

Integrated Primary Care and Social Work: A Systematic Review

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ABSTRACT *Objective:* Behavioral and physical health services are increasingly being integrated, with care provided by interprofessional teams of physicians, nurses, social workers, and other professionals. The objective of this study was to describe the functions of social workers on interprofessional teams in primary care and to assess the impact of interprofessional teams that include social workers in integrated care settings. *Method:* We undertook a systematic review of randomized controlled trials (RCTs) of routine vs. integrated primary care where social workers served on interprofessional teams. A 5-phase search process to identify RCTs from 9 electronic databases and the gray literature published between 2000 and 2016 was used. We calculated effect sizes across identified studies and conducted 2 subsample meta-analyses for behavioral health outcomes. *Results:* The searches recovered 502 citations. After screening, 107 reports were retained for a full-text review, and 32 of those (from 26 RCTs) met study criteria. In the 26 RCTs, social workers engaged in 3 patient-centered activities: behavioral health treatment, care management, and referral for social services. *Conclusion:* Although mixed, the findings suggest that, compared to routine services, integrated primary care provided by interprofessional teams that include social workers significantly improves the behavioral health and care of patients.

KEYWORDS: integrated primary care, integrated care, social work, social worker, integrated behavioral health

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New models of health care are emerging in response to reform initiatives worldwide (e.g., Hendry, Taylor, Mercer, & Knight, 2016; Sandberg et al., 2014). These care models often deploy interprofessional teams of physicians, physician assistants, nurses, social workers, and other allied health professionals to provide health services that concurrently address physical and mental health,

including substance-use disorders (Substance Abuse and Mental Health Services Administration, 2016). Based on a systematic review of randomized controlled trials (RCTs) in integrated primary care, the purpose of this paper is to describe the functions of social workers on interprofessional teams and to assess patient and service outcomes related to the provision of health care through interprofessional teams that include social workers.

Defining Integrated Care

The term *integrated care* refers to the bringing together of multiple health care services (Heath, Wise Romero, & Reynolds, 2013). Typically, integrated care involves interprofessional practice that includes both behavioral and physical health. The Agency for Healthcare Research and Quality (AHRQ; Peek & National Integration Academy Council, 2013) in the United States describes integrated care as

... care resulting from a practice team of primary care and behavioral health clinicians, working together with patients and families, using a systematic and cost-effective approach to provide patient-centered care for a defined population. This care may address mental health, substance use conditions, health behaviors (including their contribution to chronic medical illnesses), life stressors and crises, stress-related, physical symptoms, and ineffective patterns of healthcare utilization. (p. 2)

Similarly, the World Health Organization (Waddington & Egger, 2008) defines integrated care as

... the management and delivery of health services so that clients receive a continuum of preventive and curative services, according to their needs over time and across different levels of the health system. (p. 1)

In the United States, integrated care has focused primarily on the integration and funding of clinical health care services (Valentijn, Schepman, Opheij, & Bruijnzeels, 2013). In Europe, however, integrated care reforms have been more expansive and have included the reorganization of governance and delivery structures related to health and social services systems (e.g., Bäck & Calltorp, 2015). Clinical integration is typically described as “the coordination of services and the integration of care in a single process across time, place, and discipline” (van der Klauw, Molema, Grooten, & Vrijhoef, 2014, p. 2). Clinical integration usually includes the colocation of providers, the creation of interprofessional teams, the sharing of electronic medical records, and the use of a coordinated plan of care for a patient (Blount, 2003; Heath et al., 2013).

In the United States, integrated care has evolved to address the fragmented nature of health care through reforms that focus on service colocation, prevention,

interprofessional collaboration, and cost containment. Internationally, integrated care has more broadly connected health care systems with social welfare systems to emphasize the full inclusion of social care as an element of patient-centered health services (Leutz, 1999). For example, many European countries have developed integrated care models that focus on comprehensive reform of local governance, including how payment and local funding decisions are configured to meet needs at the population level (e.g., Bäck & Calltorp, 2015; Hendry et al., 2016; Valentijn et al., 2013).

Integrated care has a variety of components, and these components are influenced by clinic or practice, organizational, and policy-related constraints. That is, the components of clinically integrated care have contextual dependencies based on the degree to which services are horizontally and vertically integrated. From the AHRQ lexicon (Peek & National Integration Academy Council, 2013) and Kodner and Spreeuwenberg (2002), integration typically includes the following components or elements:

- practice or clinic level—systematic universal screening and comprehensive standardized assessment; treatment protocols to meet individual patient care plans, including care management, brief psychotherapy, and referral to community services; joint care planning; shared clinical records; frequent treatment team communication; and continuous patient monitoring;
- organizational level—service colocation, interprofessional training and education, integrated information systems and communication, multidisciplinary treatment teams, quality assurance culture, shared organization mission and culture, strategic community alliances or care networks, interagency cooperation, consumer and community engagement; and
- policy level—reimbursement mechanisms (e.g., prepaid capitation) designed to incentivize value and cost containment, resource sharing and mobilization, shared technology and information systems to continually assess outcomes.

Collaboration is considered a core element of integrating behavioral and physical health care (Unützer, Harbin, Schoenbaum, & Druss, 2013). Based on the work of Unützer, Katon, and others, the *collaborative care model* has flourished in the field of integrated care (Katon et al., 1999; Katon & Unützer, 2006; Unützer et al., 2002). This model typically includes an interprofessional treatment team consisting of a primary care medical provider, a care manager, and a consulting psychiatrist. The collaborative care model is supported by research, including systematic reviews and meta-analyses (Archer et al., 2012; Coventry et al., 2014). However, the model is just one example of an intervention for integration. For this paper, we define integrated care more broadly than simple collaboration and the collaborative care

model; we include the collaborative care model as an important health care reform nested within the integration of care. (For an extended discussion of the term “integrated care” and its elements, see Valentijn et al., 2015).

Evidence Base for Integrated Care: Mixed Findings

Integration within primary care has proliferated, and studies have shown that compared with routine care, integrated primary care produces significantly better patient-level outcomes for physical and mental health (Asarnow, Rozenman, Wiblin, & Zeltzer, 2015; Bodenheimer, Wagner, & Grumbach, 2002; Coventry et al., 2014; Gilbody, Bower, Fletcher, Richards, & Sutton, 2006; Martínez-González, Berchtold, Ullman, Busato, & Egger, 2014; Schöttle, Karow, Schimmelmann, & Lambert, 2013). However, findings are mixed. Although the evidence for the treatment of mental health problems in primary care settings is comparatively positive (e.g., Butler et al., 2011), studies have failed to produce consistently significant patient-level effects for other health outcomes (e.g., Busetto, Luijckx, Elissen, & Vrijhoef, 2016; Lemmens, Molema, Versnel, Baan, & de Bruin, 2015). For example, in a cluster randomized trial of integrated versus usual care for frail older adults in the Netherlands, van Leeuwen et al. (2015) found no significant patient-level health benefits and no cost savings for an intervention based on a chronic care model. In a meta-review of 27 systematic reviews of integrated care programs for adults with chronic conditions (e.g., heart disease, diabetes, chronic obstructive pulmonary disease), Martínez-González et al. (2014) found that a majority of reviews reported reduced hospitalizations and increased treatment adherence, but few of the reviews demonstrated cost savings. Moreover, in a review of 26 studies that compared routine care with integrated care focused on chronic health conditions, Desmedt et al. (2016) reported that integrated care produced cost savings for patients with diabetes, schizophrenia, and multiple sclerosis. However, raising questions about dose and fidelity, the extent to which care was implemented was not related to economic impacts. Finally, in an umbrella review of 50 systematic reviews, Damery, Flanagan, and Combes (2016) identified 29 reviews with at least one positive finding. The strongest findings were observed in systematic reviews that focused on interprofessional teams that provided both health and social care, targeted single health problems by including specialists (e.g., for chronic obstructive pulmonary disease), and delivered at least some care in the patient’s home. Including studies from Europe, the findings regarding cost savings have demonstrated insufficient consistency. Moreover, the findings regarding general health benefits are mixed, but slightly more consistent and positive. The research is strongest in behavioral health—a concept that includes both mental health and substance-use conditions. Calling for a greater emphasis on patient-level outcomes, Dickinson and O’Flynn (2016) summed up the status of evidence:

We have far more evidence about how partners can work together and the kinds of processes and practices that need to be in place than we do about the impact that these activities have in terms of outcomes for services users. (p. 61)

Study Purpose

Although there are many systematic reviews of integrated care, no systematic review or meta-analysis has focused on the contributions of interprofessional teams comprised, in part, of social workers. The purpose of this paper is to describe the roles of social workers on interprofessional teams in integrated care and to assess the impact of these teams on health outcomes. As health care systems evolve toward the integration of physical and behavioral health services, understanding the impact on health outcomes of interprofessional teams that include social workers is of high public policy value (Dickinson & O'Flynn, 2016). This paper is distinguished from prior reviews by its focus on the roles of social workers on interprofessional teams and its focus on the impact of interprofessional teams involving social workers in integrated primary care settings.

Social Work in Integrated Care

The potential for improved population health and cost savings is driving reforms, which affect the health care workforce. Social workers are already a key part of the health care workforce. They are increasingly being hired in integrated health care settings because of their skill in addressing behavioral health problems and physical health problems with high behavioral dependencies (e.g., adherence to diabetes treatment; Andrews, Darnell, McBride, & Gehlert, 2013; Stanhope, Videka, Thorning, & McKay, 2015). In the United States, the U.S. Department of Labor projects that 35,400 additional health care social workers (a 20% increase over 2016) and 23,900 behavioral health social workers (a 19% increase over 2016) will be needed by 2026 (Bureau of Labor Statistics, 2018).

Social workers fulfill many roles across fields of health (Horevitz & Manoleas, 2013; Muskat, Craig, & Mathai, 2017; Stanhope et al., 2015). As they have done for nearly a century, social workers often assist patients in finding community services (e.g., Cabot, 1919; Cannon, 1917). Such services may be crucial in addressing the social determinants of health, which can influence treatment uptake and adherence (Wilkinson & Marmot, 2003). Indeed, studies suggest that addressing psychosocial needs—that is, identifying and intervening on the social determinants of health—is likely to improve treatment compliance and both physical and behavioral well-being (e.g., Craig et al., 2016). In some settings, social workers manage the care of patients with chronic health conditions and complex needs (e.g., Coquillette, Cox, Cheek, & Webster, 2015; Ell et al., 2010; Muskat et al., 2017). In other

settings, social workers fulfill roles as members of clinical teams that provide treatment for behavioral health conditions (Manderscheid & Berry, 2006). Studies suggest that 30%–80% of primary care visits are at least partially driven by behavioral health problems (American Hospital Association, 2016; Blount et al., 2007; Wodarski, 2014). As members of integrated health care teams, social workers assist in diagnosing and treating problems such as depression, anxiety, and schizophrenia (Andrews et al., 2013; Stanhope et al., 2015; Wodarski, 2014).

The expansion of roles for social workers in health care settings is influenced, in part, by the alignment of the profession's values with reform initiatives. The primary goals of health care legislation align with the profession's historical and current support of prevention and early intervention, commitments to equity in service utilization, the reduction of health disparities, and the treatment of the "whole patient" using person-centered care (Andrews et al., 2013; Gorin, Gehlert, & Washington, 2010).

For this paper, we define a *role* as a set of related functions or tasks that require both knowledge and skill. Social work education prepares social workers for roles in health care through an educational focus that addresses the ways in which social and environmental contexts affect well-being—a perspective in which a full array of biopsychosocial factors is viewed as causally related to health (Andrews et al., 2013; Coulton, 1981). Typically, social workers in health care are trained to use assessment and diagnostic tools, such as the Physical Health Questionnaire (Kroenke & Spitzer, 2002) and the Scale for Adults with Suicidal Ideation (Ko & Harrington, 2016). Additionally, the preparation of social workers for roles in health care includes classroom and field education—the defining pedagogy of the profession—in year-long internships in health and behavioral health settings (McCabe & Sullivan, 2015; Powell, Proctor, & Glass, 2014; Wayne, Bogo, & Raskin, 2010).

To further define the roles of social workers in the integrated health care workforce and to assess the impact on service-related outcomes of interprofessional teams that include social workers, we undertook a systematic review of studies in integrated primary care. To do this, we examined the activities of social workers in RCTs in which behavioral and physical health care were integrated and provided by interprofessional teams in primary care settings. Across a large, relevant literature with process and summative research designs, and in the context of recent criticism that research has focused too much on process and too little on patient-level outcomes (Dickinson & O'Flynn, 2016; Glasby, 2016), we selected RCTs as the unit of investigation. Our rationale for sampling studies that used a rigorous method of determining outcomes (i.e., designs that produce strong evidence according to much-discussed hierarchies of evidence) was that although they are limited in many ways, RCTs would provide an initial incremental measure of the impact of interprofessional teams that include social workers and, hence, build a foundation for future research.

Method

The protocol for this study followed PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines and was registered with PROSPERO (CRD42015026695) at the National Institute for Health Research in the United Kingdom. As described later, this protocol was modified as the study progressed. Consistent with the Population/Participants-Intervention-Comparator-Outcomes-Study Designs (PICOS) perspective and PRISMA, we defined the *population* as studies undertaken in integrated primary care settings where interprofessional teams were comprised, in part, of social workers. We defined *intervention* as the actions undertaken by an interprofessional team comprised, in part, of social workers. That is, the intervention was defined at the team level. Further, for descriptive but not inferential purposes, the intervention tasks undertaken by social workers on interprofessional teams were of special interest. We defined the *comparator* as a control condition—usually routine services. *Outcomes* were defined as the comparative effect—typically patient (e.g., behavioral and physical health) and health care system (e.g., service utilization and cost) effects—at posttest and follow up. *Study designs* included RCTs and cluster randomized trials.

Eligibility Criteria

A priori eligibility criteria were developed and published on PROSPERO to guide the inclusion and exclusion of studies. To prevent multiple-publication bias, the unit of analysis was defined as a study rather than a report, manuscript, or article because studies sometimes generate multiple publications from the same data. The eligibility criteria required published or unpublished studies to have been undertaken in integrated care settings and to have employed social workers as intervention agents in the provision of services. The term *social worker* was defined by the education of intervention agents (i.e., holding bachelor's, master's, or doctoral degrees in social work), and studies were included if at least one intervention agent held a social work degree. The administrative titles used by studies to describe intervention agents were not considered. That is, for inclusion, intervention agents need not have been called “social workers,” but at least one intervention agent was required to hold a social work degree. Following Bronson and Davis (2012), after an initial search to map the available literature, a sufficient number of published RCTs that appeared to involve interprofessional teams comprised, in part, of social work permitted narrowing the inclusion criteria published on PROSPERO to RCTs only. Thus, to describe the activities of social workers and the potential contributions of the interprofessional teams on which they serve, sampling was limited to studies with experimental designs in order to strengthen our capacity to draw inferences about the effectiveness of integrated services relative to a control condition. Although it departed from the PROSPERO protocol, the narrowing of inclusion criteria was consistent with the purpose of our review.

To define the term *integrated care*, we drew from several resources, including the World Health Organization (Waddington & Egger, 2008), the AHRQ lexicon (Peek & National Integration Academy Council, 2013), and a Substance Abuse and Mental Health Services Administration framework developed for the Health Resources and Services Administration (HRSA; Heath et al., 2013). We included studies in the sample if (a) care was coordinated by an interprofessional team that included a social worker, (b) a treatment plan was shared across providers, and (c) at least one provider was responsible for primary care or the team was linked to a primary care provider.

Consistent with HRSA terminology (n.d.), we defined *primary care* as traditional general practice or primary care, family medicine, geriatric care, pediatric care, public health medicine, and practice focused on women's health (e.g., obstetrics and gynecology [OB/GYN]). We included specialty care—such as cardiology and emergency medicine—if services were delivered by an interprofessional team involving a social worker and if care plans entailed collaboration with primary care.

The sample was limited to published and unpublished reports completed between January 1, 2000, and April 1, 2016. These dates were selected to harvest studies that might have influenced the design of recent legislation (e.g., the 2010 Patient Protection and Affordable Care Act) and to recover the most recent papers that have been influenced by changing care delivery and payment models. In addition, we selected this timeframe to be consistent with the timeframes used in related work from Australia (Heyeres, McCalman, Tsey, & Kinchin, 2016) and the United Kingdom (Damery et al., 2016). No exclusionary limits were placed on the location of studies or publication status. Only studies written in English were included. Other than serving as a randomized comparator, no exclusionary or inclusionary criteria were established for control conditions, which was a routine services control group in almost all included studies.

Search Methods

Because the training and professional affiliations of *intervention agents* (i.e., health care workers providing care) are rarely reported in abstracts and inconsistently reported in the full text of research reports, we designed a five-phase deep-search strategy to ensure a systematic and thorough examination of the literature. In the first phase, we developed search terms in consultation with a reference librarian and experts in the field. Terms varied by the electronic database, and terms incorporated appropriate Boolean search strategies based on the limits of each database. In general, terms included *primary health care*, *collaborative care*, *integrated primary care*, *integrated behavioral health*, *social work*, and *randomized controlled trial* or *RCT*. Because the study focused on integrated care, specialty health care such as behavioral health, mental health, family or adult medicine, pediatric care, and substance abuse treatment were not included in the search terms. Inclusion of these more specific

terms could have produced search results that included studies addressing multiple kinds of care provided concurrently but without integration. Studies that did not explicitly integrate care in a single patient-level care plan were outside our scope of interest because they did not conform to prevailing definitions of integrated care. See a full list of search terms and protocols by database in the Appendix (online).

In the second phase, two researchers conducted systematic electronic searches of nine electronic databases: PubMed, CINAHL (EBSCOhost), PsycInfo (EBSCOhost), Social Work Abstracts (EBSCOhost), EMBASE, SCOPUS, Web of Science, Social Services Abstracts (ProQuest), and the Cochrane Database of Systematic Reviews. The search was conducted on April 1, 2016. Two researchers independently screened search results based on the title and abstract, and studies that clearly did not meet eligibility criteria (e.g., not conducted in an integrated care setting) were removed.

In the third phase, two researchers independently conducted a full-text review of all remaining articles. Departing from the PROSPERO protocol, full-text review was required at this point because studies rarely reported the training of intervention agents in titles or abstracts. A title and abstract search proved insufficient, and a more thorough search was required to access studies that used interprofessional teams with social workers. The two researchers read the reports and independently scored each article on three criteria: (a) delivery of an experimental service in an integrated primary care setting, (b) use of a collaborative patient-level care plan, and (c) social worker involvement in the provision of care (i.e., as intervention agents). When discrepancies in scores arose, the researchers met and resolved differences through discussion.

In the fourth phase of the search process, both backward- and forward-reference chaining was used to locate studies that might have been missed in the electronic searches. We examined reference lists and acquired and reviewed relevant papers for inclusion (i.e., backward snowballing). We used the Web of Science and Google Scholar to identify articles citing studies in our sample (i.e., forward snowballing). These articles were acquired, screened, and included if they met eligibility criteria. At the same time, related systematic reviews were reviewed to identify studies not recognized in the electronic database searches.

To reduce publication bias (i.e., bias introduced by sampling only published reports), the fifth phase focused on the gray literature and on studies that might have been overlooked because they did not explicitly identify social workers as having been involved in the provision of services. Authors who had published conference abstracts identified in the search were contacted and asked if study findings were available as "in press" or other reports. Using the search terms, we also queried the U.S. National Institutes of Health RePORT, a searchable online index of research grants funded by the National Institutes of Health; this search was intended to identify funded studies that might meet eligibility criteria and have prepublication

reports. Finally, to identify and include possibly overlooked studies, we contacted the lead authors of excluded reports if (a) a coauthor was identified as a social worker, or (b) social work practitioners were thanked in the acknowledgements for contributing to a study.

Data Extraction and Management

Two researchers worked independently to extract study characteristics from each identified report. Data from primary and secondary (when found) research reports were aggregated by study. Samples were coded both by setting and by patient characteristics, including age, sex/gender, race/ethnicity, and diagnoses or presenting problems. We coded research designs for recruitment methods, treatment randomization, and analytic techniques, including missing data imputation. The details of interventions provided by social workers were extracted, including location or setting, dose (i.e., exposure to treatment), and content. When differences in coding were observed, the two researchers met with a third member of the research team to discuss and mutually determine a proper code.

The extracted data also included patient and service outcomes, plus the functions performed by social workers as intervention agents in integrated primary care settings. From each study, information was extracted on the characteristics of the interprofessional teams on which social workers served and the characteristics of the patients for whom the teams provided care. In addition, data were collected on the length of treatment, mode of delivery (e.g., face-to-face, phone), functions of social workers, and patient outcomes. Outcome data were extracted for the immediate postintervention time point. If follow-up data or costs were available, those data were also recorded.

Scope of social work practice. The scope of social work practice was coded using task-analysis items adapted from Horevitz and Manoleas (2013). Items were also drawn from a systemic review conducted by the AHRQ on key characteristics of integrated physical and mental health in primary care (Peek & National Integration Academy Council, 2013); a systematic review conducted by Martin, White, Hodgson, Lamson, and Irons (2014) on integrated care program characteristics; and Stanhope et al.'s (2015) description of key social worker roles in the expansion of the Affordable Care Act.

Pilot test. To refine the scope of practice measures, a pilot test was undertaken with 40 social work practitioners in integrated care (Fraher, Richman, Zerden, & Lombardi, in press). These practitioners were asked to complete a survey using a pool of task-analysis items, to comment on each item, and, if warranted, to suggest additional items. We selected final items from the pilot test.

Task items. Describing social work activities that commonly occur in integrated primary care, 24 items were used in the task analysis: use standardized assessment, provide patient navigation, contribute to the care plan, link patients with commu-

nity resources, provide patient education, facilitate communication among team members, use screening brief intervention referral and treatment, participate in case conferences, contribute to electronic health records, conduct functional assessments, use behavioral activation, use motivational interviewing techniques, deliver problem-solving therapy, deliver brief cognitive-behavioral therapy, provide relaxation training, participate in the provision of team-based care, address the social determinants of health, assist patients in managing medications, provide psychoeducation, consult with providers, use risk stratification or stepped care, manage care, use cultural competence, and adapt services to be culturally inclusive. Intended to have content and face validity for the more frequent tasks undertaken by social workers in integrated primary care, these items should not be considered exhaustive. We coded the activities of social workers in each of the 26 studies using the 24 task items. Across studies, codes were tabulated for analysis.

Quality assessment. The quality of included studies was defined as methodological rigor. A Jadad score, often used to assess the methodological quality of controlled trials, was calculated to assess the quality of each report (Jadad et al., 1996). Jadad scores rely on three criteria to assess the quality of studies: (a) use of an unbiased treatment allocation procedure, (b) masking of participants, and (c) intent-to-treat analysis. Each criterion carried a 1-point value (Moher, Jadad, & Tugwell, 1996; Moja et al., 2005). Scores were summed, with higher values indicating greater rigor.

Synthesis of Findings

The synthesis of findings took place in two phases: (a) aggregation of information into tables that described the methods and findings from each included study; and (b) disaggregation by outcome domains. Outcomes were categorized into domains based on the principal research question addressed in each study. These domains included behavioral health, general health and functioning, use of health care services, and cost of care. We extracted or estimated effect sizes (Cohen's d) and 95% confidence intervals (CIs) for all included studies (where sufficient information was presented); we did not calculate effect sizes for costs because no study included adequate information. We used Cohen's metric of small ($d = .20$), medium ($d = .50$), and large effects ($d = .80$) to guide interpretative analysis of studies with effect sizes (Cohen, 1988). With the exception of findings from studies focused on depression, heterogeneity across studies prevented meaningful cross-study quantification of effects (e.g., pooling of effect sizes).

The aggregation of findings into tables was followed by integrative synthesis. Two authors reviewed and discussed the tables. The synthesis was analytic, integrative, and interpretive. It drew on the tables, narrative in the included studies, quantification using effect sizes, scoring across studies of the tasks and activities undertaken by interprofessional teams, and exploratory meta-analyses.

Meta-analysis. We did not calculate a meta-analytic summative effect across all outcomes because the number of common outcomes from studies of similar interventions in comparable settings was insufficient to permit meaningful quantification. Outcomes varied from measures of behavioral and physical health to events (e.g., number of emergency room visits in a given period). For descriptive synthesis of findings, outcomes were classified into domains (e.g., behavioral health, general health and functioning).

To assess impacts across studies with conceptually similar outcomes, separate subsample meta-analyses were undertaken. Following Littell, Corcoran, and Pillai (2008), we conducted meta-analyses for a subsample of integrated care studies that used a conceptually distinct, comparable measure—depression symptoms—and had common follow-up data collection time points (i.e., at 6 and 12 months).

For these exploratory meta-analyses, a dichotomous outcome for depression symptoms (i.e., at least a 50% score reduction from baseline to follow up on the Physical Health Questionnaire, Symptom Checklist-20, or Child Depression Rating Scale–Revised; yes = 1; no = 0) was expressed as a risk ratio (RR) with 95% CIs. We used the measure *at least a 50% reduction in symptom score* because (a) it was used by reports, and no more finely grained measure was available (i.e., we did not have access to patient-level data, and we were constrained to the information reported in each article); and, more broadly, (b) the 50% cut point is widely used in the field (see, e.g., Barone et al., 2010; Cabassa, Hansen, Palinkas, & Ell, 2008; Rush et al., 2006). We estimated significance using the Mantel–Haenszel random effects model (DerSimonian & Kacker, 2007). The I^2 statistic was used to assess heterogeneity across studies (between-study variability of less than 25% [low heterogeneity], 25%–50% [moderate heterogeneity], and more than 50% [high heterogeneity]; Higgins & Thompson, 2002). We used RevMan 5 (Cochrane Collaboration, 2014) to estimate meta-analytic effects. The meta-analyses are incorporated in the behavioral health outcomes section.

Results

Included Studies and Participant Characteristics

As shown in Figure 1, 502 articles were recovered for a title and abstract review. After the initial review, 107 articles were subject to a full-text review by two independent reviewers. In all, the review encompassed 32 research reports describing 26 RCTs, including three reports identified by experts or other methods of citation searching (e.g., backward snowballing). When multiple reports were published from a single study, secondary reports typically focused on cost-effectiveness (e.g., Hay, Katon, Ell, Lee, & Guterman, 2012), follow-up results (e.g., Ell, Katon, et al., 2011; Ell, Xie, et al., 2011), and moderator or subgroup analyses (e.g., Katon et al., 2014). Only published articles were included in the final pool of studies; that is, no unpublished literature met criteria for inclusion.

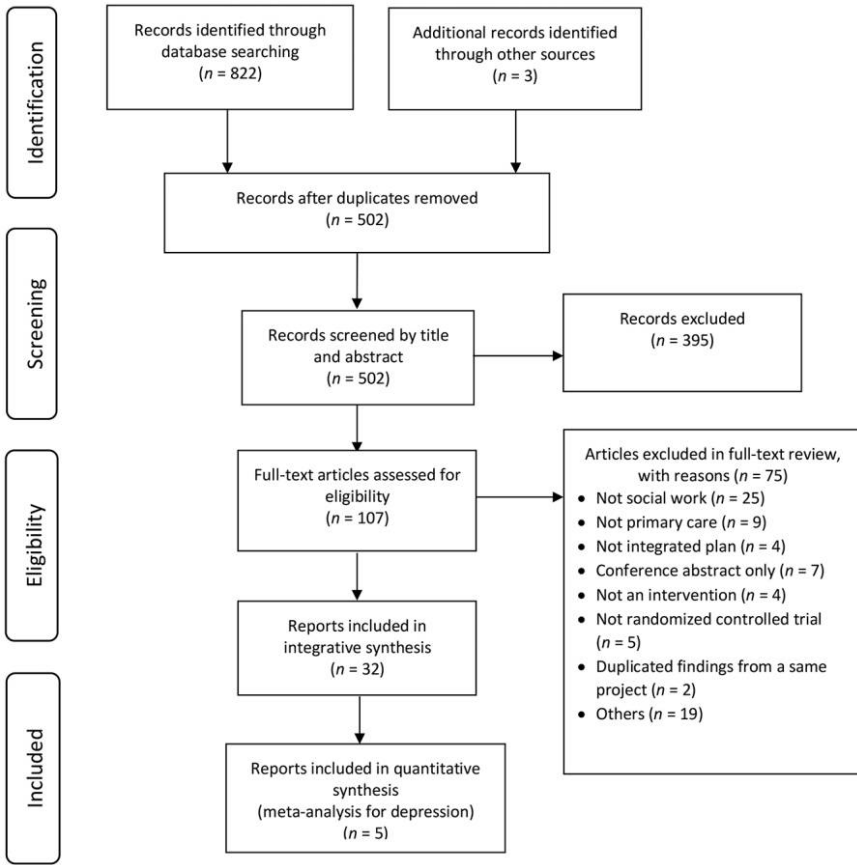


Figure 1. Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow diagram of screening and selection.

Of the 26 studies that generated the 32 reports included in this review (see Table S1 online), all but three studies were completed in the United States, with one study completed in Hong Kong (Leung, Liu, Chow, & Chi, 2004) and two conducted in Canada (Angeles et al., 2013; Béland et al., 2006). Nine studies were located in traditional primary care practice settings (Angeles et al., 2013; Boulton, Rassen, Rassen, Moore, & Robison, 2000; Farmer, Clark, Drewel, Swenson, & Ge, 2011; Fortinsky, Kulldorff, Kleppinger, & Kenyon-Pesce, 2009; Katon et al., 2001; Richardson et al., 2014; Roy-Byrne et al., 2010; Saitz et al., 2013; Sommers, Marton, Barbaccia, & Randolph, 2000). Six studies were located in public-health community clinics (Béland et al., 2006; Counsell et al., 2007; Ell et al., 2010; Kwong, Chung, Cheal, Chou, & Chen, 2013; Roy-Byrne et al., 2014; Safren, O’Cleirigh, Skeer, Elsesser, & Mayer, 2013), and

four studies were located in academic health care systems (Counsell et al., 2007; Ell et al., 2008; Huffman et al., 2014; Ross, Roberts, Campbell, Solomon, & Brouhard, 2004). The remaining studies were conducted in assisted-living settings (Bellantonio et al., 2008; Boulton et al., 2001), a detoxification unit (Samet et al., 2003), Veterans Administration medical centers (Engelhardt, Toseland, Gao, & Banks, 2006), a community hospital (Leung et al., 2004), and OB/GYN clinics (Grote et al., 2015; Melville et al., 2014).

Characteristics of patient participants. Shown in Table S1 (online), patients across studies tended to be adult, White, and female. In 15 studies, the majority of participants were 45 years or older. Reflecting the growth of integrated care in aging services, nine studies focused on older adults (Béland et al., 2006; Bellantonio et al., 2008; Boulton et al., 2000, 2001; Counsell et al., 2007; Engelhardt et al., 2006; Fortinsky et al., 2009; Leung et al., 2004; Sommers et al., 2000). Two studies focused on parents of children (Farmer et al., 2011; Ross et al., 2004), and one study focused primarily on adolescents (Richardson et al., 2014).

Twenty-one studies included gender. Female patients outnumbered males in 14 studies, and no studies included transgender patients. One study had only male participants (Safren et al., 2013), and the samples of both studies from the Veterans Administration were predominantly male (Engelhardt et al., 2006; Hedrick et al., 2003).

Across all 26 studies, most participants were White; however, five studies did not report the race/ethnicity of participants (Angeles et al., 2013; Béland et al., 2006; Bellantonio et al., 2008; Leung et al., 2004; Moore & Robison, 2000). Two studies focused exclusively on Hispanic patients (Ell et al., 2008, 2010), and one focused exclusively on Chinese American patients (Kwong et al., 2013).

Shown in Table S1 (online), the studies inconsistently recorded participant income and educational data; only three studies reported patient income information (Grote et al., 2015; Roy-Byrne et al., 2014; Safren et al., 2013). Across studies, the majority of participants held high school degrees. A few studies reported patient employment status or homelessness (e.g., Huffman et al., 2014; Samet et al., 2003). Four studies focused on disadvantaged populations (Ell et al., 2008; Engelhardt et al., 2006; Grote et al., 2015; Samet et al., 2003); a similar focus on disadvantaged populations could be inferred in two other studies that were conducted in “safety-net” or public health clinics (Ell et al., 2010; Roy-Byrne et al., 2014).

Most studies reported focusing on patients with high levels of physical health needs, including chronic conditions such as diabetes, high blood pressure, and heart disease. Six studies focused on patients with comorbid physical and behavioral health conditions (Boulton et al., 2001; Ell et al., 2008, 2010; Grote et al., 2015; Hedrick et al., 2003; Huffman et al., 2014). Five studies focused principally on behavioral health problems, such as depression and anxiety (Katon et al., 2001; Richardson et al., 2014; Roy-Byrne et al., 2010; Safren et al., 2013; Melville et al., 2014).

Three studies focused on patients with substance-use disorders (Saitz et al., 2013; Samet et al., 2003; Roy-Byrne et al., 2014).

Quality of included studies. All studies were RCTs. One study used a randomized cohort design (Sommers et al., 2000), two studies used randomized waitlist controls (Angeles et al., 2013; Farmer et al., 2011), and five studies randomized patients at the practice or physician level (Boult et al., 2000; Counsell et al., 2007; Fortinsky et al., 2009; Hedrick et al., 2003; Sommers et al., 2000). The majority of studies included detailed descriptions of recruitment and randomization procedures; however, three studies included insufficient details to allow readers to understand the randomization procedures (Engelhardt et al., 2006; Kwong et al., 2013; Leung et al., 2004).

To assess the rigor of studies, the review team calculated Jadad scores (Jadad et al., 1996; Moher et al., 1996). As reported, all 26 studies randomized participants to treatment or comparison conditions. No study used a double-blind (masked) design; however, 12 (46%) of the studies masked research team members to treatment assignment. If a study used a single-masked design, it was given half credit (a score of 0.5). The final criterion used to assess rigor was the study's analysis protocol, which showed that the majority of studies used an intent-to-treat analysis. Out of a maximum possible Jadad score of 3.0, the average Jadad score was 2.096, with 12 studies earning a score of 2.5. Jadad scores are shown in Table S2 (online).

Characteristics of Interventions Involving Social Workers in Integrated Care

All studies were designed to test the effects of integrating physical and behavioral health care. As shown in Table S3 (online), only a few studies reported the use of treatment manuals as a part of integrated care; most studies reported the use of treatment protocols and guidelines. Explicit protocols were used to organize—or step—service responses to diagnoses and the severity of behavioral health conditions, such as depression with suicidal ideation.

Treatment length. The length of treatment for which social workers served as the intervention agent varied from one to multiple sessions, with multisession treatments focused on monitoring patients over time. These contact differences reflect the varied functions that social workers serve in integrated care. On average, brief mental health interventions lasted between four and 12 sessions (e.g., Ell, Katon, et al., 2011). For interventions in which social workers had care evaluation and monitoring roles, regular patient contact was required over entire study periods (e.g., Melville et al., 2014).

From the data, two social work practice models emerged, characterized by the intervention length. One practice model appears to be defined by limited encounters with patients who receive brief behavioral health interventions; patients who fail to respond to brief interventions are referred—or stepped up—to other health care resources for more intensive care. A second practice model appears to be de-

fined by prolonged encounters with patients who have chronic conditions that require extended monitoring and, often, ongoing interventions to address the social determinants of health.

Intervention delivery. To provide integrated care, team members in 21 studies used a combination of face-to-face and phone communication with patients (See Table S3 online). Five studies reported only face-to-face communication to deliver interventions (Angeles et al., 2013; Bellantonio et al., 2008; Boulton et al., 2000; Safren et al., 2013; Saitz et al., 2013). Follow-up and monitoring typically occurred through phone contact with patients or their caregivers (e.g., Boulton et al., 2000).

Integrated care team composition. By design, all studies occurred in integrated settings with interprofessional teams that included at least one social worker, but the composition and size of teams varied. In 12 studies (46%), a primary care physician was fully integrated on an interprofessional team. In six studies, interprofessional teams were composed of a primary care physician, a psychiatrist, and other health professionals, including social workers (Hedrick et al., 2003; Huffman et al., 2014; Melville et al., 2014; Richardson et al., 2014; Roy-Byrne et al., 2014; Saitz et al., 2013). The remaining studies provided medical care through cooperative arrangements. For example, in two studies a primary care physician coordinated with a consulting psychiatrist and other team members through phone calls, faxes, and electronic health record entries (Ell et al., 2008; Hedrick et al., 2003).

Social Workers in Integrated Primary Care: Task Analysis

As intervention agents, social workers worked alongside nurses or other professionals serving in similar roles. With other professionals, they were often given functional titles. For example, in the study by Katon et al. (2001), the intervention agents were called “depression specialists,” with that role filled by social workers, psychologists, and nurses. Shown in Table 1, 11 studies (42%) reported that social workers serving as intervention agents held Master of Social Work degrees. One study reported using social workers who held a Bachelor of Social Work degree (Boulton et al., 2001), and one study reported using staff with a combination of master’s and bachelor’s degrees in social work (Roy-Byrne et al., 2014). Only two studies reported using licensed clinical social workers as intervention agents (Boulton et al., 2000; Huffman et al., 2014).

Tasks fulfilled by social workers in integrated care. The tasks and activities of social workers in each trial were coded using 24 items (see Figure 2). In addition to providing team-based care and contributing to care plans, social workers conducted standardized assessments; consulted with care providers; managed plans of care; monitored medications; provided patient education and psychoeducation (e.g., leading self-care training groups for patients with chronic health problems); facilitated communication among team members; and, in the context of addressing the social determinants of health, conducted functional assessments and linked patients to community resources. In 19 studies (73%), social workers performed care-management tasks.

Table 1*Characteristics of Social Workers as Described in 26 Reports of RCTs of the Efficacy of Integrated Care*

Study by Author(s)	Functions of Social Workers on Interprofessional Teams				Level of Social Work Education	Social Workers are Colocated
	Behavioral Health Specialist	Care Manager	Community Engagement Specialist	Other Function		
1. Angeles et al., 2013	Yes	–	–	–	MSW	Yes
2. Béland et al., 2006	–	Yes	Yes	–	U	Yes
3. Bellantonio et al., 2008	–	Yes	Yes	–	U	Yes
4. Boulton et al., 2000	–	Yes	Yes	–	U	Yes
5. Boulton et al., 2001	–	–	Yes	Yes	BSW ^a	Yes
6. Counsell et al., 2007, 2009	–	Yes	–	–	U	Yes
7. Ell et al., 2008; Ell, Xie, et al., 2011	Yes	Yes	–	–	MSW	Yes
8. Ell et al., 2010; Ell, Katon, et al., 2011; Hay et al., 2012	Yes	Yes	–	–	MSW	Yes
9. Engelhardt et al., 2006	–	Yes	–	–	U	Yes
10. Farmer et al., 2011	–	Yes	–	–	U	No
11. Fortinsky et al., 2009	–	Yes	–	Yes	U	No
12. Grote et al., 2015	Yes	Yes	–	–	MSW	Yes
13. Hedrick et al., 2003	Yes	Yes	Yes	–	U	Yes
14. Huffman et al., 2014	Yes	Yes	–	–	MSW	No
15. Katon et al., 2001	Yes	Yes	–	–	U	Yes
16. Kwong et al., 2013	–	Yes	–	–	MSW	Yes
17. Leung et al., 2004	–	Yes	Yes	–	U	No
18. Melville et al., 2014; Katon et al., 2014	Yes	Yes	–	–	MSW	Yes
19. Richardson et al., 2014	Yes	–	–	–	MSW	Yes
20. Ross et al., 2004	Yes	Yes	Yes	–	U	No
21. Roy-Byrne et al., 2010	Yes	–	–	–	U	Yes
22. Roy-Byrne et al., 2014	Yes	–	–	–	MSW; BSW	Yes
23. Safren et al., 2013	Yes	Yes	–	–	U	Yes
24. Saitz et al., 2013; Park et al., 2015	Yes	–	Yes	–	U	Yes
25. Samet et al., 2003	–	–	Yes	–	U	Yes
26. Sommers et al., 2000	–	Yes	Yes	–	MSW	Yes

Note. RCTs = randomized controlled trials; BSW = Bachelor of Social Work; MSW = Master of Social Work; U = unclear or unknown degree of social worker.

– Not reported as a function of social worker(s).

^a Details reported in Boulton et al., 1998.

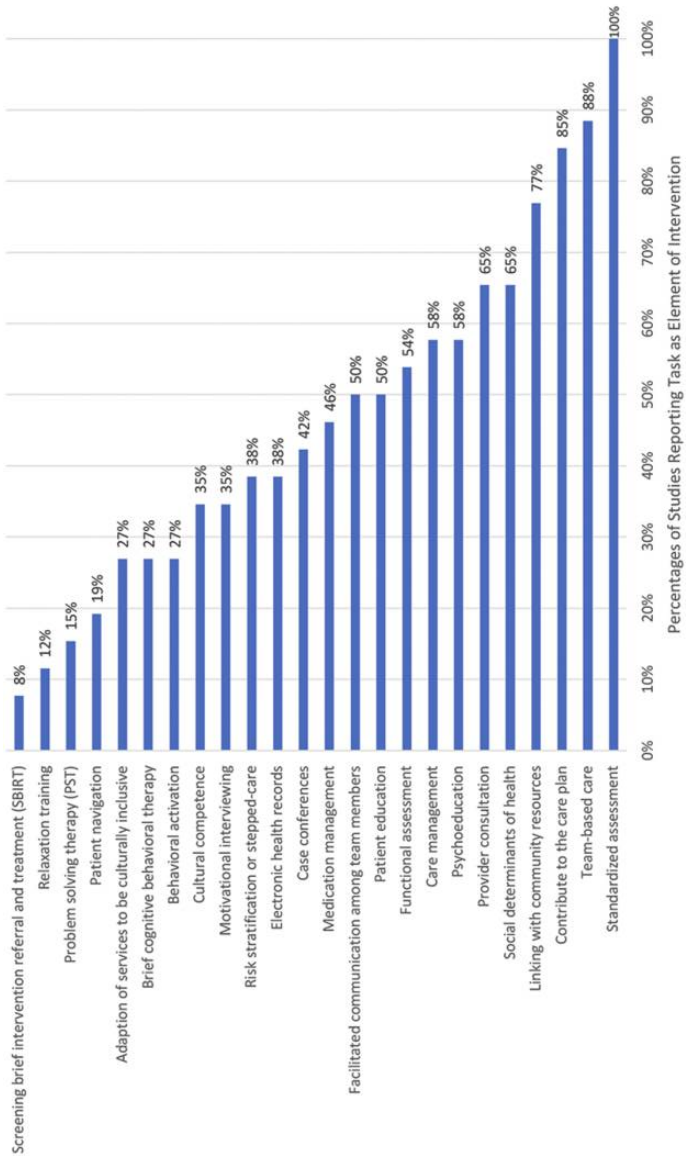


Figure 2. Task analysis of activities of social workers in randomized controlled trials of integrated primary care.

In nearly half of the tests of integrated care, services were culturally adapted to improve treatment uptake or adherence. About one fourth of the studies reported that social workers provided discrete behavioral health treatments, including structured interventions such as problem-solving therapy and cognitive-behavioral therapy.

Roles of Social Workers in Integrated Care: Three Core Functions

Consistent with prior reports (e.g., Horevitz & Manoleas, 2013; Steketee, Ross, & Wachman, 2017; Wells, Kristman-Valente, Peavy, & Jackson, 2013; Wodarski, 2014), three social work functions or specializations were identified: behavioral health intervention, care management, and community engagement or patient referral. These functions were then scored in the extraction process by two raters who read the descriptions of interventions involving social workers. Shown in Table 1, of the 26 studies, 14 employed social workers as behavioral health specialists, 19 employed social workers as care managers, and 10 employed social workers to engage community resources on behalf of patients. Reflecting the diversity of the ways in which social workers can be deployed, the roles of social workers in 17 studies combined all three functions.

Behavioral health specialist. From the narrative descriptions in the trials, behavioral health specialists focused on the assessment and treatment of mental health and substance-use problems. Behavioral health specialists used standardized assessment tools and assisted in initial diagnostic evaluations. They recommended a behavioral health care plan to the primary care provider and relayed information to other treatment team members. In this role, social workers often conducted brief mental health interventions with patients or referred patients to specialty mental health care in the community. Brief interventions described in the studies included cognitive-behavioral treatment, problem-solving therapy, and motivational interviewing (e.g., Ell et al., 2008; Roy-Byrne et al., 2010; Safren et al., 2013). In four studies, social workers functioned solely as behavioral health specialists (Angeles et al., 2013; Richardson et al., 2014; Roy-Byrne et al., 2010, 2014), whereas 10 studies reported employing social workers to perform behavioral health interventions in addition to community engagement or care-management functions (e.g., Ell et al., 2008; Safren et al., 2013).

Care manager. The social determinants of health complicate treatment adherence and the provision of care to many patients—especially those with chronic health problems (Wilkinson & Marmot, 2003). As members of a health care team in the 26 studies, social workers were often given care-management responsibilities when neighborhood, family, or other social factors were expected to interfere with the completion of a care plan. As care managers, social workers used standardized and functional assessments to appraise patients' treatment engagement and to identify obstacles related to treatment adherence. Social workers facilitated communication among the care team members as well as between team members

and patients and/or caregivers. As shown in Table 1, social workers fulfilled a care-management function in 19 studies, and four studies employed social workers to serve exclusively as care managers (Counsell et al., 2007; Engelhardt et al., 2006; Farmer et al., 2011; Kwong et al., 2013).

Community engagement specialist. Likely because social workers have familiarity with social service systems, 10 studies employed social workers to serve in a community engagement or liaison capacity. In conjunction with their care-management role, social workers typically helped patients to navigate social service systems and solve concrete problems, such as locating affordable housing (e.g., Béland et al., 2006). Without other care-management responsibilities, social workers served solely as community engagement specialists in two studies (Boult et al., 2001; Samet et al., 2003).

Effectiveness of Care Provided by Interprofessional Teams Involving Social Workers

Across all 26 RCTs, data were collected on patient outcomes, including measures of health (i.e., general, physical, and behavioral), use of health care services, and the cost of care. In contrast to treatment-as-usual, care provided by interprofessional teams that included social workers appears to confer important patient- and system-level benefits. Significant effects favoring integrated care were observed in 19 studies (73.1%). On primary outcomes, seven studies (26.9%) reported no significant differences between integrated and routine care (Bellantonio et al., 2008; Boult et al., 2000; Fortinsky et al., 2009; Kwong et al., 2013; Roy-Byrne et al., 2014; Saitz et al., 2013; Safren et al., 2013). Because statistical significance is affected by sample size (i.e., small studies may be under powered and, although they produce potentially important effects, have nonsignificant findings), we estimated effect sizes to supplement the count of studies with significant versus nonsignificant findings. These are shown in Table S2 (online). To show the absolute strength of the intervention effect, Cohen's d is presented as an absolute value in the text. In Table S2 (online), d is presented with directional signs. Heterogeneity across studies (e.g., lack of comparability across outcomes) prevented more rigorous meta-analysis across the 26 experiments and within the outcomes categories (e.g., behavioral health, general health and functioning). As we discuss next, the strength of findings was assessed by using both statistical significance and effect sizes.

Behavioral health. The most consistent effects were observed in behavioral health, where social workers served as behavioral health specialists and often concurrently as care managers on interprofessional teams. Of the 14 studies in which social workers served in behavioral health roles, 12 measured behavioral health as a primary outcome. Two studies that employed social workers as behavioral health specialists did not measure behavioral health as a primary outcome (Angeles et al.,

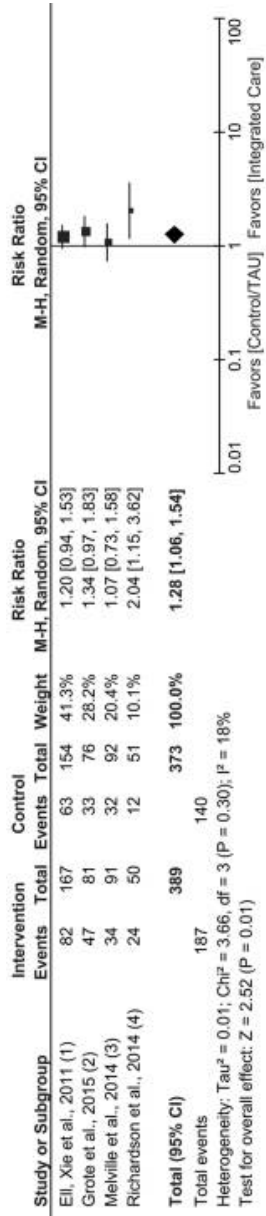
2013; Ross et al., 2004). In 10 of the 12 RCTs reporting a primary behavioral health outcome, the interventions focused on measuring the treatment of depression and anxiety. In nine of these 10 studies, effects were significant at the end of experimental services. That is, integrated care involving social workers appeared to reduce symptoms of depression and anxiety compared to routine or enhanced services in 9 of 10 randomized trials. Shown in Table S2 (online), effects varied, ranging from $d = .26$ (Roy-Byrne et al., 2010) to $d = .90$ (Richardson et al., 2014). Beyond posttest, six of these nine studies observed sustained effects at 12-, 18-, or 24-month follow-up:

- 24-month follow-up, $d = .44$ (Ell, Xie, et al., 2011);
- 24-month follow-up, $d = .04-.20$ (Ell, Katon, et al., 2011);
- 18-month follow-up, $d = .45$ (Grote et al., 2015);
- 12-month follow-up, $d = .63$, and 18-month follow-up, $d = .46$ (Melville et al., 2014);
- 12-month follow-up, $d = .52$ (Richardson et al., 2014); and
- 12-month follow-up, $d = .34$, and 18-month follow-up, $d = .26$ (Roy-Byrne et al., 2010).

Of the 12 studies focused on behavioral health as a primary outcome, two studies focused on brief treatment for substance use. Findings from these two studies were not significant. The data suggest that integrated care comprised of brief interventions of one to six sessions provided by interprofessional teams involving social workers confers no added benefit over routine care for patients with drug and alcohol dependence (Saitz et al., 2013; Roy-Byrne et al., 2014).

Of the nine studies with significant effects for a primary outcome in behavioral health, we were able to calculate effect sizes for seven studies. Shown in Table S2 (online), the effect sizes across these seven studies were in the small to medium range (Ell, Xie, et al., 2011; Ell, Katon, et al., 2011; Grote et al., 2015; Huffman et al., 2014; Melville et al., 2014; Roy-Byrne et al., 2010). One of these studies reported a large effect ($d = .90$, Richardson et al., 2014). Because a subsample of these studies used depression symptoms as an outcome, we conducted a subsample meta-analysis of findings from these studies.

Meta-analysis of behavioral health findings for depression. We conducted two exploratory meta-analyses on a subsample of RCTs that focused on similar populations and used comparable interventions with comparable outcome measures at 6-month follow-up ($n = 762$ [389 integrated care patients and 373 controls]; four RCTs: Ell, Xie, et al., 2011; Grote et al., 2015; Melville et al., 2014; Richardson et al., 2014) and 12-month follow-up ($n = 973$ [501 integrated care patients and 472 controls]; five RCTs: Ell, Xie, et al., 2011; Ell, Katon, et al., 2011; Grote et al., 2015; Melville et al., 2014; Richardson et al., 2014).



Footnotes.

- (1) Measured by Physical Health Questionnaire [PHQ-9]
- (2) Measured by Symptom Checklist-20 [SLC-20]
- (3) Measured by Symptom Checklist-20 [SLC-20]
- (4) Measured by Child Depression Rating Scale-Revised [CDRS-R]

Figure 3. Forest plot comparing the event of a reduction in depression symptoms by at least 50% at 6 months for patients who received integrated care versus treatment as usual (TAU). M-H Random = A Mantel-Haenszel random effects model was used to conduct the meta-analysis; risk ratios were estimated with 95% confidence intervals.

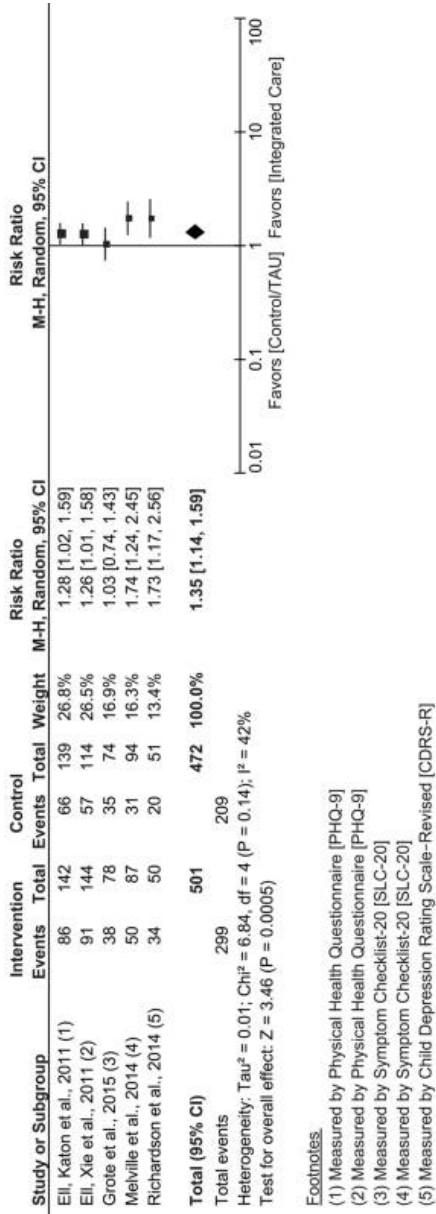


Figure 4. Forest plot comparing the event of a reduction in depression symptoms by at least 50% at 12 months for patients who received integrated care (intervention) versus treatment as usual (control/TAU). M-H Random = A Mantel-Haenszel random effects model was used to conduct the meta-analysis; risk ratios were estimated with 95% confidence intervals.

Patients who received integrated care from an interprofessional team that included social workers were 1.28 times as likely to experience at least a 50% decline in depressive symptoms at 6-month follow-up (RR = 1.28, 95% CI [1.06, 1.54], $p = 0.01$, $I^2 = 18\%$), compared to patients in the control conditions. As shown in Figure 3, patients who received integrated care had a 28% increase in the chance of having at least 50% reduction in depression symptoms compared to those who received routine care at 6-month follow-up.

At 12-month follow-up, patients who received integrated care from an interprofessional team that included social workers were 1.35 times as likely to experience at least a 50% decline in depressive symptoms (RR = 1.35, 95% CI [1.14, 1.59], $p = 0.0005$, $I^2 = 42\%$) compared to patients in the control conditions (e.g., routine care) of the five studies. Shown in Figure 4, the findings indicate that patients who received integrated care had a 35% increase in the chance of having at least 50% reduction in depression symptoms compared to those who received routine care at 12-month follow-up.

General health and functioning. Across studies, findings were mixed for general health, physical health, social functioning, and life quality. Of the eight studies that reported on functioning or quality of life, four studies reported no significant differences. Four studies observed positive effects favoring integrated care (Boult et al., 2001; Counsell et al., 2007; Huffman et al., 2014; Leung et al., 2004) for some measured health outcomes. For example, Counsell et al. (2007) reported significant differences favoring integrated care on 4 of 8 dimensions of the Short Form Health Survey (i.e., general health, vitality, social functioning, and mental health). However, effect sizes were small ($d = .03-.15$). In a study focused on older adults, patients in the treatment group were reported to have improved physical functioning as compared to the control condition ($d = .22$, Boult et al., 2001), but there were no differences in mortality rates between the two groups. Huffman et al. (2014) found no between-group differences on physical functioning; however, significant differences favoring integrated care were observed on the Duke Activity Status Index ($d = .34$) and a measure of overall quality of life ($d = .34$). A study focusing on HIV transmission risk behaviors (i.e., sexual functioning) as the primary outcome found no overall differences between men in integrated care and treatment as usual conditions (Safren et al., 2013). Of the four studies with significant findings, effects were mixed and small ($d = .03-.34$). Across the mix of findings from the eight studies, the results suggest that integrated care affords a small benefit, if any, in general health and functioning relative to routine care.

Use of health care services. Compared with patients in treatment-as-usual conditions, patients in integrated care appeared to have used fewer and less costly health services. However, the findings are mixed, and only four studies presented sufficient information to calculate effect sizes (Engelhardt et al., 2006; Leung et al., 2004; Samet et al., 2003; Sommers et al., 2000). In contrast to patients in control groups, patients in integrated care conditions in two studies had significantly fewer emer-

gency room visits (Counsell et al., 2007; Ross et al., 2004). In three studies, patients in integrated care had significantly fewer hospital admissions or shorter lengths of stay compared with patients in routine care conditions (Béland et al., 2006; $d = .34$, Engelhardt et al., 2006; $d = .36$, Sommers et al., 2000). Two studies with aging populations found no differences in service use by older adults (i.e., hospitalization, nursing home care) in integrated versus routine care (Bellantonio et al., 2008; Boulton et al., 2001). One study reported that those who received integrated care were more likely to adhere to medication regimens than patients who received routine care (Katon et al., 2001). Two studies reported that treatment-group participants were more likely than the controls to use appropriate and lower cost health services, such as well-child clinics (Ross et al., 2004) and primary care providers ($d = .38$, Samet et al., 2003). In a study of older adults, patients who received integrated care experienced significantly lower rates of hospital readmission ($d = .48$, Sommers et al., 2000).

In the four studies with calculable effect sizes, effects ranged in size from $d = .13$ to $d = .48$. Across studies, integrated care in which social workers served on interprofessional teams appeared to promote the use of regularly scheduled care versus emergency or hospital care. But effects were mixed and findings, although promising, were not consistent.

Cost of care. From eight RCTs that reported costs of care, integrated care appeared to be at least revenue neutral when compared with usual care. That is, integrated primary care involving social workers as members of interprofessional teams was provided at approximately the same cost as treatment as usual (Béland et al., 2006; Boulton et al., 2000, 2001; Counsell, Callahan, Tu, Stump, & Arling, 2009; Engelhardt et al., 2006; Hay et al., 2012; Leung et al., 2004; Sommers et al., 2000). Indeed, although effect sizes could not be calculated, a few reports suggested that integrated care might be less expensive than usual care. For example, in a Veterans Administration study focused on older male adults, Engelhardt et al. reported that integrated care produced cost savings relative to routine care. After taking into account intervention costs, attrition, and other adjustments, the Geriatric Evaluation Management intervention saved \$1,154 per patient over the 48-month study period (Engelhardt et al., 2006). Similarly, in the Geriatric Resources for Assessments and Care of Elders (GRACE) project, Counsell et al. reported lower comparative costs in the second year of an integrated care condition for a subsample of older adults at high risk of hospitalization. That is, increases in costs for chronic and preventive care were offset by reductions in the use of acute care, producing a net per-patient savings of \$1,487 compared to high-risk participants in the control condition. Additionally, based on an analysis of depression-free days and quality-adjusted life years, Hay et al. (2012, p. 253) found integrated care for depression to be “highly cost-effective” in the Multifaceted Diabetes and Depression Program. Conditioned on the tendency in the literature to conduct cost analyses on studies with positive findings (and thus introduce a publication bias that potentially overestimates cost-

effectiveness in the population of all RCTs), the findings are promising and suggest that some models of integrated primary care involving social workers may promote the use of less costly health services and be at least comparable in cost to usual care (see also Steketee et al., 2017).

Discussion

Social workers are employed in a range of health care settings in which physical and behavioral health services are integrated and provided by interprofessional teams. In our sample of 32 reports from 26 RCTs, social workers served as intervention agents in several types of primary care, including pediatric, geriatric, and OB/GYN settings. Social workers also coordinated care and provided behavioral health treatment—including follow-up contact in the community—in specialized clinical settings such as cardiology (Huffman et al., 2014) and emergency medicine (Ross et al., 2004).

Scope of Social Work Practice in Integrated Care

The scope of practice for social workers in integrated care entails three core functions that are often undertaken concurrently: (a) providing behavioral health care for patients with mental health problems and substance-use disorders, (b) managing the community-based care of patients with chronic physical and behavioral health conditions, and (c) engaging community resources on behalf of patients.

Providing behavioral health services. Social workers in integrated care provide clinical interventions for depression, anxiety, phobias, and other behavioral health problems, including substance-use disorders. In addition, social workers often serve as care managers for patients with comorbid behavioral health and chronic physical health problems. In the 26 studies, behavioral health services were integrated with primary care and unfolded with a *warm handoff* in which the primary care provider initiates a discussion of a behavioral health problem with a patient. Then, with patient consent, the provider introduces the patient to a behavioral health social worker who discusses care options with the patient. This warm handoff, which transfers a patient from one team member to another, takes place entirely within the primary care setting.

Behavioral health care was based on protocols that prescribe either brief interventions or referral depending on an assessment of the severity of problems. For example, in MOMCare (Grote et al., 2015), 168 pregnant women with depression were randomly assigned to treatment or public health maternity support services. Women in the treatment condition received a choice of eight sessions of brief interpersonal psychotherapy (IPT), medication, or both. IPT alone was selected by 81.0% of the women. A combination of IPT and antidepressant medication was selected by 15.2% of the women in the integrated care condition, and the remaining 3.8% of the women selected medication only. The IPT was provided by a social work behavioral health care specialist who monitored patients' responses weekly;

in the absence of meaningful progress, the social worker consulted with the primary care provider to step up treatment, often by adding a medication component. As compared with women in the control condition, women in MOMCare reported significant reductions in depression symptoms at 12-month follow-up ($d = .66$).

In the behavioral health area, the most consistent findings were observed for the subsample of studies that focused on the treatment of depression in integrated primary care. Indeed, across studies that used comparable measures of depression symptoms, exploratory meta-analysis showed that when integrated versus routine health care was provided, patients were more likely to experience at least a 50% decline in symptoms between baseline and 6-month follow-up ($RR = 1.28, p < 0.05$). Meta-analysis also suggested that these outcomes were sustained at 12-month follow-up ($RR = 1.35, p < 0.001$). Thus, the provision of behavioral health services in primary care has the potential to significantly improve mental health treatment for depression.

Managing care plans. As a social work function, care management has roots in traditional case management (e.g., Gensichen et al., 2006; Stokes et al., 2015), a complex intervention aimed at coordinating and implementing a patient's health plan (Hickam et al., 2013). In the literature and in practice, distinguishing between care and case management can be challenging because in both instances, goals and tasks overlap and may be performed by social workers.

In the studies reviewed, care management was typically undertaken in the context of the chronic care model (CCM)—a framework for providing care to patients who have chronic health problems such as diabetes (Bodenheimer et al., 2002; Wagner, Austin, & Von Korff, 1996). Although the CCM has many formulations, it is based on six organizing principles: (a) providing patients with training and support to manage their own care, (b) integrating clinical information systems to provide real-time data on outcomes, (c) designing an interprofessional team-based service system, (d) using evidence-supported practice guidelines in a collaborative decision-making process, (e) creating strong organizational supports, and (f) maximizing community resources to support patients in their homes (Stellefson, Dipnarine, & Stopka, 2013; Von Korff, Gruman, Schaefer, Curry, & Wagner, 1997). In the CCM, patients who are high users of services and who have multiple diagnoses are assigned a care-management team. The team then provides physical and behavioral health services while engaging community supports intended to help patients live in their homes or, when that is not possible, the least restricted level of care.

Under the CCM, social workers on interprofessional care teams tend to have responsibility for managing the care of patients with both behavioral and physical health problems. Of the 19 studies in which social workers functioned as care managers, 14 reported significant findings favoring integrated care. Typically, social workers served concurrently in care management, behavioral health, and community resources roles. Social workers served primarily as care managers in only four

studies (Counsell et al., 2007; Engelhardt et al., 2006; Farmer et al., 2011; Kwong et al., 2013). In the 14 studies in which social workers fulfilled care-manager roles and significant findings were reported, effects were mixed, ranging from small ($d = .03$, Counsell et al., 2007) to large ($d = .95$, Melville et al., 2014). For example, a CCM-like model of care was tested in the GRACE project, which was designed to support high-risk older adults living in their homes (Counsell et al., 2007). GRACE used care-management teams composed of social workers and nurses. In a randomized trial, GRACE was compared with routine services, and study findings showed older adults in the GRACE condition reported significantly better general health, social functioning, vitality, and mental health ($d = .03-.15$). GRACE had no effect on costs for lower risk older adults, but it observed reduced acute care costs for higher-risk patients (Bielaszka-DuVernay, 2011; Counsell et al., 2007, 2009).

In care-manager roles such as those tested in GRACE, social workers evaluate and monitor the health status of patients, work closely with physical health care providers, and arrange community resources to build a web of support to meet patient needs. Compared to case management, the distinguishing feature of care management is that social workers have responsibility—sometimes shared with nurses—for monitoring and implementing the full treatment plan under the supervision of a primary care provider.

Engaging community resources on behalf of patients. In helping patients to navigate the social welfare system and secure community-based services, social workers provide critical support that often addresses the social determinants of health. (For a discussion of the challenges associated with addressing the social determinants of health, see Thornton et al., 2016). Ten studies reported that social workers engaged community resources on behalf of patients and their families, and seven of these studies observed findings favoring integrated care. In nine of the studies in which social workers engaged community resources, social workers concurrently worked as behavioral health specialists or care managers.

Defining roles contextually across the three functions. Across the various studies, the on-the-ground roles of social workers in health care organizations appear to be determined by differentially weighting the three functions of providing behavioral treatment, managing care, and engaging community services. In some situations, social workers served principally as care managers or principally as referral or systems navigation specialists. In other situations, the role of the social worker was a mix of care management, behavioral health intervention, and community engagement. The impact of the number of functions fulfilled by social workers cannot be assessed in the studies. However, of the seven studies in which social workers served as both behavioral health specialists and care managers (Ell et al., 2008, 2010; Grote et al., 2015; Huffman et al., 2014; Katon et al., 2001; Melville et al., 2014; Safren et al., 2013), six studies observed significant effects that favored inte-

grated care. Effects were mixed, ranging from small ($d = .13$, Ell et al., 2010) to large ($d = .95$, Melville et al., 2014). Understanding the impact of each social work function on clinical and systems outcomes (through, for example, dismantling designs) is a high priority.

Across the 26 studies (see Figure 2), social workers typically

1. used standardized instruments to assess the progress of patients in treatment,
2. conducted functional analyses to gauge the impact of health conditions and interventions on the social and vocational connectedness of patients,
3. identified environmental factors with the potential to interfere with a recommended course of treatment for a patient, and
4. provided guidance and assistance to patients in securing resources within and outside the medical system.

Along with the core skill of providing supportive counseling (e.g., Muskat et al., 2017), these tasks constitute a set of common activities that characterizes much social work practice—across the three core functions—in integrated primary care.

The roles of social workers appear to be influenced by contextual characteristics, although the scope of social work practice in the 26 studies was likely also influenced by research objectives and funding. Depending on the setting, social workers might lead psychoeducational groups or provide individual patient education on self-care topics such as coping with diabetes, heart disease, or other chronic conditions. In some settings, social workers specialized in the provision of protocol-informed training to address depression, anxiety, trauma, substance use, or other behavioral health problems. As behavioral health care specialists, social workers in programs such as MOMCare delivered brief interventions for patients with mental health problems, monitored patient progress over time (i.e., in consultation with a primary care physician and a consulting psychiatrist), and provided care-management services. The role of social workers—the mix of providing care management, behavioral health interventions, and community engagement services—appears to be determined by the context, including the characteristics of patient populations, the level of integration of behavioral and physical health care, and external policy-level constraints, such as the availability of reimbursement from public and private payers for face-to-face and non-face-to-face monitoring, evaluation, and treatment.

The Changing Landscape of Health Care Policy

Beyond social work, some critics have questioned whether the kinds of value-based payment initiatives and reforms that incentivize integrated interprofessional care can continue (Glied & Frank, 2017). Others have suggested that the shift to paying

for value will continue because both policymakers (Deland & Gordon, 2016) and large health care systems (MacDonald, 2016) have an interest in controlling costs. Although the future of health care reform is uncertain, interest in controlling costs, providing high-quality care, and improving patient and population health outcomes is unlikely to abate. One element of controlling costs clearly involves early intervention: Many behavioral health problems can be prevented through the provision of evidence-supported interventions, and when behavioral health problems are ignored, they may compromise treatment adherence for physical health problems and contribute to costly long-term negative outcomes (Hawkins et al., 2016). Addressing behavioral health and the social determinants of health may be the best way to improve physical health and “bend the cost curve” (Cutler, 2010, p. 1131).

Limitations

The twofold purpose of this study was to describe the functions of social workers on interprofessional teams and to assess health-related outcomes in integrated primary care where services were provided by interprofessional teams that included social workers. To do this, we focused on RCTs that compared integrated versus routine primary care. That is, the studies tested integrated care interventions against control conditions—usually routine services or enhanced treatment-as-usual conditions. With this design, no inferences can be made about the effectiveness of the interventions provided by social workers per se, because the experimental conditions represent a complex mix of services provided by interprofessional teams comprised of physicians, nurses, social workers, and other allied health professionals.

Causal inference. Although it is not possible to draw inferences about the effectiveness of social work in integrated care, it is possible to draw inferences about the effectiveness of interprofessional teams that involve social workers. From the studies, we know that treatment as usual did not involve interprofessional or coordinated teams and resembled usual services in which a primary care medical provider saw patients, made a diagnosis, and determined the treatment plan, including referral to specialists who might or might not be colocated. Across the 26 studies, 19 studies reported findings that favored team-based care involving social workers over this traditional care model. Conditioned on the limitations of these 26 studies and on the risk of publication bias (i.e., the extent to which the studies represent the population of RCTs—both published and unpublished—in which social workers served on interprofessional teams in integrated care), the findings suggest that the services provided by these teams produced behavioral health outcomes superior to those produced in routine care. Findings regarding the use of health care services and cost were mixed but promising.

Publication bias. Because published studies are more likely than unpublished studies to report significant findings (Bronson & Davis, 2012; Littell et al., 2008),

we undertook an extensive search strategy to identify both unpublished and published research reports. Despite these search strategies, the results should be interpreted with caution. The searches were limited to English language reports. Studies may contain (difficult to assess) outcome bias, where researchers report only significant findings and fail to report nonsignificant findings. In addition, cost-benefit and cost-effectiveness analyses tend to be conducted only on interventions that have been found efficacious in previous reports. Cost estimates may be biased by the failure to conduct economic analyses on reports of similar interventions that had null or negative effects. Because we could not pool effect sizes across outcomes, funnel plots—except in two exploratory meta-analyses—could not be used to assess bias. In the two exploratory meta-analyses, funnel plots (available from the first author) showed symmetry and suggested low publication bias for the studies focused on depression. In sum, although we did not rely exclusively on searches of electronic databases, our review is vulnerable to a variety of publication biases.

Sampling bias. In sampling only RCTs, we might also have failed to observe new or innovative social work functions that are described—possibly more frequently—in qualitative research or observational studies, and we may have underestimated the contextual dependencies that condition some features of the health care workforce. Our aim in limiting the sample to rigorous tests of services in integrated settings was to assess outcomes and, further, to describe the functions of social workers in strong studies of interprofessional teams comprised partly of social workers. The studies we sampled described the ways in which social workers contribute to patient care in experimental tests of integrated care. Sampling in this way exposes the findings to the limitations of RCTs. These limitations are nontrivial. Indeed, evaluating complex, dynamically changing systems with high contextual dependence and where interventions are not standardized is enormously challenging (Kaehne, 2016; Tsiachristas, Steint, Evers, & Rutten-van Mölken, 2016). The findings of this study are limited in the sense that these dependencies and dynamics are not well measured in RCTs.

Scoring social work task and functions from descriptions in research reports. Similarly, the scoring of the tasks and functions of social workers in integrated care was limited by the extent to which the reports described the characteristics of services in a thorough and rich fashion. Descriptions of interventions in outcome studies are often limited (Hoffmann et al., 2014). In addition, the 24 items used in Figure 2 are not exhaustive. The items do not describe all the tasks potentially fulfilled by social workers in integrated care. In a systematic review of program characteristics of integrated primary care interventions, Martin et al. (2014), for example, used a more comprehensive list. However, based on pilot testing and a prior report from Horevitz and Manoleas (2013), our list appears to have content validity for much of social work practice in integrated care. More nuanced accounts of the scope of social work practice in integrated settings might be found through self-reports, activ-

ity logs, and behavioral observation (see, e.g., Muskat et al., 2017). Findings are thus conditioned on the limitations of using only 24 items to extract profiles of services from research reports.

Researcher allegiance and sponsorship bias. Finally, recent reports suggest that researcher allegiance and sponsorship bias may be underestimated in systematic reviews (Uttley & Montgomery, 2017). This project was supported by a contract from a HRSA-funded workforce center to the first author. In addition, the fourth author serves as the principal investigator of a HRSA-funded training grant intended to prepare social workers for practice in integrated primary care. The first three authors were deeply involved in the preparation of this proposal. Finally, five of the six authors are social work researchers by training, and the sixth author is a health workforce researcher. In the spirit of full transparency, the team clearly had an allegiance to social work and interest in clarifying the roles and impact of interprofessional teams involving social workers in integrated primary care.

Conclusion

Three core functions define the scope of practice for social workers in integrated care: (a) engaging community resources on behalf of patients, (b) managing care plans for patients with chronic conditions, and (c) providing clinical interventions for patients with behavioral health problems. Because of their knowledge of social services, social workers have long provided assistance to patients who need community-based services. To promote treatment uptake and ensure follow through, the coordination of health and community services is gaining recognition as payment and care-delivery models emphasize these boundary-spanning functions, which help to keep patients healthy while continuing to live in their homes and communities (Andrews et al., 2013; Fraher & Ricketts, 2016). Sometimes, especially in geriatric medicine, social workers are also involved in care management. In the care-manager role, social workers have responsibility—often shared with nurses—for monitoring care plans for patients with chronic needs. Similarly, social workers are routinely involved in the provision of treatment for behavioral health problems—including the treatment of trauma, such as recovery from cardiac events—and in the treatment of depression and anxiety. In fulfilling these three functions, social workers contribute to transformational changes in health and social care that, based on findings from 26 studies, improve the behavioral health and care of patients in integrated primary care.

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- *Asterisks indicate studies—sometimes with multiple reports—that were included in the systematic review. See Table 1.
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