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The Guide to Community Preventive Services and Health Equity

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ABSTRACT

The optimal approach to eliminating health inequities is through evidence-based interventions. In 2009, the non-federal Community Preventive Services Task Force launched a series of systematic reviews of interventions to promote health equity. Topics to be considered include education, employment, housing, and transportation. Thus far, reviews have focused on educational interventions: center-based early childhood education, full-day kindergarten programs, out-of-school time academic programs, high school completion programs, and school-based health centers. These reviews demonstrate the benefits of diverse educational interventions in advancing health equity. Here, we summarize the strategy of Community Guide health equity reviews, first findings and challenges.

Keywords: Health Equity; Social Determinants of Health; Public Health; Translational Research

INTRODUCTION

Aims, Methods and Recommendations

In 1996, the U.S. Department of Health and Human Services established the non-federal, independent Community Preventive Services Task Force (Task Force) to identify and evaluate the state of knowledge on community preventive programs, services, and policies that help save American lives and dollars, increase longevity, and improve quality of life. Task Force members are appointed by the Director of the Centers for Disease Control and Prevention (CDC) and represent a broad range of research, practice, and policy expertise in community preventive

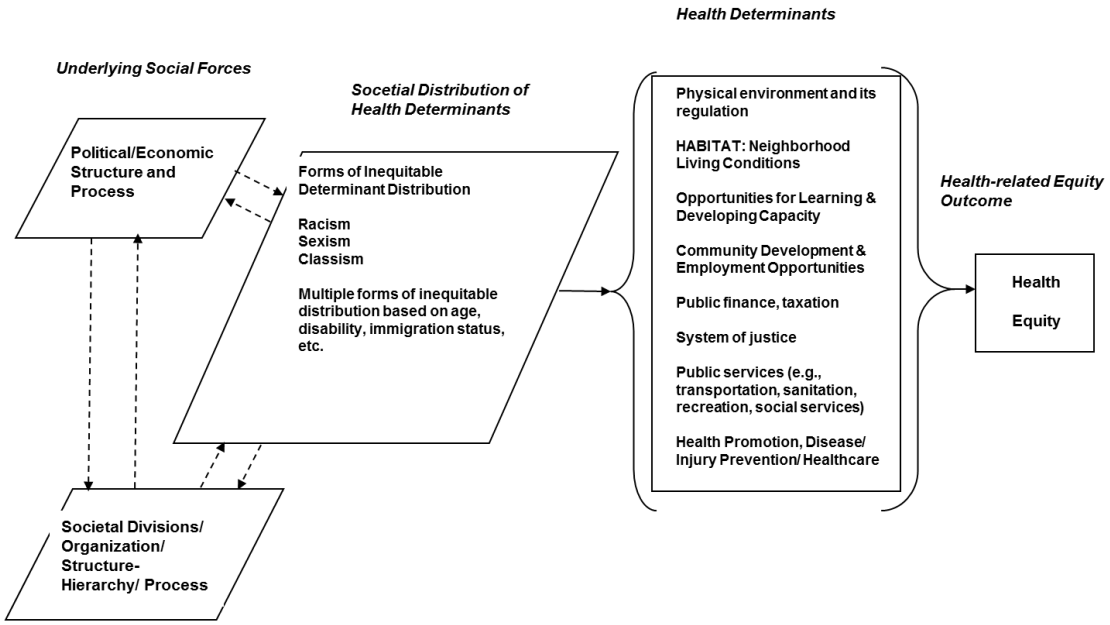
services, public health, health promotion, and disease prevention. Task Force recommendations and the systematic reviews of the evidence on which they are based are compiled in the Guide to Community Preventive Services (The Community Guide). The Task Force reviews program and policy interventions to promote public health in a wide range of areas--ranging from preventive health screening and immunizations, promoting healthy behaviors, from increasing physical activity and healthy eating, to curbing tobacco use and excess alcohol consumption, and creating safe and healthy environments, from motor vehicle safety to the prevention of juvenile violence (http://www.thecommunityguide.org). Community Guide staff at CDC work under the direction of the Task Force. Task Force reviews increasingly reflect the growing awareness that the primary determinants of population health lie in upstream social determinants. In 2009, the Community Guide initiated a series of reviews of the effectiveness of interventions to promote health equity in the U.S. These reviews target both low-income populations (the majority of which are white) and racial and ethnic minority populations in the U.S. This paper summarizes the strategy of the Community Guide health equity reviews, review findings, and challenges.

How the Task Force Defines Health Equity

The Task Force defines "health equity" as "the widespread, achievable equality in health *and* in the major social determinants of health among all the principal social divisions of a population." In 2014, the ability of a topic to address health inequities was explicitly added as a criterion in the Community Guide reprioritization of reviews to be conducted in the future.

In its conceptualization of the development and redress of health inequities, it is essential to recognize the history of inequity—in part because that history sheds understanding of the present; in part because the full redress of inequity may require addressing the legacies of that history; in part because such analyses can point us towards strategies that will be effective in reversing these inequities. One critical source of inequity is the way in which individuals and groups with predominant economic, political, and cultural power in a society name and create social divisions, such as "races," and differentially extract labor from and distribute powers and resources to those divisions in accordance with an ideology of merit, capacity, or other criteria.(Hill 1996, Omi & Winant 2014, Muntaner, Nagoshi, & Diala 2001) In U.S. history, this distribution was associated with slavery and forced labor, the appropriation of Indian land, restrictions of marriage, civic participation, and immigration, and so on, until, forcefully beginning with the Civil War, efforts have increasingly been made to reverse multiple forms of unequal treatment.(Zinn 1980) One consequence of inequitable resources is differential health status, as different groups are differentially exposed to pathogenic processes as well as to preventive and remedial resources. This conceptualization is represented in the Community Guide health equity logic model (Figure 1) which indicates how the distribution of resources, including power, is established and may be maintained in a society.

Figure1.How social forces create and may undo health inequities.



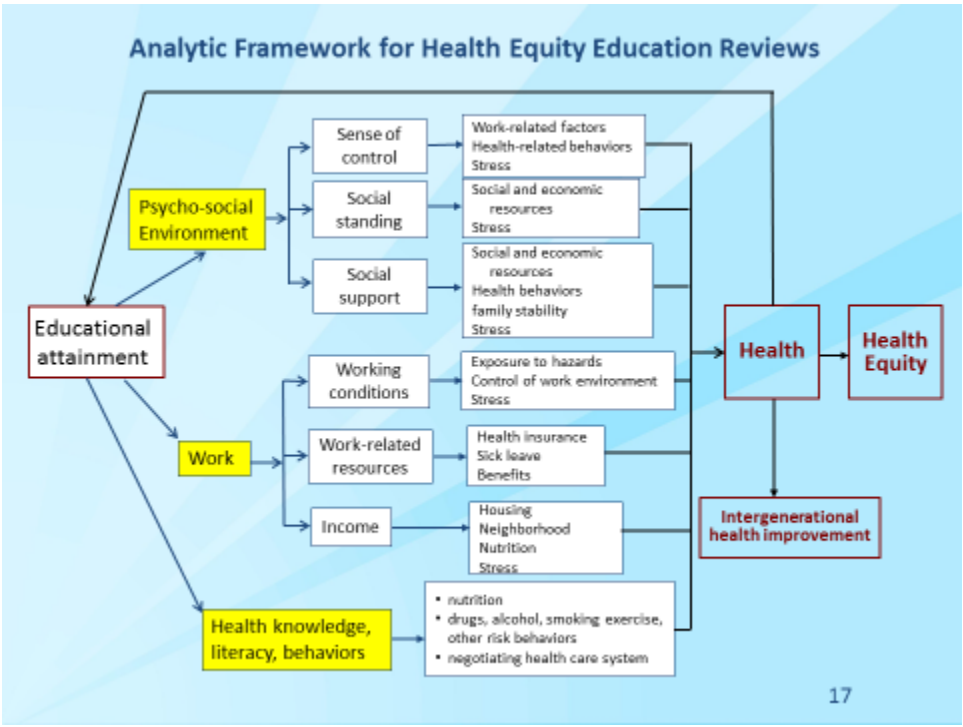
A new focus for Task Force reviews: Education for the Promotion of Health Equity

Community Guide coordination review teams include subject matter experts and methodologists from academia, public health agencies, as well as government agencies and public health research and philanthropic organizations. The first task of a coordination team is to develop a priority list of arenas in which reviews could be undertaken. The next task is to prioritize interventions within the first arena. The priority list of topic arenas identified for the health equity reviews included: 1) education programs and policies, 2) employment programs and policies, 3) community design and housing programs and policies, and 4) the social safety net and tax and wage policy. Within the arena of education, the Community Guide health equity review team has published reviews on five interventions and is completing reviews on two additional interventions (http://www.thecommunityguide.org/healthequity/education/index.html):

- Center-based early childhood education programs (including those that target or enroll low-income and racial/ethnic minority populations)
- Full-day kindergarten (versus half-day)
- Out-of-school-time academic programs (after-school and summer programs)
- Programs to increase high school completion
- School-based health centers
- Altered school calendars (longer school days or school years, year-around school) (in process)
- Elimination of multi-level school achievement "tracking," i.e., creation of higher- and lower-level academic achievement tracks and classes (in process)

CDC Community Guide staff and Task Force chose education as an initial focus for its health equity reviews because of its potential to shape the health, economic and wellbeing outcomes across the lifespan and through succeeding generations. Education has the potential to provide entire cohorts of children and youth with the intellectual, emotional, and social skills and capacities needed to effectively negotiate the world and to lead productive and healthy lives.(Hahn & Truman 2015) The educational system addresses the "opportunities for learning and developing capacity" as shown in Figure 1, and the related social and emotional capacities referenced in Figure 3. Education also has the potential to be a powerful equalizer insofar as all cohorts of a society's children undergo an extensive and shared process of socialization that may foster equality of opportunity to all. In U.S. society, the objective of equity through education has been far less than fully successful, (Duncan & Murnane 2011) but the potential remains.(Hahn & Truman 2015)

Figure 2. Pathways from educational attainment to health outcomes



There is evidence for three major pathways through which education affects health outcomes and their distribution in societies (Figure 2). Community Guide health equity reviews focus is on education as a means of shaping generations of young adults who have basic skills, can solve problems, know how to monitor and regulate their emotions, and interact effectively so that they can pursue productive careers and have healthy lives.(Hahn & Truman 2015) Education facilitates an escape from cycles of poverty and poor health. However, the effects of education have changed over time and vary by economic environments.(Duncan & Murnane 2011)

METHODS

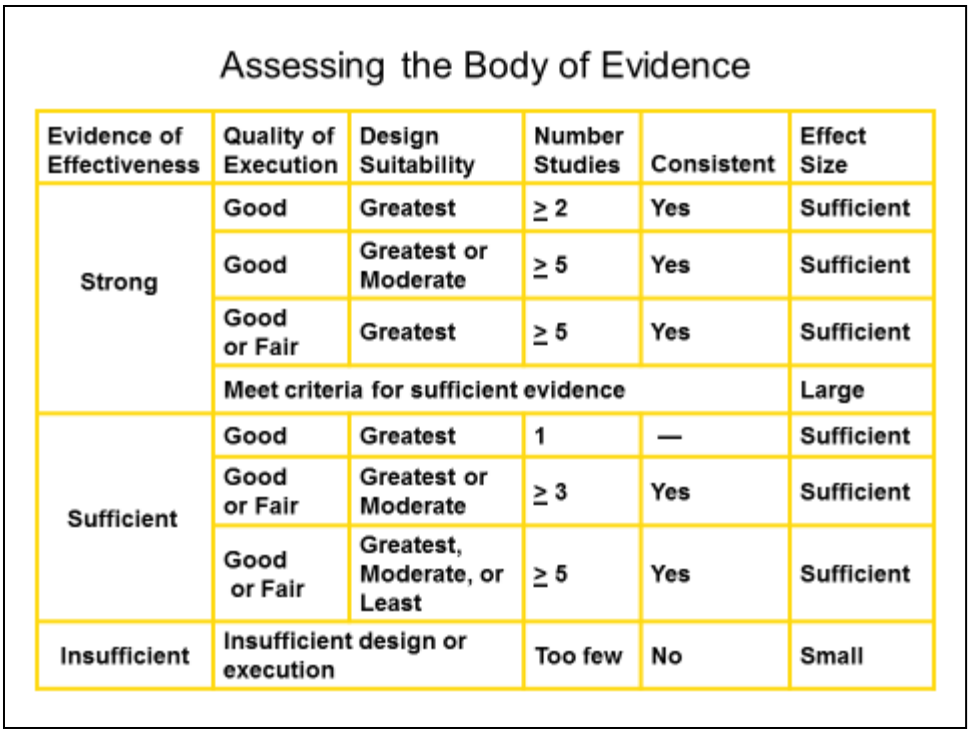
Health Equity Review Methods

The general methods for conducting Task Force systematic reviews,(Briss et al. 2001, Zaza et al. 2001) include forming a systematic review development team made up of Task Force members, expert outside consultants, and CDC Community Guide staff; developing a conceptual approach to organizing, selecting and defining interventions to evaluate; searching for and retrieving evidence; assessing the quality of and abstracting information from each study; assessing the quality of and drawing conclusions about the body of evidence of effectiveness; and translating that evidence of effectiveness into recommendations. Given its public health focus, the Task Force bases findings on the demonstrated effects of interventions on health outcomes. However, when studies examine other health-related outcomes, such as the academic achievement, that are known to be associated with health outcomes, Community Guide recommendations can be made on the basis of these upstream, health-related outcomes.

When published systematic reviews conducted by other researchers are found, these are evaluated to determine whether they meet Community Guide requirements for study design and methodology. If they meet standards, they can be included in Task Force systematic evidence reviews. For several of the Community Guide health equity review topics, existing systematic reviews have been found that meet Task Force review standards and could thus serve as the foundation for Task Force findings.

Following application of standardized synthesis methods,(Briss et al. 2001) the Community Guide presents results of systematic reviews to Task Force members who carefully review study methods and results, request review modifications required to reach a recommendation based the quality and quantity of evidence found and the meaningfulness and consistency of the effect, summarized in a "Translation Table" (Figure 3). Task Force evidence reviews and recommendations can support the intervention (as beneficial) when the body of evidence indicates improvement of the chosen public health outcomes; can conclude that the intervention is harmful when the body of evidence indicates worsening of the public health outcomes; or can find the evidence insufficient, when there are few studies or effects are inconsistent.

Figure 3. Community Guide Evidence Translation Table



Assessing the Body of Evidence

Evidence of Effectiveness	Quality of Execution	Design Suitability	Number Studies	Consistent	Effect Size
Strong	Good	Greatest	≥ 2	Yes	Sufficient
	Good	Greatest or Moderate	≥ 5	Yes	Sufficient
	Good or Fair	Greatest	≥ 5	Yes	Sufficient
	Meet criteria for sufficient evidence				Large
Sufficient	Good	Greatest	1	—	Sufficient
	Good or Fair	Greatest or Moderate	≥ 3	Yes	Sufficient
	Good or Fair	Greatest, Moderate, or Least	≥ 5	Yes	Sufficient
Insufficient	Insufficient design or execution		Too few	No	Small

In addition, for interventions found to have at least sufficient evidence of effectiveness, benefits and harms beyond those public health outcomes on which the review has focused are also assessed; this allows the evaluation of overall benefits and harms, given available evidence. Findings either from study authors or from the Community Guide research team, regarding the applicability to different populations and settings are also reported, as well as reported or conjectured implementation issues and evidence gaps. For interventions found to have sufficient evidence of effectiveness, economic evidence is also systematically assessed regarding intervention cost, cost-effectiveness, and benefit-cost ratios.(Carande-Kulis et al. 2001)

RESULTS

First Findings

The Task Force findings for the first completed health equity reviews are summarized below. They meet the criteria for health equity interventions in three ways: by specifically targeting and benefitting disadvantaged low-income and racial/ethnic minority students; by benefiting all students with disproportionate benefits for those in disadvantaged at-risk low-income and racial/ethnic minority populations (universal proportionality) or by benefiting all students more or less equally, regardless of income, race and ethnicity For each of the interventions reviewed, because academic attainment is linked with long-term health, and because the interventions are commonly implemented in racial and ethnic minority or low-income communities, health equity is likely to be improved.

1. The Task Force found strong evidence that center-based early childhood education (ECE) programs are effective in promoting educational benefit among low income and racial/ethnic minority populations as measured by improvements in subsequent academic

achievement test scores, declines in grade retention and assignment to special education, and increased rates of high school graduation.(Hahn et al. 2016) There is also sufficient evidence that these programs improve social and health-related outcomes, including crime, teen births, and emotional self-regulation. To the extent that these programs are targeted to low-income and minority communities, they are likely to advance health equity. Governmental and societal economic benefit have also been demonstrated.(Ramon, Chattopadhyay, Barnett, & Hahn 2017)

2. The Task Force found strong evidence that full-day kindergarten programs, when compared with half-day kindergarten or full-day kindergarten on alternating days are associated with improved academic skills and performance at the beginning of first grade and predict improved reading and mathematics achievement. They can advance the health prospects of low-income and minority children, by improving reading and mathematics achievement (population level predictors of long-term academic and health-related outcomes) when compared with half-day kindergarten or full-day kindergarten on alternating days.(Hahn et al. 2014) However, the achievement gains apparent at the beginning of first grade do not, by themselves, guarantee improved academic achievement in later years. Ongoing school environments that support learning and development are essential. Available economic studies of full-day kindergarten did not give a clear picture about costs beyond the broad finding that full-day kindergarten is more expensive than half-day kindergarten.
3. The Task Force issued the following separate findings for four types of out-of-school-time academic programs for students at different stages (Knopf et al. 2015):
    - There is strong evidence that **reading-focused** out-of-school-time academic programs for academically at-risk students (i.e., those with at least one of the following risk factors: low SES, racial/ethnic minority, low academic performance, single-parent family, low maternal education, or limited English proficiency) in grade levels K-3 are effective in improving reading achievement.
    - There is sufficient evidence that **math-focused** out-of-school-time academic programs are effective in improving the math achievement of academically at-risk students. Effects appear to be greater among older students (grade levels 7-12,) than among younger students (grade levels 2-5).
    - There is sufficient evidence that **general** out-of-school-time academic programs that do not focus on a specific subject (but may, for example, include briefer programs on both reading and math or other subjects) are effective in improving the reading and math achievement of academically at-risk students, although the magnitude of each effect is smaller than those from reading- and math-focused programs. No differential effects by grade were evident.
    - There is insufficient evidence that **out-of-school-time academic programs with minimal academic content** (for example recreational programs that provided time for homework completion) are effective in improving academic outcomes.

    The achievement gains apparent after out-of-school-time academic programs do not, by themselves, guarantee academic achievement in later years. Ongoing school and social environments that support learning and development appear to be essential.(Little, Wimer, & Weiss 2008) Available economic studies do not provide sufficient data for cost-effectiveness or cost-benefit assessments of out-of-school-time academic programs.

4. The Task Force found strong evidence that high school completion programs for students at high risk for non-completion (e.g., students from economically disadvantaged families, low academic achievement, or poor attendance) are effective in increasing rates of high school completion. The Task Force also found strong evidence that high school completion programs for a subset of students who are at risk for non-completion because they are pregnant or have children are effective in increasing rates of high school completion.(Hahn et al. 2015) With program effectiveness measured as the increased rate of high school completion by the intervention group when compared with the control group, evidence shows the following types of high school completion programs are effective (listed in order of effectiveness): vocational training; alternative schooling; socio-emotional skills training; college-oriented programming; mentoring and counseling; supplemental academic services; school and class restructuring; programs with several forms of assistance; attendance monitoring and contingencies; community service; and case management.(Hahn et al. 2015, Wilson, & Tanner-Smith 2013) Evidence from the review also shows that, among interventions assessed, attendance monitoring and multiservice packages are effective for students who are pregnant or have children.

   Based on the economic evidence, interventions to increase high school completion produce substantial economic benefits to government and society.(Qu, Chattopadhyay, & Hahn 2016) And for most programs, benefits exceed costs for all students at risk for non-completion, including students who are pregnant or have children.(Qu, Chattopadhyay, & Hahn 2016)
5. The Task Force found strong evidence that school-based health centers are effective in promoting educational benefit, including rates of improved standardized achievement test scores, high school graduation, and declines in grade retention and assignment to special education among at risk populations.(Knopf et al. 2016) Sufficient evidence was also found for the effects of school-based health centers on health-related outcomes (i.e., vaccination and other preventive services, asthma morbidity, emergency department utilization and hospital admissions, contraceptive utilization among females, prenatal care, birth weight, illegal substance use and alcohol consumption). There was evidence that a greater range of services and more hours of service availability were associated with greater reductions in emergency department overuse. The Community Guide economic review found economic benefits of school-based health centers.(Ran, Chattopadhyay, & Hahn 2016)

DISCUSSION

Challenges and Opportunities

The work of systematic reviews of interventions to promote health equity has several challenges: (1) The intervention evaluation studies that constitute the data we assess often lack sufficient information needed to fully assess essential features of program effects. (2) In health equity reviews, we are looking further up the causal chain than is common in public health. This has two consequences: (a) Studies of upstream health determinants, such as education, transportation, justice, or employment, rarely assess health outcomes directly. We often find intermediate non-health outcomes, such as educational achievement, for which an additional body of evidence is necessary to make clear connections with health outcomes. (b) Many public health audiences are unaccustomed to considering these upstream, social determinant interventions as

public health interventions. Social determinants, such as education are more often considered someone else's area of work, for example, the U.S. and state departments of education.

Despite (or perhaps because of) these challenges, the work is fruitful. We continue to expand the array of potentially powerful interventions for the promotion of health equity.

REFERENCES

Briss, P. A., Zaza, S., Pappaioanou, M., Fielding, J., Wright-De Agüero, L., Truman, B. I., ... & Carande-Kulis, V. G. (2000). Developing an evidence-based Guide to Community Preventive Services—methods. American journal of preventive medicine, 18(1), 35-43.

Carande-Kulis, V. G., Maciosek, M. V., Briss, P. A., Teutsch, S. M., Zaza, S., Truman, B. I., ... & Task Force on Community Preventive Services. (2000). Methods for systematic reviews of economic evaluations for the Guide to Community Preventive Services. American Journal of Preventive Medicine, 18(1), 75-91.

Duncan, G. J., & Murnane, R. J. (Eds.). (2011). Whither opportunity?: Rising inequality, schools, and children's life chances. Russell Sage Foundation.

Hahn, R. A., Barnett, W. S., Knopf, J. A., Truman, B. I., Johnson, R. L., Fielding, J. E., ... & Community Preventive Services Task Force. (2016). Early Childhood Education to Promote Health Equity: A Community Guide Systematic Review. Journal of Public Health Management and Practice, 22(5), E1-E8.

Hahn, R. A., & Truman, B. I. (2015). Education improves public health and promotes health equity. International Journal of Health Services, 45(4), 657-678.

Hahn, R. A., Knopf, J. A., Wilson, S. J., Truman, B. I., Milstein, B., Johnson, R. L., ... & Moss, R. D. (2015). Programs to increase high school completion: a Community Guide systematic health equity review. American journal of preventive medicine, 48(5), 599-608.

Hahn, R. A., Rammohan, V., Truman, B. I., Milstein, B., Johnson, R. L., Muntañer, C., ... & Abraido-Lanza, A. F. (2014). Effects of full-day kindergarten on the long-term health prospects of children in low-income and racial/ethnic-minority populations: A community guide systematic review. American journal of preventive medicine, 46(3), 312-323.

Hill, J. D. (Ed.). (1996). History, Power, and Identity: ethnogenesis in the Américas, 1492-1992. University of Iowa Press.

Knopf, J. A., Hahn, R. A., Proia, K. K., Truman, B. I., Johnson, R. L., Muntaner, C., ... & Qu, S. (2015). Out-of-school-time academic programs to improve school achievement: A community guide health equity systematic review. Journal of public health management and practice: JPHMP, 21(6), 594.

Knopf, J. A., Finnie, R. K., Peng, Y., Hahn, R. A., Truman, B. I., Vernon-Smiley, M., ... & Hunt, P. C. (2016). School-based health centers to advance health equity: a Community Guide systematic review. American journal of preventive medicine, 51(1), 114-126.

Little, P., Wimer, C., & Weiss, H. B. (2008). After school programs in the 21st century: Their potential and what it takes to achieve it. Issues and opportunities in out-of-school time evaluation, 10(1-12).

Muntaner, C., Nagoshi, C., & Diala, C. (2001). Racial ideology and explanations for health inequalities among middle-class whites. International Journal of Health Services, 31(3), 659-668.

Omi, M., & Winant, H. (2014). Racial formation in the United States. Routledge.

Qu, S., Chattopadhyay, S. K., Hahn, R. A., & Community Preventive Services Task Force. (2016). High School Completion programs: a community guide systematic economic review. Journal of Public Health Management and Practice, 22(3), E47-E56.

Ramon, I., Chattopadhyay, S. K., Barnett, W. S., Hahn, R. A., & Community Preventive Services Task Force. (2017). Early Childhood Education to Promote Health Equity: A Community Guide Economic Review. Journal of Public Health Management and Practice.

Ran, T., Chattopadhyay, S. K., Hahn, R. A., & Community Preventive Services Task Force. (2016). Economic evaluation of school-based health centers: A community guide systematic review. American journal of preventive medicine, 51(1), 129-138.

Wilson, S. J., & Tanner-Smith, E. E. (2013). Dropout prevention and intervention programs for improving school completion among school-aged children and youth: A systematic review. Journal of the Society for Social Work and Research, 4(4), 357-372.

Zaza, S., Wright-De Agüero, L. K., Briss, P. A., Truman, B. I., Hopkins, D. P., Hennessy, M. H., ... & Pappaioanou, M. (2000). Data collection instrument and procedure for systematic reviews in the Guide to Community Preventive Services. American journal of preventive medicine, 18(1), 44-74.

Zinn, H. (1980). A People's History of the United States: 1492–Present.