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Screening Adolescents for Sensitive Health Topics in Primary Care: A Scoping Review

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Abstract

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Purpose: We sought to aggregate common barriers and facilitators to screening adolescents for sensitive health topics (e.g., depression, chlamydia) in primary care, as well as those that are unique to a given health topic.

Methods: We conducted a literature search of three databases (PsycInfo, MEDLINE, and CINAHL) and reference lists of included articles. Studies focused on barriers and facilitators to screening adolescents (ages 12–17 years) for sensitive health topics in primary care that are recommended by national guidelines. Articles were peer-reviewed, presented empirical data, and published in English in 2006–2021. We coded barriers and facilitators using the Consolidated Framework for Implementation Research, a well-established framework within implementation science.

Results: In total, 39 studies met inclusion criteria and spanned several health topics: depression, suicide, substance use, Human Immunodeficiency Virus (HIV), and chlamydia. We found common barriers and facilitators to screening across health topics, with most relating to characteristics of the primary care clinics (e.g., time constraints). Other factors relevant to screening implementation ranged from confidentiality concerns to clinician knowledge. Barriers and facilitators specific to certain health topics, such as the availability of on-site laboratories for HIV screening, were also noted.

Conclusions: Findings can guide refinements to screening implementation.

Keywords

adolescents; screening; primary care; implementation science

National guidelines recommend that pediatric primary care providers (PCPs) screen young people for a growing number of health topics [1,2,3,4] and literature suggests there are numerous barriers to conducting such screening (e.g., reimbursement, limited time) [5,6]. However, most research on factors that impede or facilitate screening in primary care focuses on a single health topic (e.g., substance use) [7], which likely leads to overlooking common factors related to implementation of screening across health topics in this setting. Understanding similarities in barriers and facilitators to screening in primary care has the potential to accelerate the process of designing and testing generalizable strategies for enhancing screening implementation efforts broadly. In the current scoping review, we aggregate research on factors that enable and hinder screening adolescents for sensitive health topics (e.g., substance use, sex, and mental health) [8] in primary care. We focus on sensitive health topics during adolescence given the heightened vulnerability to a number of mental health concerns and risky behaviors that occurs during this developmental period [9,10,11,12] and the fact that discussion of sensitive health topics has been linked to adolescents' active role in treatment and positive perceptions of their PCPs [8]. Thus, routine screening and follow-up for sensitive health topics is crucial for adolescents' physical and mental health.

Applying Implementation Science Frameworks to Identify Barriers and Facilitators to Screening

A key issue in implementation science, or the study of methods to foster the uptake of evidence-based practices into routine health services to improve quality of care [13], is that efforts to understand barriers and facilitators to implementation are often lengthy and focused on one health topic [14]. The current scoping review represents one avenue for addressing this issue and promotes streamlining of knowledge on common factors related to screening implementation in primary care.

Implementation science offers frameworks for classifying determinants (i.e., barriers and facilitators) of implementation [15]. A key focus of such frameworks is the importance of the fit between an evidence-based practice and the setting in which it is to be implemented [16,17]. One prominent framework, the Consolidated Framework for Implementation Research (CFIR) [17], highlights the complex, multi-level contextual factors associated with implementation of an evidence-based practice, ranging from aspects of the healthcare organization to clinicians' beliefs. Because screening adolescents in primary care inherently involves similar contextual factors, including the setting itself (e.g., workflow within a primary care office) and the types of clinicians providing these services (e.g., resident and attending physicians), barriers and facilitators to screening are likely shared across diverse health topics and different clinics. In addition to identifying common barriers and facilitators, uncovering factors that are unique to a specific health topic in the current review can facilitate tailoring of implementation strategies for enhancing uptake of screening procedures for that topic. For example, ensuring practice protocols include reliable ways to identify sexually active adolescents may be important for implementing risk-based screening, such as screening for chlamydia and gonorrhea.

Screening Adolescents for Sensitive Health Topics in Primary Care

Guidelines from leading medical organizations have encouraged screening youth for a variety of health topics [2,3,4,18]. The U.S. Preventive Services Task Force (USPSTF), which assigns letter grades to designate screening priorities, is a major source of the guidelines for adolescent screening [2]. Many of the USPSTF's recommendations regarding adolescent screening fall within the scope of sensitive health topics [9,19]. Studies have delineated barriers and facilitators to screening adolescents for many of the health topics recommended by the USPSTF. For instance, studies on specific health topics (e.g., suicide, depression, substance use) have found knowledge levels and time constraints to be relevant to implementing screening [7,20,21]. Despite some unique barriers that likely exist given differences in the types of screening involved for various sensitive health topics (e.g., lab tests for HIV vs. paper-and-pencil measures for depression, universal screening for depression vs. screening sexually active females for chlamydia and gonorrhea), there are potentially many common barriers and facilitators to screening adolescents for sensitive health topics in primary care, such as discomfort associated with discussing these topics and confidentiality issues [7,22].

The Present Study

Our scoping review synthesizes information on barriers and facilitators to screening in order to streamline implementation processes. Optimizing screening implementation in primary care is crucial given that screening is an important means of symptom detection that can spark linkages to care to prevent the onset or escalation of physical and mental health problems.

Methods

Literature Search

We conducted a scoping review given that this type of review is best suited for determining the coverage of a body of literature on a topic and providing an overview of key concepts and types of evidence to summarize findings and identify gaps in research [23,24,25]. See the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) [26] checklist in Appendix File S1. To increase the rigor of our approach, our scoping review was guided by the Arksey and O'Malley framework [23], which provides structured steps for scoping studies. We completed a comprehensive literature search using three databases: PsycInfo, MEDLINE, and CINAHL; abstracts of articles retrieved from this literature search were compiled in Rayyan QCRI software and those articles containing relevant content based on the abstract/title then underwent full article review (see Figure 1). The reference lists of articles retrieved via database searches that met inclusion criteria were also searched to identify additional articles for inclusion. The initial search was restricted to peer-reviewed manuscripts available in English that were published between January 2006 and October 2019. The starting point was chosen to reflect the fact that 2006 marks the beginning of the journal Implementation Science. This year functionally demarcates the launch of the implementation science field, and thus, we expected that 2006 would also signify the beginning of formal approaches to assessing barriers and facilitators to implementation. We conducted an updated literature search from November 1 2019 through August 17 2021. All included studies were conducted in the United States and presented empirical data (qualitative, quantitative, multiple, or mixed methods).

The present review focused on screening for adolescents ages 12–17, based on the Centers for Disease Control and Prevention's parameters for defining this developmental period [27,28]. Similar to an approach used by Ranney and colleagues [29], studies were included if at least 1/3 of the sample fell within the 12–17 range. If the percentages of individuals within different age ranges were not provided, studies could still be included if the mean age for the sample was between 12 and 17. Furthermore, studies of clinicians who worked with adolescents were included.

Health topics included in this review were drawn from the published USPSTF ratings available in October 2019. In particular, those topics that were designated as grade A (i.e., "Strongly Recommended"), B ("Recommended"), or I ("Insufficient Evidence to Make a Recommendation") for adolescent screening were reviewed. Topics under consideration were: gestational diabetes, Hepatitis B, high blood pressure, illicit drug use, bacterial

vaginosis, HIV, elevated blood lead levels, unhealthy alcohol use, intimate partner violence, syphilis, adolescent idiopathic scoliosis, obesity, celiac disease, lipid disorders, depression, iron deficiency anemia, chlamydia and gonorrhea, suicide, and Rh(D) incompatibility. From those topics, we selected those that can be defined as sensitive health topics based on the extant literature, including mood, substance use, sexuality, getting along with other people, and family problems [8]. Topics designated as "I" by the USPSTF (i.e., illicit drug use, suicide risk, and alcohol use) were included in the present review given that the American Academy of Pediatrics has advocated for screening for these topics in primary care [1,30]. This led to the inclusion of 10 health topics in our literature search: chlamydia, gonorrhea, depression, Hepatitis B, Human Immunodeficiency Virus (HIV), intimate partner violence, syphilis, illicit drug use, suicide risk, and alcohol use [10,19,31–37].

For our initial search, the search term combinations covered the following categories: implementation determinants (e.g., "barrier(s)," "facilitator(s)"), screening (e.g., "screen," "questionnaire(s)"), health domain (e.g., "depression," "chlamydia"), setting (e.g., "primary care"), and age group (e.g., "pediatric," "adolescent"). See Appendix File S2 for a full list of search terms.

In our updated search, we maintained the same health topic terms we used previously. To minimize the number of erroneous hits and streamline the search process, we pared down some of our search terms to focus on "barrier," "facilitator," "screening," "primary care," and "adolescent." Reference lists of included articles were again searched to identify additional articles.

Data Analysis

First, we extracted general information (e.g., author, title, year, results specific to barriers and facilitators) from articles that met the aforementioned inclusion criteria. We then developed a codebook guided primarily by CFIR [17]. CFIR outlines various levels of context (e.g., culture of the healthcare organization, clinician knowledge; see Appendix File S3 for a list of constructs and operational definitions for the current study) that can affect implementation of best practices. CFIR categories were operationalized within the codebook based on definitions of CFIR constructs outlined in the literature [17]. We provide examples relevant to screening accompanying those definitions in the codebook to facilitate application of the codes to the data. For instance, as described in Appendix File S3, for the Outer Setting code, we state, "This code refers to the economic, political, and social context in which the organization resides. This includes factors such as external policies and incentives (e.g., Medicaid billing, USPSTF guidelines regarding screening), opportunities (or lack thereof) for linkages to care, population served by the clinic/health system, and clinic location." With guidance from a review by Williams and Beidas [38], we further drew upon individual-level factors highlighted in leading implementation science frameworks [17,39,40,41] to provide fine-grained details on clinician factors linked to implementation. Furthermore, in line with the work of Safaeinili and colleagues [42], who note the need to adapt CFIR [17] to augment its focus on patient needs, we included a code to encompass patient and family factors pertinent to screening implementation (e.g., patient age). To parallel the patient and family factors code and capture clinician factors that were not

encompassed in other codes, we also added a code for clinician demographics. The patient and family factors and clinician demographics codes were both derived inductively based on review of included studies to ensure sufficient coverage of key concepts. See code definitions in Appendix File S3; the application of codes to specific studies is detailed in Appendix Table S1.

Full text articles were then coded to categorize barriers and facilitators to screening. Consistent with qualitative matrix analysis techniques [43], data were displayed in a matrix to organize key dimensions and discern trends across cells. Each study comprised a row, and columns were comprised of the study's health topic(s), applicable codes, and related barriers and/or facilitators. Barrier and/or facilitator cells included key qualitative themes and/or quantitative results from the text. To ensure rigor in our approach, two authors double-coded eight studies (21%) to determine reliability (i.e., agreement on presence or absence of each code). We chose to double code approximately 20% of the included articles since 20% is commonly used as the threshold in empirical literature to establish inter-rater reliability [44,45]. For the double-coded articles, authors discussed discrepancies to reach consensus. Reliability was calculated prior to consensus discussions and percent agreement was 91% across all codes for the eight double-coded studies. The authors independently coded the remainder of the files and met regularly to discuss questions to avoid coder drift. The coders also consulted one of the senior authors as discrepancies arose to facilitate consensus decisions. After coding was complete, we then grouped barriers and facilitators for each code by health topic and identified concepts (e.g., uncertainty related to management of positive screens) that were common across health topics. We also counted the codes observed (e.g., number of studies in which outer setting factors were coded as barriers/ facilitators). Recurrent concepts that spanned at least two health topics are highlighted in our narrative synthesis of results as common barriers/facilitators, and unique features of specific health topics are then presented. In addition to providing numeric counts for our results, we highlight example articles illustrating each point.

Results

See Figure 1 for a visual depiction of the literature search process (initial and updated search results combined). In total, 39 articles met inclusion criteria and were coded for barriers and facilitators to screening. Many (n=22) studies represented clinician perspectives, 7 articles represented patient perspectives, and 3 studies included both perspectives. One study focused on clinic staff (e.g., administrators, clinicians). Six studies were conducted at the clinic- or visit-level. The majority (n=33) of studies reported quantitative data, with fewer utilizing qualitative methods (n=4) mixed methods (n=1) or multiple methods (n=1). Study characteristics such as the sample size and screening measures used are provided in Appendix Table S1. The included articles mainly focused on substance use (n=18) and depression (n=17) and also covered the health domains of suicide (n=7), HIV (n=6), and chlamydia (n=1). Among those studies, some (n=7) focused on more than one of the included health topics. We first will review the primary common barriers and facilitators that were described across multiple health topics (i.e., at least two) in the included studies, and then highlight some distinctive factors unique to a single health topic (i.e., HIV, depression, and suicide). See Appendix File S3 for detailed definitions of the codes discussed below.

Commonalities

Inner Setting—The most commonly-cited barriers and facilitators across studies and health topics related to the inner setting (n=28) [17], meaning characteristics of the primary care clinics themselves (e.g., workflows, resources). Time constraints were consistently described as a major barrier to screening efforts (n=14) [7,46,37,48]; approaches to overcoming time constraints such as conducting screening before the visit began and using technology (e.g., computerized screening) to facilitate screening were noted [47,49,50,51]. Established clinic procedures for screening, such as in the context of universal implementation or other practice protocols facilitated screening (n=6) [52]. The availability of resources in the clinic (n=14) [53], including designated staff to conduct screening [5], was identified as a key factor for adoption of routine screening into clinical practice. Given the competing demands of managing pressing health concerns during sick visits, clinicians were more likely to screen during well visits (n=5) [7,54]; this aligns with many systems-level recommendations that annual screenings occur during adolescent well-visits [45].

Outer Setting—The economic, political, and social context of the primary care clinics, referred to within CFIR as the outer setting [17], was also a common barrier (n=10) [20,55,56]. Payment processes arose as being pertinent to whether or not screening was performed (n = 4) [5,54]. For instance, lack of reimbursement for screening was one barrier [5]. There were also concerns raised about limited options for, and information about, treatment referrals in the community following screening, as well as extended wait times for treatment (n=4) [6,7,49]. Additionally, some studies noted screening rates varied by clinic location (e.g., urban vs. suburban, Northeast vs. West) (n=3) [20,56].

Clinician Factors—With regard to common clinician factors associated with screening (n=23), clinicians expressed discomfort discussing sensitive health topics and uncertainty about how to handle positive screens (n=6) [46,49,57]. Nonetheless, clinicians tended to endorse responsibility for identifying concerns involving these health topics (n=7) [58,59]. Whereas opportunities for training, and therefore enhanced knowledge, facilitated screening for multiple health topics, gaps in knowledge and training were also described as barriers (n=15) [20,21,60,61]. Confidentiality concerns pervaded multiple levels of implementation (n=8). In addition to serving as a barrier in terms of the outer setting (e.g., disclosure via billing) and inner setting (e.g., documentation in the electronic health record) [46], clinicians also expressed concerns about how to proceed when parents do not allow confidential conversations with adolescents to take place [7] and discomfort deciding when to break an adolescent's confidentiality [20].

Patient and Family Factors—Clinicians screened differentially for various health topics depending on certain patient and family factors (n=10). For example, patients presenting with risk factors perceived as being pertinent to a given health topic (e.g., report of sexually active peers, "warning signs") were more likely to be screened than peers who were perceived as being lower-risk (n=5) [6,46,62,63]. There were also documented disparities in screening (n=5) based on patient race/ethnicity [54,59], age [46], and gender [21]. For instance, Meredith et al. (2018) found that while older adolescent age was associated with

higher odds of screening for substance use, adolescents who identified as Black, Hispanic, Multiracial, or other non-White race/ethnicity had lower odds of being screened [62].

Barriers and Facilitators Unique to a Single Health Topic

While the preponderance of barriers and facilitators identified spanned multiple health topics, some were specific to a given topic, as noted below.

HIV—Because screening for HIV inherently involves physical test results, lack of availability of an on-site laboratory, in addition to barriers related to transportation to an outside laboratory, can hinder HIV screening (n=1) [46]. Furthermore, time required for pre-test and post-test counseling (irrespective of test results) was also identified as a barrier to HIV screening (n=1) [53]. Clinicians cited concern for breached confidentiality via both the electronic health record (e.g., HIV test order printing out on an after visit summary) and insurance companies (e.g., documentation of HIV testing in the explanation of benefits) as a system-level barrier to screening (n=1) [46]. Clinicians' having information specific to local and state consent laws was a unique facilitator of HIV screening (n=1) [53]. Additionally, adolescents facilitated their own screening with specific requests to clinicians for HIV testing (n=1) [53].

Depression—Whereas reminders (e.g., signs in the clinic, texts/emails) to clinic staff facilitated depression screening, forgetting served as a barrier (*n*=1) [54]. Of note, clinician self-efficacy in detecting depression and suicide risk can be intertwined [57], which makes sense given that screening for both often occurs using the same measure.

Suicide—A few clinician-level experiences and beliefs were unique to suicide screening. Specifically, Diamond and colleagues [20] found that seeing at least one suicidal adolescent in the past year and clinicians' belief that talking about suicide did not yield iatrogenic effects served as facilitators.

Discussion

The current scoping review aggregates information on barriers and facilitators to screening adolescents for a variety of sensitive health topics to identify cross-cutting ways to enhance screening implementation. Overall, findings shed light on the many common factors related to implementation of adolescent screening for sensitive health topics in primary care, regardless of the health topic. While our findings suggest more similarities than differences, we also highlighted barriers and facilitators unique to specific health topics that are important to consider when planning future implementation efforts.

The most consistently cited barriers and facilitators were related to the inner setting, meaning the primary care clinics themselves, with clinician factors being a close second. In particular, time constraints were highlighted as a major barrier to screening adolescents for sensitive health topics in primary care [7,46]. This aligns with research that has quantified time constraints in primary care, including findings indicating that about 7.4 hours per working day (or 1773 hours annually) is needed for physicians in primary care to carry out all USPSTF recommendations for preventive services in a practice of 2500 patients

with an age and sex distribution similar to that of the U.S. population [64]. While the amount of time spent on adolescent preventative services is likely less given there are more USPSTF guidelines that apply to adults than pediatric populations, this finding still points to the substantial time it can take to implement USPSTF recommendations on top of other visit tasks. A number of inner setting facilitators were also noted in the extant literature, such as the availability of clinic resources and establishment of clinic procedures for screening. Given the shared aspects of the inner setting and similarities in the types of clinicians being tasked with screening, prioritizing strategies that target aspects of the inner setting as well as clinician factors will be especially important for optimizing screening implementation in primary care. For example, assigning tasks related to screening and subsequent follow-up to specific clinic staff and providing reminders about these procedures may streamline workflows and help clinicians remember to screen [5,54]. Results also suggest that clinicians may need additional support navigating difficult conversations with adolescents regarding sensitive health topics [49]. Based on the benefits of training noted in the included studies [21], this may be one important outlet for supporting clinicians. In particular, trainings with experiential components (e.g., role plays and opportunities for live feedback) may be especially helpful for bolstering clinicians' confidence and skills in discussing sensitive health topics with adolescents. Given that upstream factors like insurer and health system policies can drive inner setting barriers such as time constraints [65], advocacy for changes to the structure of service delivery (e.g., extending time with providers and adjusting reimbursement to compensate for that time, increasing integration of behavioral health services into pediatric primary care; 66,67) may be needed to enhance screening.

We also found other commonalities in barriers and facilitators across health topics, including intervention characteristics and outer setting factors. For example, payment processes were relevant to screening implementation, with funding for screening serving as a facilitator [46] and lack of reimbursement functioning as a barrier [5]. Given that barriers and facilitators at different levels (e.g., clinician- and organization-level factors) are often intertwined [68] and interact to predict clinician practices [69], it will be important that implementation strategies for promoting screening in primary care span multiple levels of context. Implementing a clinical pathway with clear guidance on screening tools to use for each health topic, ages when screening should occur, and steps to take to address a positive screen would not only target inner setting factors related to the importance of having established clinic procedures but would also help to alleviate clinician uncertainty about management of positive screens. Implementation strategies targeting screening for multiple health topics might be a particularly efficient method for augmenting uptake and sustainment of numerous screening procedures in pediatric primary care. Strategies can range from knowledge assessments to gauge clinician understanding after training to lists of billing codes to make the billing process easier [70].

Additionally, the racial and ethnic disparities observed in the current study are likely due to structural determinants based on longstanding issues of systemic racism and racial injustice in the U.S. Thus, efforts to augment implementation of screening or other health services should include a focus on health equity to ensure that services and implementation strategies reach all adolescents and reduce inequities in care [71,72]. Relatedly, additional research

is needed to specifically delineate determinants of screening implementation from a health equity perspective (e.g., racism, medical mistrust) [73].

While barriers and facilitators related to characteristics of the screeners themselves (e.g., length of measures) were rarely coded (n=5), this is most likely reflective of the lack of implementation research exploring these characteristics [74]. Close attention to intervention characteristics, such as the complexity of screening measures (e.g., how cumbersome they are to administer and score) will be key for optimizing screening implementation.

Of note, there were also unique barriers and facilitators pertaining to specific health topics. For example, clinicians' belief that there were not iatrogenic effects of talking about suicide facilitated suicide screening [20]. Similarly, when lab tests were involved in screening as is the case for HIV, unique barriers were noted such as lack of availability of an on-site laboratory [46]. This suggests that some tailoring of strategies for specific health topics is warranted to improve uptake of screening procedures. Tailored strategies could take the form of clinician- and/or patient-facing educational resources focused on a specific health topic, reminders in the electronic health record pertinent to a particular screener, and so forth. It will be important for future research to compare the effectiveness of cross-cutting versus topic-specific implementation strategies.

Limitations

Despite contributions of this work to our understanding of barriers and facilitators to screening in primary care, limitations are noted. First, to represent the state of the literature on barriers and facilitators to screening adolescents for sensitive health topics in primary care, we did not require included articles to focus on screening using specific, validated measures. We recognize there may be variability in barriers and facilitators to screening depending on the approach to screening used. As research on this topic continues to accumulate, it would be beneficial to examine barriers and facilitators to administering certain screening measures, such as those recommended by the American Academy of Pediatrics (e.g., Car, Relax, Alone, Forget, Friends, Trouble, Patient Health Questionnaire-9 Modified for Teens; [1,4]). Second, we did not analyze the data based on the type of screening recommendation (i.e., universal vs. risk-based); there may be unique barriers associated with implementing each type of recommendation. For example, risk-based screening hinges on accurate risk assessments (e.g., gathering information on sexual activity before determining whether to screen for chlamydia and gonorrhea), so any obstacles to those assessments will pose additional barriers to screening. Third, based on the literature available, certain health topics are more heavily represented than others in this review. There were also barriers and facilitators (e.g., clinician emotions) outlined in our coding system that were not reflected in the included studies. While this could suggest these determinants are less salient in primary care compared to other settings, it is more likely that they are simply understudied and further research is needed to investigate a more expansive set of barriers and facilitators to screening adolescents for sensitive health topics in primary care. Updating this review in the future will ensure contemporary knowledge of the most pressing barriers and facilitators to screening adolescents for sensitive health topics in primary care are consolidated. Moreover, for health topics that are under-represented in the literature,

there is an opportunity to apply what we learned about common barriers and facilitators to designing strategies to enhance implementation of screening for those topics.

Conclusions

In sum, the current scoping review synthesizes barriers and facilitators to screening practices that share common features with regard to general content and setting. Given the extensive lag between the generation of research findings and the application of those findings in clinical practice [75], we need to find ways to use existing research more efficiently to accelerate implementation of essential healthcare services. While we are not suggesting review articles will replace the need for collecting data to understand contextual factors when implementing screening in a new setting or with a new population, it is possible that reviews like this could be used as a tool to rapidly verify previously discovered barriers and facilitators to screening are relevant to current stakeholders before beginning implementation [14]. Comparing the cost-effectiveness and quality of information gathered using reviews such as the current one as the primary means of assessing barriers and facilitators versus conducting in-depth contextual inquiry (e.g., detailed qualitative interviews in a given setting) will be a critical next step for making data-driven decisions about when these different approaches are most appropriate. The current findings, alongside close partnerships with key stakeholders, can be used to enhance existing screening for sensitive health topics among adolescents in primary care.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Abbreviations:

PCP primary care provider

HIV Human Immunodeficiency Virus

USPSTF U.S. Preventive Services Task Force

CFIR Consolidated Framework for Implementation Research

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Implications and Contributions

This review highlights common barriers and facilitators to screening adolescents for sensitive health topics (e.g., depression, HIV) in primary care. Findings can be used to enhance screening among adolescents in primary care.

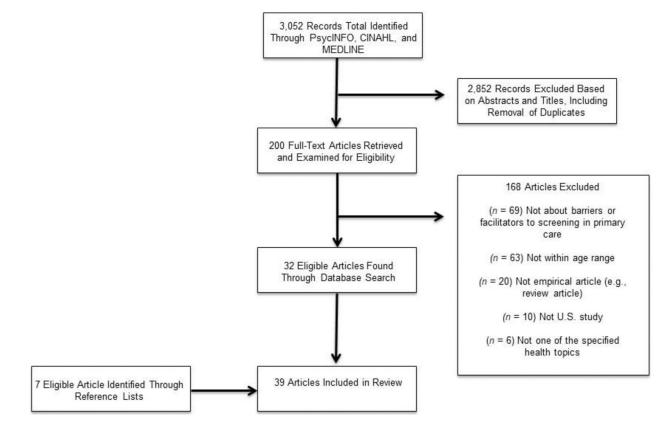


Figure 1. Flowchart depicting the literature search process.

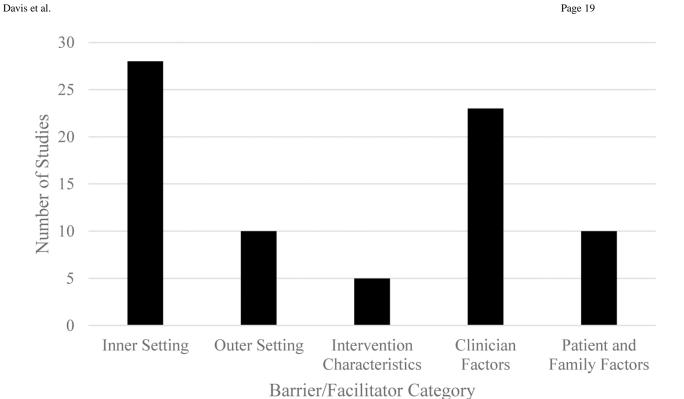


Figure 2.

Number of studies coded for each category of barriers/facilitators.

Note. Clinician factors (e.g., knowledge, demographics) were combined into one overarching category.