations. Our review also identified several gaps in the literature in which research would be beneficial in moving the field forward.

First, more high quality research is needed in the implementation of integrated care models for the behavioral health conditions that most commonly occur among adolescents and

young adults. A recent Cochrane review identified 79 randomized controlled trials of integrated care models for depression and anxiety among adult populations with overwhelming evidence for effectiveness in reducing depression and anxiety symptoms.[58] In contrast, our search revealed only three randomized controlled trial studies of integrated care models among adolescents, all of which focused on depression. We did not identify any randomized controlled trials addressing behavioral health integration for anxiety, the most prevalent disorder during adolescence, nor eating disorders among adolescents which are often medically managed in primary care. Similarly, although integrated care models have been tested among younger children with attention deficit disorder,[60–63] studies have not included adolescents above age 13 or young adults. Additional opportunities for new research areas include: examining effectiveness of brief interventions developed for primary care administration in adult settings among adolescent and young adult populations, evaluation of technological strategies to increase access to psychotherapy in primary care, and improved models for the primary care integration of web-based psychotherapy methods that have been shown to be effective for depression and anxiety in adolescent and young adult populations.[64]

Our review also suggested the need for more research addressing how developmental stage affects the types of needed supports and interventions. Prior research suggests that developmental factors can influence the presentation of mental health symptoms, the ability to be independent in care, the impact of stigma, and the efficacy of particular types of interventions.[65–67] For younger teens, parents are often the ones initiating care which may influence interest and engagement in treatment interventions.[68–70] The studies in our review differed in the range of included ages and none were designed with adequate numbers to explore if the intervention was similarly effective across developmental stage. Future studies should address this gap and examine if there are consistent patterns to the types of components (e.g. parental engagement, behavioral skills) required at different ages. One notable area of absence of developmental information was in the young adult population. While most adult studies include individuals who are 18 and older, our search identified relatively few studies in which integrated behavioral health care was specifically examined in young adults, most of which were focused on substance use in college health settings. [36–38,41,42,44,49,50] However, compared to older adults, young adults have little experience in navigating the system to reach care.[18] More research is needed to determine if existing adult collaborative care models are reaching and meeting the needs of this population.

Additionally, more research is needed to identify key strategies to facilitate the dissemination of behavioral health integration models that have been found to be effective in randomized trials into actual primary care practice in the US. There is good evidence for the effectiveness of integrated care for depression[53–56] and brief motivational interviewing for substance misuse[34,41,42,71] (especially when combined with what is known in the adult literature) but significant work still exists in adopting these programs into practice under the current funding system. While our review did identify descriptive papers of large-scale implementation projects,[51,52] they did not include rigorous patient-level outcome assessments or comparison groups. In the US health care system, the funding of activities related to care management and psychiatric supervision have been a particular challenge that will require creative solutions and might benefit from more research. In a recent survey,

clinicians identified lack of resources as a key barrier to implementing integrated care plans in Medical Homes.[72] Finally, integrated care practice requires specific skills among providers including shared management plans, group case supervision by psychiatrists, and training for depression care managers. Further investigation is needed on how to train providers for these skills possibly taking an earlier approach to multidisciplinary training between behavioral health and medical trainees.

The field of adolescent and young adult health care is rapidly shifting in ways that may create new opportunities for improving behavioral health outcomes for this population. The Affordable Care Act opens new opportunities to serve young adults through expansion of health insurance coverage.[73,74] The Patient-Centered Medical Home model aims to reduce the cost of health care and improve patient experience and population health through the integration of needed services, such as behavioral health, into a single setting.[15] School-based health clinics and college health clinics may provide new opportunities to test models that integrate educational and other social supports.[75] By expanding our research in integrated care among adolescents and young adults, we will be positioned well to maximize these new opportunities and to improve key behavioral health outcomes.

Acknowledgments

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Implications and Contribution

Although behavioral health conditions are common sources of morbidity among adolescents and young adults, research in these populations lags behind research in older age groups. This article is the first to specifically examine integrated care research in this age group and to suggest important directions to move the field forward.
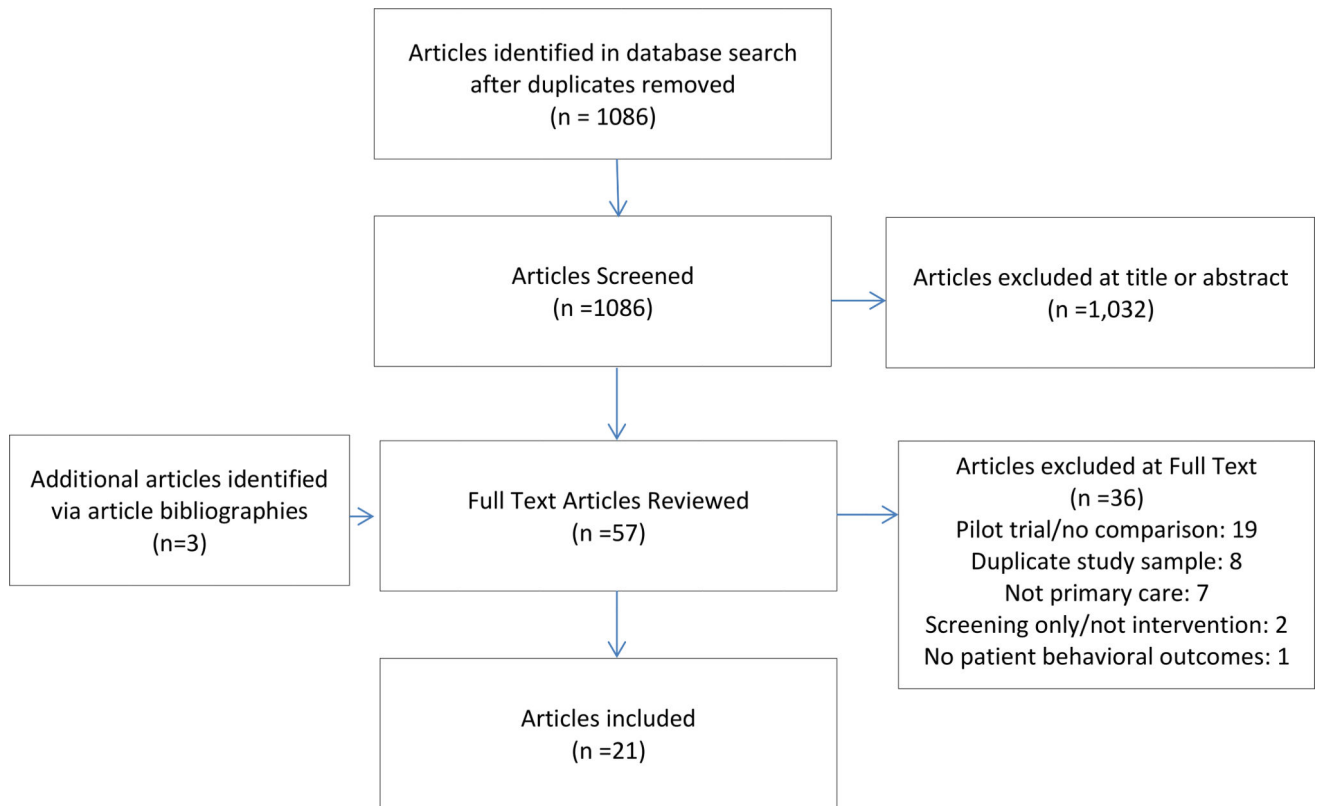
Figure 1.
Literature Review Flowchart

Table 2

Summary of Articles Included in Literature Review (Organized by condition treated and level of evidence)

Study (Country)	N	Youth Age Range	Intervention Target	Intervention Description	Comparison condition	Follow-Up	Main Outcomes	Quality Rating
Coordinated Care Models								
Wissow et al., 2008[32] (US)	418	5–16 years	Behavioral and mood problems	Primary care provider training in mental health communication skills in order to use skills at child wellness or other visits	Usual care	6 months	Intervention associated with greater reductions in impairment among minority but not white youth. No changes noted in youth symptoms but intervention was associated with a decrease in parent symptoms.	Good
Werch et al., 2007[38] (US)	155	College Students (mean age 19 years)	Health behaviors and beliefs	Three comparison conditions: 1 Behavioral contract with calendar log 2 Single consultation Both	Comparison between three arms, no no-treatment cohort	1 month	Groups receiving consultation reported increased rates of physical activity, nutrition, and sleep as well as reductions in drinking and driving behaviors.	Fair
Borowsky et al., 2004[39] (US)	224	7–15 years	Violence	Screening with physician feedback. Optional telephone-based parenting program delivered by parent-educator	Usual care	9 months	Intervention associated with reductions in aggressive and delinquent behaviors and attention problems. Parents also reported less child bullying and physical fighting.	Good
Walton et al., 2013[43] (US)	328	12–18 years	Cannabis use	Computerized brief intervention based on motivational interviewing with or without therapist facilitation	Usual care plus informational brochure and websites	3, 6 & 12 months	Intervention associated with reduced cannabis-related problems and reduced other drug use (3 & 6 months) but not with reductions in cannabis or alcohol use.	Good
Kypri et al., 2004 (New Zealand)[41]	104	17–26 years	Alcohol Use	Web-based assessment and personalized feedback on alcohol use	Information pamphlet	6 weeks & 6 months	Intervention associated with reduced total alcohol consumption at 6 weeks but not 6 months, as well as reduced personal problems and academic problems (6 months only)	Good
Kypri et al., 2008 (New Zealand)[42]	576	17–29 years	Alcohol use	Web-based motivational intervention in: 1 A single dose	Information pamphlet	6 & 12 months	Single dose intervention associated with reduced total alcohol consumption and academic problems. Similar results for three dose intervention.	Good

Study (Country)	N	Youth Age Range	Intervention Target	Intervention Description	Comparison condition	Follow-Up	Main Outcomes	Quality Rating
				2 Three doses over 6 months				
Mertens et al., 2014 (South Africa)[36]	403	18–24 years	Substance use	Single session brief motivational interviewing with a nurse practitioner plus referral resources	Usual care plus list of referral resources	3 months	Intervention youth had significant reductions in alcohol use scores but not at-risk use of alcohol or marijuana.	Good
Fleming et al., 2010 (US & Canada)[37]	986	College students 18 years	Substance use	Brief motivational interviewing - two 15-minute sessions with a physician and two follow-up calls	Booklet on general health issues	12 months	Intervention associated with reduced 28-day alcohol use and alcohol problem index. No reduction in binge drinking, health care utilization, injuries, drunk driving, depression or tobacco use.	Good
Mason et al., 2011 (US)[34]	28	14–18 years, all female	Substance use	Single 20-minute session including brief motivational interviewing and social network counseling	No treatment	1 month	Intervention associated with reduced use of substances prior to sex and reported trouble due to alcohol use	Good
Hides et al., 2013 (Australia)[35]	61	16–25 years	Substance use in youth receiving care for anxiety or depression	Brief Motivational interviewing - two to three 1-hour sessions	One-time assessment with feedback session	6 months	Intervention associated with significantly reduced alcohol use, cannabis use, and psychological distress	Fair
Harris et al., 2012 (US & Czech Republic)[40]	2106 (US) 589 (CZ)	12–18 years	Substance use	Computer-facilitated screening and feedback for youth, plus provider led brief advice based on results	Usual care (asynchronous)	12 months	Intervention associated with significantly reduced alcohol use (US sample only) and marijuana use (Czech sample only)	Fair
D'Amico et al., 2008 (US)[33]	42	12–18 years	Reduction in substance use among high risk youth	Brief motivational interviewing intervention during a primary care visit, with telephone follow-up	Usual Care	3 months	Intervention associated with significant reductions in marijuana use and non-significant reductions in alcohol use	Poor
Reid et al., 2011 (Australia)[44] Reid et al., 2013 (Australia)[45]	118	14–24 years	Depression	Use of a phone app to collect data on mood, stress, coping, activities, eating, sleeping, exercise, and substance use for physician review during follow-up	Attention control	6 weeks & 6 months	Intervention associated with increased provider understanding of mental health and patient emotional self awareness and decreased overall mental health symptoms. No significant reductions in depressive or other mental health disorders.	Fair
Merry et al., 2012 (New Zealand)[46]	187	12–19 years	Depression	Internet-based cognitive behavioral therapy intervention designed as a fantasy game	Usual care (89% received treatment with	2 & 3 months	Intervention associated with reductions in depressive symptoms similar to usual	Good

Study (Country)	N	Youth Age Range	Intervention Target	Intervention Description	Comparison condition	Follow-Up	Main Outcomes	Quality Rating
					psychotherapy or medications)		care group and higher rates of depression remission.	
Van Vorhees et al., 2008 (US)[47] Van Vorhees et al., 2009 (US)[48]	84	14–21 years	Secondary depression prevention among adolescents with sub-threshold symptoms	Brief motivational interviewing with provider followed by participation in an internet preventive intervention (14 modules)	Brief advice (2–3 minutes) + internet preventive intervention (14 modules)	4–8, 12 weeks	Both groups experienced declines in depressive symptoms, increases in social support by peers, and reductions in depression-related impairment at school. The motivational interviewing group was significantly less likely to experience a depressive episode or report hopelessness by 12 weeks.	Fair
Banasiak et al., 2005 (Australia)[49]	109	18 years and older (mean age 29.5 yrs)	Bulimia Nervosa	Modified cognitive behavioral therapy self-help manual guided by brief sessions with a specialist or non-specialist health professional.	Delayed treatment control	6 months	Intervention associated with significant improvements in psychological and bulimic symptom scales, reduced frequency of mean binge eating episodes, and greater remission of eating disordered behaviors.	Fair
Walsh et al., 2004 (US)[50]	91	18–60 years (mean age 30.6 years)	Bulimia Nervosa	Fluoxetine alone, Fluoxetine plus guided cognitive behavioral therapy self-help book, or Placebo plus guided cognitive behavioral therapy self-help book	Placebo alone	3–4 months	Participants receiving fluoxetine had reduced binge eating and vomiting episodes and a greater improvement in psychological symptoms. There was no benefit noted from self-help book. High rate of treatment drop out in both arms.	Poor
Integrated Care Models								
Asarnow et al., 2005 (US)[54]	418	13–21 years	Depression	Quality improvement intervention including depression care management, patient and provider choice of meds, cognitive behavioral therapy, or both	Enhanced usual care	6 months	Intervention associated with significantly improved receipt of treatment, depressive symptoms, mental health related quality of life, and satisfaction with care.	Good
Richardson et al., 2014 (US)[53]	101	13–17 years	Depression	Collaborative care intervention delivered by depression care management, patient and family choice of meds, cognitive behavioral therapy or both; stepped care algorithms and psychiatric supervision	Enhanced usual care	6 & 12 months	Intervention associated with significantly improved receipt of treatment, depressive symptoms, and functional status as well as higher rates of depression remission.	Good

Study (Country)	N	Youth Age Range	Intervention Target	Intervention Description	Comparison condition	Follow-Up	Main Outcomes	Quality Rating
Clarke et al., 2005 (US)[55]	152	12–18 years	Depression	Cognitive behavioral therapy intervention provided by therapist in conjunction with primary provider-prescribed antidepressant	Medications alone	12 weeks	Intervention associated with non-significant reduction in depressive symptoms	Good
Mufson et al. 2004[56]	63	12–18 years	Depression	Interpersonal psychotherapy intervention provided by a therapist in school-based health clinic	Treatment as usual	12 weeks	Intervention associated with reduction in depressive symptoms compared to treatment as usual	Good

Table 2

Collaborative Care Categorization Overview

Coordinated	Co-Located	Integrated
• Routine behavioral health screening in primary care setting Referral relationships developed between primary care and behavioral health • Methods established for routine exchange of information between treatment settings • Primary care provider may deliver brief behavioral health interventions depending on severity	• Medical and behavioral health services located in same setting • Referral process developed to delineate cases to be seen by behavioral health • Proximity promotes enhanced informal communication and bi-directional consultation • Needs of the clinic population may influence the type of behavioral health services offered	• Medical and behavioral services can be located in the either the same or separate facilities • Shared treatment plan between providers with both behavioral and medical elements • Multidisciplinary team works together to deliver care using a pre-arranged protocol • Use of a database to track the care of patients who screen positive • Protocols and improvement goals target the whole population in the database

*Adapted from articles by Blount A.[48] and Collins et al.[47]