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Worksite Health Promotion for Low-wage Workers: A Scoping Literature Review

Emily Stiehl¹, Namrata Shivaprakash², Esther Thatcher³, India J. Ornelas⁴, Shawn Kneipp⁵, Sherry L. Baron⁶, and Naoko Muramatsu⁷

¹University of Illinois at Chicago, Health Policy and Administration, 1603 W. Taylor Chicago, IL 60612

²Northwestern University, Department of Medical Social Sciences

³University of Virginia Health System, University Medical Associates Clinic

⁴University of Washington, Health Services

⁵University of North Carolina at Chapel Hill, Health Care Environments Division

⁶Queens College, Barry Commoner Center for Health and the Environment

⁷University of Illinois at Chicago, Community Health Sciences

Abstract

Objective—To determine: (1) What research has been done on health promotion interventions for low-wage workers and (2) What factors are associated with effective low-wage workers' health promotion.

Data Source—This review includes articles from PubMed and PsychINFO published in or before July 2016

Study Inclusion/Exclusion Criteria—The search yielded 130 unique articles, 35 met the inclusion criteria: (1) being conducted in the US, (2) including an intervention or empirical data around health promotion among adult low-wage workers, and (3) measuring changes in low-wage worker health.

Data Extraction—Central features of the selected studies were extracted, including the theoretical foundation, study design, health promotion intervention content and delivery format, intervention targeted outcomes, sample characteristics, and work, occupational, and industry characteristics.

Data Analysis—Consistent with a scoping review, we used a descriptive, content analysis approach to analyze extracted data. All authors agreed upon emergent themes and two authors independently coded data extracted from each article.

Corresponding author: estiehl@uic.edu.

Declaration of Conflicting Interests

The authors declare that there is no conflict of interest.

Results—The results suggest that the research on low-wage workers' health promotion is limited, but increasing, and that low-wage workers have limited access to and utilization of worksite health promotion programs.

Conclusions—Workplace health promotion programs could have a positive effect on low-wage workers, but more work is needed to understand how to expand access, what drives participation and which delivery mechanisms are most effective.

Keywords

workplace health promotion; low-wage workers; scoping literature review; low income; workplace

Objective

Workplace health promotion programs offer unique opportunities for addressing workers' health¹. They build on existing structures at work, including work group norms, social identities, and employee time spent at work, to target a range of healthy behaviors (e.g., physical activity, healthy eating, prevention, and/or smoking cessation) both on- and off-the-job. Previous reviews of the literature have already examined the programs' content (i.e., what makes them effective)^{2–5}; its financial viability to organizations (i.e., return on investment)^{6, 7}; how to engage organizations of different types and size⁸; and the relationship between health promotion programs and socio-environmental factors^{9, 10}. However, they do not address the specific considerations of low-wage workers accessing or utilizing such programs. And yet, this is an important consideration in the U.S., which has the greatest proportion of low-wage workers of 31 other developed countries¹¹ and high rates of poor health among low-wage workers.

Low-wage workers

The U.S. has a higher incidence of low-wage workers, defined as those with weekly earnings below 150% of the federal minimum wage for a 40-hour week¹², than 31 other developed countries¹¹. Indeed, many of the fastest growing occupations in the U.S. are low-wage jobs, including food preparation (\$10.60/hour) and child care work (\$10.72/hour) (OOH, 2015), and tend to consolidate in the service sector¹³. Low-wage workers are more likely to work in part-time rather than full-time jobs, and are less likely to have stable employment throughout the year.

Low-wage workers experience socioeconomic and racial disparities in health, including higher rates of morbidity and mortality¹⁴, greater exposure to physical and social hazards in the work environment, and a higher risk of chronic illness, such as heart disease or diabetes¹². They are more likely to face precarious employment^{15–17}, job insecurity¹⁸, and exposure to job-related hazards that higher-wage workers can avoid¹⁹. One way that researchers and practitioners have tried to address these disparities is through targeted programs outside of the workplace (e.g., in low-income communities or health care settings)²⁰. However, low-wage workers face unique challenges across both work and non-work domains, including limited time and resources. Thus, interventions targeted at low-

income neighborhoods alone may not address the challenges that low-wage workers face in balancing the demands of work and family, and meeting their own health needs.

This paper provides a scoping review to systematically compile this information. The objective of this scoping review is to address two primary research questions: (1) What research has been done on health promotion programs that target or include adult low-wage workers in the United States, and (2) What factors have been associated with effective health promotion outcomes among low-wage workers?

Methods

We conducted a scoping review to systematically map the existing literature on health promotion programs for low-wage workers “in terms of the volume, nature, and characteristics of the primary research”²¹. The scoping review has emerged as a form of work that is distinct from traditional systematic reviews, which aim to determine the strength or quality of the evidence from empirical studies that use standardized research methods. Although both methods are systematic, the scoping review was the best fit for this domain, given the relatively small amount of literature and diverse research designs.

Data Source

In January 2016 we searched PubMed and PsychINFO for articles around health promotion and low-wage workers. We followed the methods framework for searching, inclusion/exclusion, and data extraction from the literature that is explained in depth by Pham, Raji , Greig, Sargeant, Papadopoulos, McEwen²¹ and Gough, Thomas, Oliver²², starting with the formation of a research team of members of the Workplace Health Research Network to inform each phase of the review^{23, 24}. Five articles that met our inclusion criteria came from an AHRQ literature review of Total Worker Health²⁵. We updated the search in July 2016 to ensure inclusion of the emerging literature (all search terms are listed in Table 1).

Study inclusion and Exclusion Criteria

From the initial 1174 articles, 345 duplicates were removed (see Figure 1). The authors reviewed the titles of the remaining 829, removing any that did not meet the inclusion criteria. We use the PICOTS framework²⁶ to delineate our eligibility criteria (Table 2). To meet the inclusion criteria, studies had to (1) be conducted in the U.S., (2) include intervention or empirical findings (either quantitative or qualitative) around health promotion, and (3) measure changes in health, healthy behavior, or well-being of adult low-wage workers. Articles not conducted in the U.S. (N=224); those lacking empirical findings around health promotion (e.g., reviews, commentaries, or theory-building articles) (N=84); or articles that were not relevant because they had only a child-focus (e.g., how low parental wages affect the health of children), an employer or health care focus (e.g., patients’ adherence to clinical testing) (N=52), or did not include low-wage workers (N=353) were excluded.

Data extraction and synthesis

The resulting articles were randomly divided among the authors for a review of abstracts and article content to verify that they met the inclusion criteria and to assist in developing codes for data extraction. The articles from the second, expanded search were reviewed in the same way. From the resulting 130 articles across both searches, 41 were identified as possibly meeting the eligibility criteria. The reviewers had shared agreement on the inclusion of 12 intervention studies and 20 empirical articles and the exclusion of one study that had a non-U.S. sample (80% agreement across the 41 studies). For the remaining 8 studies, the reviewers discussed them to reach consensus on inclusion. Three of those articles were found to have a health promotion intervention and to meet the inclusion criteria, while five articles were excluded upon closer review. The final sample included 15 intervention studies and 20 non-intervention studies that reported empirical findings (see Figure 1). The research team discussed categories to be used for data extraction, based on their initial understanding of the articles. Articles were divided and assigned evenly among the co-authors to be coded around the following categories: theoretical foundation, study design, health promotion intervention delivery, intervention-targeted outcomes, sample characteristics, and work, occupational, and industry characteristics. After the first round of coding, they revisited the codes and discussed items that were confusing or did not fit. For instance, in the second round, the large set of health-related outcomes across the intervention studies were consolidated under two codes: diet and lifestyle, which included physical activity, prevention and smoking cessation. Two reviewers then coded the rest of the intervention studies (see Tables 3 & 4). The non-intervention studies did not include intervention codes (see Table 5).

Results

Study Design

Fifteen studies evaluated a health promotion intervention with low-wage workers and 20 studies included empirical findings that addressed health promotion with low-wage workers but did not explicitly assess intervention outcomes. Instead, the 20 studies used a variety of methods including secondary data analysis, qualitative data analysis, and survey research.

Details about the worksite health promotion interventions

Population and sample—The intervention-based studies included participants from various industries (Table 3), most notably workers from low-wage occupations, such as blue-collar, hourly, supermarket, and childcare workers. Six of the samples included comparison groups of professional workers^{27–32}. About 42% of employees in the WellWorks studies were low-wage workers²⁸, but only 18% in the Healthy Worker Project study³².

Theoretical frameworks—Four theoretical frameworks underlay eight of these studies, while nearly half of the intervention studies did not explicitly specify a theoretical framework. The most frequently applied theory was the socio-ecological model (SEM)^{33–35}, which suggests that one's health is affected not only by individual characteristics, but also by the environment (e.g., peers, the workplace, family, or home). It is useful for studying low-wage workers' health promotion, because it frames the complex set of factors impacting their health and inhibiting their access to and utilization of health promotion programs.

Social Cognitive Theory³⁶ was the second-most utilized framework, and introduces self-efficacy (e.g., one's belief about their ability to bring about a desired outcome)³⁷ to describe how people learn new health promotion behaviors. Although self-efficacy is important to learning, low-wage workers might have limited opportunities to build self-efficacy³⁸, due to the lack of control they have over their work³⁹ and personal environments⁴⁰. Third, the Health Belief Model (Becker & Maiman, 1975), which suggests that people are more willing to engage in preventive health behaviors when they perceive themselves at risk of health illness or injury, was noted in Jones, Weaver, Friedmann⁴¹. Finally, the Communities of Practice model^{42, 43} describes how groups of people share information (e.g., about health) through joint participation and engagement⁴², and was applied in the COMPASS study⁴⁴. This model was applied to low-wage workers because they are often isolated from sources of social support at work, including co-workers or managers, which potentially inhibits their ability to build supportive networks in their workplaces.

Characteristics of the intervention studies—Tables 3 & 4 provide an overview of the 15 intervention studies, including the study design, outcomes, and sample (Table 3), and the intervention types and delivery methods, and main findings (Table 4). Eight of the intervention studies were randomized controlled trials (RCTs), representing five distinct RCT projects. The remaining seven intervention studies included two that used a quasi-experimental design^{41, 45}, and five that used a one-group, pre-/post- design to evaluate vaccine rates⁴⁶ and changes in employees' knowledge and behaviors^{44, 47, 48}.

Fourteen studies addressed healthy diet or lifestyle programs and one highlighted a vaccine program. For low-wage workers, providing convenient access to these programs was associated with better health in some situations. For example, when fresh fruit was provided to low-wage workers in the workplace at no cost⁴⁹, not only did workplace consumption of fresh fruit increase, but the low-wage workers with access to it reported higher personal consumption of fruits *and* vegetables, higher purchasing of fruit, and higher family purchasing of vegetables outside of work⁴⁹. In the same way, restaurant workers, including both Hispanic and non-Hispanic whites, had higher vaccination rates when vaccines were provided in the workplace⁴⁶. However, Jeffery, Forster, French, Kelder, Lando, McGovern, Jacobs Jr, Baxter³² found no treatment effects for employees in organizations that offered interventions (i.e., on-site classes and an incentive system around weight loss and smoking cessation) versus those that did not, although participation in the program overall was related with better weight loss outcomes³². In fact, the findings comparing low-wage workers (e.g., craftsmen and laborers, or blue-collar workers) to their professional colleagues consistently found that low-wage workers were less likely to participate in health promotion programs (participation ranged from 13%–36.9% for low-wage workers vs. 43%–50.8% for professionals on nutrition/weight and from 18%–27.6% vs. 37.3%–47% for smoking cessation)^{30, 32}. It could be that the convenience of eating available fruit or receiving a one-time flu shot are easier for low-wage workers to use than programs emphasizing continuous diet and exercise.

Education and training were the primary intervention delivery techniques. Among female municipal workers with known heart disease risk factors, education was especially effective for increasing knowledge and awareness of susceptibility among those who were unaware of

their susceptibility for heart disease⁴¹. Some of the interventions for low-wage workers included combinations of tactics for encouraging participation in the program. For instance, one set of studies combined training (e.g., weight loss or smoking cessation initiatives) and participation in occupational health and safety initiatives related to the training (i.e., reducing exposure to particulates that contribute to lung damage) and found that it produced smoking quit rates twice as high as health promotion education alone^{27, 31}. Incorporating relationships was another tactic used in some studies. For instance, home care workers developed relationships during training that could be used to share information about avoiding injury in the future⁴⁴. Similarly, for Hispanic female housekeepers, incorporating individual consideration, respect, and dignity (*personalismo, respeto, and dignidad*) into the training sessions seemed to increase their engagement with the trainers—the researchers suggest that the number of questions participants asked and their interest in their blood pressure readings increased throughout the training session⁵⁰. However, these combinations did not guarantee changes in behavior. Following skill-based training with personalized consideration, more than 80% of the Hispanic female housekeepers above incorporated new knowledge about diet (e.g., reading food labels), but fewer than half practiced the exercises they were taught⁵⁰. It could be that reading labels was an easier task than exercising. It presents a dilemma around knowing how to be healthy and having the motivation to practice healthy behaviors.

At least two studies in this review were not designed with the employee's health as the target, but rather, the customers that employees serve. In the first of these, 82 child care workers received training around nutrition to examine whether they would alter the types of food options for children in their facility⁴⁵, and in the second, grocery store workers were trained to examine whether their health knowledge would influence shoppers' healthy purchasing⁴⁸. The trained child care workers versus controls were indeed more likely to offer fresh fruit instead of sweets at events and parties for the children in their facilities and reported greater confidence in their ability to talk to parents about the children's health⁴⁵. In terms of their own behavior, reported changes were minimal, the only statistically significant difference being a decrease in the consumption of sweetened beverages, suggesting that the largest beneficiaries of the training were the children they watched. This creates a dilemma around health promotion aimed at the consumer, where the workers may have adopted a "do as I say, not as I do" mentality to health. The trained grocery store clerks, though, did not impact customers' behaviors nor did they change their own behaviors⁴⁸. This might, however, be a reflection on the content of the training. Since a growing number of low-wage workers interact directly with customers especially in the food services sector, the value provided by their organizations is directly related to the service the workers provide and may provide opportunities for mutual benefits⁵¹.

Non-intervention studies around low-wage workers and health promotion in the U.S

Secondary data to examine low-wage worker health—In addition to the intervention studies, other studies yielded further insight into the extent to which health promotion may be available for low-wage workers (see Table 5). Six studies examined the state of worksite health promotion using secondary analysis of panel datasets, including the National Survey of Health Promotion (NSHP)⁵², the Behavioral Risk Factor Surveillance

System (BRFSS)⁵³, the National Health Interview Surveys (NHIS)⁵⁴, and the Minnesota Health Care Program pharmacy claims data⁵⁵. They examine the state of worksite health promotion in the U.S. and correlates of health and wellness for low-wage workers in specific occupations or organizations. These studies found that low-wage workers are less likely to engage in preventative care or health promotion than their higher-wage counterparts^{53, 56}, although rates for vaccinations are not significantly different between the two groups. At the same time, the National Worksite Health Promotion Survey data collected in 2004 found that only about 7% of all worksites had comprehensive worksite health promotion programs¹, which varied with the size of the employer. Larger worksites (more than 750 employees) were 6.7 times as likely as smaller worksites (50–99 employees) to offer a comprehensive HP program¹. This is significant since low-wage workers tend to be concentrated in smaller organizations⁵³. Moreover, a lower income level – even after adjusting for higher risk occupations, such as farming, service and blue collar jobs – was associated with increased risk of sensory impairment, including hearing loss⁵⁴. At the same time, low-wage workers were found to be less likely to engage in preventative health screenings⁵⁶ or report high levels of physical activity⁵³.

Job stressors experienced by low-wage workers—Five studies examined job stressors associated with low-wage work, including work-life balance and on-the-job discrimination that can impact health. For example, one empirical study of low- to mid-income parents living in urban areas found that work affected personal eating habits (e.g., less eating at home), which negatively impacted their health⁵⁷. Another study used a national survey to examine how discrimination mediates the relationship between a person's education and their job control, and subsequently their health³⁹. Framing the analysis using the job demands, job control mode⁵⁸, Meyer³⁹ found that due to individual racial discrimination, Black workers had less job control than White workers, and this lack of job control was associated with poorer self-rated health. Workplace stress impacts aspects of health, including obesity, smoking and physical activity⁵⁹. At the same time, employed African-Americans had a better chance of abstaining from smoking than unemployed African-Americans⁶⁰. Finally, barriers to participating in health promotion programs can come from different levels, and vary with organizational and managerial support⁶¹. In a qualitative study of low-wage workers, researchers found that while most employees were excited about the idea of worksite health promotion, especially programs centered on diet and exercise, they were skeptical about whether their employer would want to offer them⁶².

Increasing health care access for low-wage workers—Five studies examined strategies for increasing low-wage workers' access to health care services, either through new technologies, new domains for targeting health, or the incorporation of additional staff to increase the reach of programs^{63–67}. Although low-wage workers can be difficult to reach, especially part-time or temporary employees with little stability in their jobs, most have access to mobile devices. A survey of 80 migrant farm workers suggest that these mobile devices could be used to monitor low-wage workers' health and manage or prevent chronic diseases across worksites⁶³. Another strategy looked at increasing access to healthcare by expanding the involvement of community health workers (a group of workers who typically meet low-wage criteria) into care teams, which improved access to care and health outcomes

among other low-wage individuals through community-based, but not worksite, settings^{65, 66}. In a similar way, Moore, Wright, Gipson, Jordan, Harsh, Reed, Murray, Keeter, Murphy⁶⁴ examined the feasibility of expanding the delivery of health education or screenings to barbershops. Although they found that African American men preferred to obtain health education and screenings in clinical offices first, this was followed by barbershops and churches. The authors suggest that these non-traditional settings could be useful future targets for influencing health literacy or health perceptions, in partnership with traditional health care settings⁶⁴.

Low-wage employers and their readiness to implement health promotion programs—Finally, a growing number of studies focus on small or mid-sized employers' readiness to implement health promotion programs, since these employers are likely to employ low-wage workers^{68, 69}. Using qualitative focus groups of human resources professionals representing these workplaces, these studies find that many workplaces want to increase access to worksite health promotion, but face a number of barriers to doing so⁶⁹. Some representatives expressed concern that the employees would find it intrusive, in addition to concerns about finding the time and money to make it effective⁶⁹. This stream of research identifies strategies for increasing the adoption of worksite health promotion among these employers⁷⁰.

Conclusions

This scoping review summarizes the results of 15 intervention studies and 20 non-intervention studies that examine the state of health promotion activities for adult low-wage workers. As noted previously, the use of the scoping review provided rich results in an area where research is still relatively new, by including a variety of studies that use diverse methods and designs which may have been excluded from the traditional systematic review. Our primary finding is that while there is growing interest in understanding the health needs of low-wage workers and opportunities for addressing those needs in the workplace, the findings in this area are only beginning to shed light on how to most effectively integrate health promotion into workplaces for low-wage workers. We highlight a few key findings below to guide future research.

Greater health risks

First, low-wage workers have greater health needs than professional workers given their higher likelihood of working in more hazardous workplaces and living in communities with fewer health promoting resources^{12, 14}. They are less likely to have access to preventative care or health promotion^{53, 56}, especially those who are part-time, temporary, or working multiple jobs, making them ineligible or unable to participate. They also face different barriers to health in the work context^{38, 39}, including heavy job demands, race-based discrimination³⁹, and even exposure to hazardous materials²⁷. Thus, from a public health perspective, worksite health promotion programs could be especially beneficial for addressing the health of this under-addressed group.

Improving access to health promotion

Low-wage workers, especially those who are part-time, temporary, or have multiple jobs, tend to have less access to health promotion programs, either because the organization does not offer them⁸ or because they are ineligible or unable to participate. However, these barriers make health promotion even more necessary. From a public health perspective, finding innovative ways to address low-wage worker health in the workplace could deliver a bigger “bang for the buck” than comparable programs for professional workers. To improve low-wage worker access, the reviewed studies identify the potential use of new technologies⁶³, new staffing models^{65, 66}, or new settings⁶⁴. Two of the reviewed studies directly increased access by increasing convenience--delivering fresh fruit or providing vaccinations in the workplace^{46, 49}. The convenience of access may have increased employees’ willingness to utilize them. More work is needed to understand how to increase low-wage worker access to health promotion programs, especially through alternative approaches that might provide greater community access and acceptability, such as was illustrated through the use of community barbershops or community health workers.

Improving utilization of health promotion

Even with access, employees may not participate, given financial constraints or a lack of management support for the program⁶¹. Programs that ask employees to withhold small amounts from their paycheck – where the funds are returned (or lost to charity) when personal health goals are met (or not)³² – may actually generate *less* participation than those that simply offer rewards for participation⁷¹. For low-wage workers, the risk of losing even a nominal amount of money if health goals are not met could be too great a burden to warrant participation⁷². At the same time, we mentioned that combining tactics for delivering training (e.g., linking smoking cessation education with organizational initiatives to reduce exposure to hazardous particulates, or linking training with relational support) could prove to be more effective than training alone. It is worth noting that in the studies that combined tactics, they did not always result in health behavior changes. More work is needed to understand the mechanisms through which low-wage workers make decisions around engaging in health promotion programs. It is necessary to consider the commitments required by the program (e.g., time, initial investment, convenience), the organizational support provided to low-wage workers, and also the impact of combining delivery tactics. One future direction for researchers developing workplace health promotion programs for low-wage workers would be to use the National Health and Nutrition Examination Survey to identify specific health issues facing low-wage workers and to develop health promotion programs that will target and address those issues.

Differences by Worker Characteristics

Only four studies analyzed their data by subgroups. The analysis consistently demonstrated that low-wage workers were less likely than professional workers to participate in health promotion programs. Similarly, individuals living below the poverty line were less likely to engage in physical activity during their leisure time than those at or above the poverty line¹⁸. As is the case for many health promotion interventions, women were more likely than men to participate in health promotion programs³². Caucasian men and women were more likely

to engage in leisure time physical activity than other racial/ethnic groups, while Mexican-American men and women were least likely to participate¹⁸. Future work should further explore the underlying factors leading to disparities in program accessibility and/or acceptability across worker populations to improve program effectiveness and health promotion utilization.

Aligning health promotion for employees with value for customers

Finally, the nature of work in a largely for-profit, consumer-driven society has prompted researchers to search for indirect means for providing benefits to workers. Although a business case for health promotion programs has been made with full-time employees in large organizations^{6, 73}, considering costs to the organization or absenteeism, productivity, and employer-based health care, the value proposition for low-wage workers has not been as clearly articulated. While some researchers are working to understand whether and how small- and mid-sized organizations can provide health promotion to their employees^{3, 8, 68}, others are examining how to align the health of employees and customers to generate value and strengthen the case for health promotion in workplaces. For instance, some train-the-trainer models indirectly encourage employers to focus on low-wage workers' health by tying it to the health of the customer⁷⁴. The premise is that organizations employing low-wage workers may have an incentive to train their workers around health promotion if the initiative can be shown to improve the value (i.e., quality, safety, or efficiency) of services to both employees and customers. Future interventions require a better understanding of the motivations driving employer behavior, to align low-wage worker health with employer initiatives.

Limitations

Our review does have some limitations. First, given the understudied nature of low-wage workers, we included some studies that did not explicitly focus on the demographics of their population, even though the population is likely to fall into our definition of "low-wage." In at least one study, we included an occupational group (e.g., child care workers) that is notoriously poorly paid in the market (average hourly wage=\$10.72⁷⁵). However, the article did not focus on the low-wage aspect of the work. Second, given the science related to health promotion among low-wage workers is just emerging, the scope of this review precluded performing quantitative comparisons across study findings. Third, self-reported data on health promotion outcomes might have reflected participants' desire to please interventionists rather than reflect actual behavior. We expect these limitations will be addressed as more research is conducted in this area. In the meantime, this review provides a summary of the types of studies, frameworks, and findings conducted to date related to health promotion among specifically low-wage workers in the workplace; highlights the potential public health benefits of targeting this group; and provides recommendations for advancing research in this area.

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So what?

What is already known on this topic?

Existing research suggests that workplace health promotion (WHP) programs, when appropriately designed and implemented can be effective.

What does this article add?

This article shifts the focus of WHP programs to low-wage workers, who are less likely to have access to or to utilize these programs, but who could benefit significantly from them.

What are the implications for health promotion practice or research?

Through a broad assessment of the WHP research, this review highlights the potential public health impact of targeting low-wage workers. It calls for more research around how to increase WHP access and utilization for this group. These include initiatives to understand what drives employer participation and which delivery mechanisms are most effective for this group. It also calls for more research on how to align employee health promotion with customer well-being to improve organizational investments in such programs.

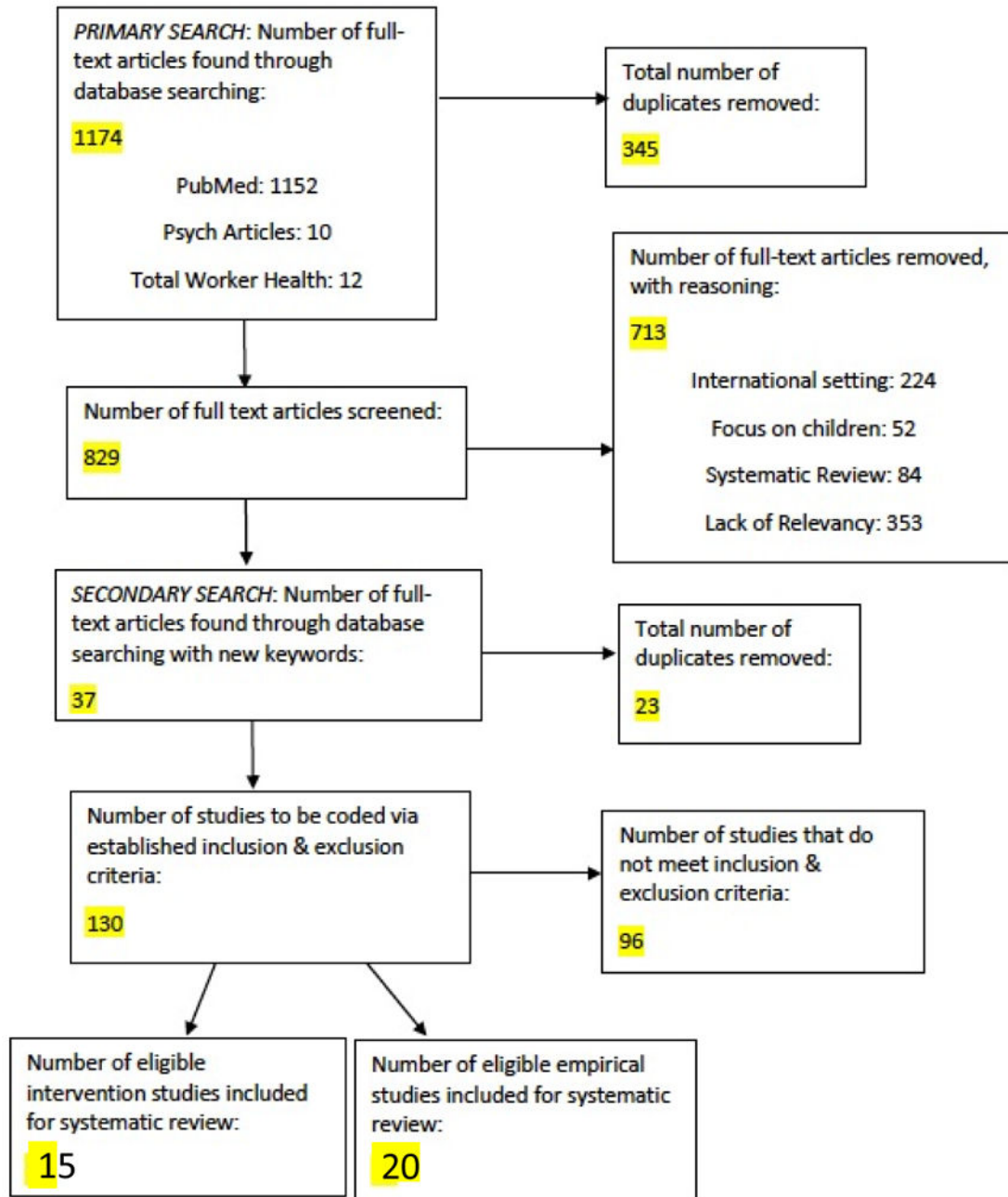


Figure 1.
Disposition Algorithm

Table 1

Scoping Review Search Items for Worksite Health Promotion for Low-wage Workers

Scoping Review Search Terms	
Lifestyle Issues	health promotion; physical activity; nutrition; workplace wellness; wellness; employee health; mental health; chronic disease; injury; injury prevention; worker safety; total worker health intervention
Workers Wage Levels	low wage; low-wage worker; restaurant worker; home care; home care aid; certified nursing assistant; child care worker; farm worker; low income; blue collar; white collar; pink collar
Employment-Related Issues	employment; employment status; health insurance; work environment; work related health promotion; in the workplace

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Table 2

PICOTS Descriptions of Inclusion and Exclusion Criteria

PICOTS	Inclusion	Exclusion
Population	Adult low-wage workers, whose wages put their household income at or below 200% of the federal poverty level. These workers can come from a variety of industries and occupations (e.g., care worker, restaurant worker, farm worker, construction laborer, blue-collar worker)	Children, unemployed individuals, white-collar or high status workers without any low-wage comparison group, individuals who might be working but who are selected to the study because of their membership in another group (e.g., parents, patients, racial minorities)
Intervention	(1) Health promotion programs that improve the healthy behaviors, knowledge or health/well-being of low-wage employees, including those with a dual focus on health protection (2) Studies that include empirical data without an intervention	Programs that do not consider workplace wellness or health promotion; programs that do not measure employee outcomes
Comparator	Any comparator	Not applicable
Outcomes	Changes in healthy behaviors; changes in health as a result of the health promotion intervention	Outcomes that include only clinical screenings or clinical outcomes that are not impacted by work or considered in the context of work
Timing	In or before July 2016	Not applicable
Setting	Studies conducted in the US. One setting is the workplace. This can include large organizations (where the low-wage employee has differential access to the program) or middle to small-sized organizations (where resources for health promotion may be scarce); Studies in a community-based organization—if the focus is on improving the healthy behaviors, health, or well-being of low-wage employees	Studies conducted in other countries or in settings without any focus on low-wage employees or the workplace

Table 3

Intervention Study Model, Design, Outcomes and Sample Characteristics

AUTHORS	THEORETICAL MODEL	STUDY DESIGN	OUTCOMES/ ¹		SAMPLE CHARACTERISTICS
			DIET ²	LIFESTYLE ³	
Backman, et al. (2011) ⁴⁹	N/A	Prospective, randomized block experimental	1	1	A convenience sample of 391 low-wage employees in 6 intervention worksites and 137 low-wage employees in 3 control worksites in Los Angeles, CA.
Gosliner, et al. (2010) ⁴⁵	N/A	Quasi-experimental controlled trial	1	1	82 staff members at 13 Child Care Centers
Graves et al. (2015) ⁴⁶	N/A	Pre/Post Analysis	0	0	Restaurants with 25 employees speaking English or Spanish and over 18 years.
Green et al. (2007) ⁴⁷	N/A	Pre/Post Analysis	0	1	Worksite-based program was offered to 3624 employees, and 1167 (32%) enrolled. Enrollment varied by facility type and averaged considerably higher in the six clinics (66.5%) than the two hospitals (20.4%) and the two administrative centers (40.2%). Of the enrolled participants, 595 (51%) reported all 10 weeks of points.
Hannon et al. (2016) ⁷¹	N/A	3 arm-randomized controlled trial	1	1	Small worksites (20–200 employees) in low wage industries.
Hunt et al. (2005) ²⁷	Socio-Ecological Model	Randomized, controlled study	1	1	Worksites employing between 400–2000 working in manufacturing workplaces
Jeffery et al. (1993) ³²	N/A	Randomized, controlled study	1	1	32 Worksites, 10,000 total employees
Jones et al. (2007) ⁴¹	The Health Belief Model	Quasi-Experimental	0	1	48 sedentary female municipal workers
Lee et al. (2015) ⁴⁸	Social-Cognitive Theory; Theory of Planned Behavior	Pre/Post Analysis with Single Group	1	0	Grocery store workers who are being asked to implement an intervention for shoppers.
Olson et al. (2015) ⁴⁴	Community of Practice Model	Pre/Post Analysis with Single Group	1	1	Home care workers in the Portland, OR area (19 signed up; 16 completed).
Sorensen et al. (1995) ²⁸	Socio-Ecological Model	Randomized, controlled	1	1	24 predominantly manufacturing work sites (Worksites employing between 400–2000 working in manufacturing workplaces in Massachusetts)
Sorensen et al. (1998) ²⁹	Socio-Ecological Model	Randomized, controlled	1	1	24 predominantly manufacturing work sites (Worksites employing between 400–2000 working in manufacturing workplaces in Massachusetts)
Sorensen et al. (1996) ³⁰	Ecological Model of Health Promotion	Randomized, controlled	1	1	24 predominantly manufacturing work sites (Worksites employing between 400–2000 working in manufacturing workplaces in Massachusetts)
Sorensen et al. (2002) ³¹	Socio-Ecological Model	Randomized, controlled	1	1	15 worksites (Worksites employing between 400–2000 working in manufacturing workplaces in Massachusetts)

AUTHORS	THEORETICAL MODEL	STUDY DESIGN	OUTCOMES ¹		SAMPLE CHARACTERISTICS
			DIET ²	LIFESTYLE ³	
Zarate-Abbott et al. (2008) ⁵⁰	N/A	Pre/Post Analysis with Single Group	1	1	21 housekeeping workers

¹ 1=included as a health promotion outcome; 0= is not included as health promotion outcome

² Diet= Healthy Eating; Fruits & Veggies; Nutrition

³ Lifestyle= Physical Activity; Exercise; Smoking Cessation; Overall Health

Table 4

Intervention Study Delivery and Results

Author(s)	INTERVENTION DELIVERY	MAIN FINDINGS	ADDITIONAL FINDINGS
Backman, et al. (2011) ⁴⁹	Making fresh fruit available to employees at work	Intervention participants showed a significant increase in fruit, vegetable, and total fruit and vegetable consumption, purchasing of fruit, family purchasing of vegetables, and self-efficacy toward eating 2 servings of fruit each day compared to the control worksites.	
Gosliner, et al. (2010) ⁴⁵	Training and education	Significant differences between intervention and control sites were seen for several foods and beverages provided to children in their care.	The intervention had a limited impact on staff members' personal health habits, but applied information towards better child care
Graves et al. (2015) ⁴⁶	On-site vaccine, plus a survey with monetary incentive	Vaccination rates improved. Survey response rates were 73% and 55%, pre and post survey respectively	Equally successful in raising vaccination rates in Hispanic and non-Hispanic whites; more effective with those less than a high school education
Green et al. (2007) ⁴⁷	Targeted physical activity through goal setting and prizes	Participants reported substantial increases in physical activity, and three quarters of those who had been sedentary at baseline were engaging in at least some moderate activity; however, at the 6-month follow-up, physical activity declined toward baseline levels.	Barriers to AFL goal attainment included busy work and home schedules and vacations (AFL was implemented during the summer). Participants were more likely to drop out if team captains had difficulty collecting points.
Hannon et al. (2016) ⁷¹	Worksite adoption & implementation of evidence based intervention	Worksite implementation of HealthLinks best practices at baseline. Worksites reported highest implementation for policy best practices, particularly related to limiting tobacco use and healthy foods and beverages. Implementation of policies to support physical activity was much lower (b.20). Implementation of physical activity programs was even lower (b.10), as was implementation of all communication best practices.	When asked yes/no questions about the presence of healthy foods and beverages, physical activity programs, a written tobacco policy, and communications about the tobacco quit line, the majority of employees said these were not present at their worksites or that they did not know. Employees were least likely to perceive communications and support related to cancer screening.
Hunt et al. (2005) ²⁷	Educational programs delivered around health promotion alone (HP), or with occupational health and safety initiatives (HP/OHS)	Smoking quit rates among blue collar workers in the HP/OHS were 2x the HP	Greater worker participation is also a factor in the measure of mean minutes of worker exposure to the intervention. This triangulation provides stronger evidence for validity of the measurement than the use of one item.
Jeffery et al. (1993) ³²	Health education classes with payroll-based incentive system(\$5 deduction/refund)	No treatment effect was found for weight; positive correlation with participation (smoking)	Women more likely to participate than Men; Blue-collar workers least likely to participate
Jones et al. (2007) ⁴¹	Training and education	Fifty-eight percent of the participants improved their knowledge of heart disease and 50% of the participants increased their perception of susceptibility to heart disease from pre- to post-intervention.	The greatest improvement in knowledge and awareness of susceptibility occurred for those with limited knowledge and low perceptions of susceptibility.
Lee et al. (2015) ⁴⁸	Stocking, Advertising, Outreach & Employee Training	Supermarket employee training had no significant impact on employees' knowledge, self-efficacy, or behavioral intention for helping customers with healthy purchasing or related topics of nutrition and food safety.	High rates of turnover had implications for employee participation in the program.
Olson et al. (2015) ⁴⁴	Education & social support	Knowledge increased; 62% made safety/healthy changes	

<u>Author(s)</u>	<u>INTERVENTION DELIVERY</u>	<u>MAIN FINDINGS</u>	<u>ADDITIONAL FINDINGS</u>
Sorensen et al. (1995) ²⁸	Educational programs; worksite changes	Production workers' job limited their full participation	
Sorensen et al. (1998) ²⁹	Health behavior changes: education programs; worksite participation/consultations	No significant effects were observed for smoking cessation	
Sorensen et al. (1996) ³⁰	Exposure-related activities & smoking-related activities	Association between participation in exposure related activities & smoking control activities were not sig.	Smokers and quitters more likely to participate in nutrition activities than smoking cessation activities
Sorensen et al. (2002) ³¹	Targeted smoking and diet; HP & HP/OHS	Smoking quit rates doubled relative to those in the HP condition; no mean changes with veg/fruit intake	
Zarate-Abbott et al. (2008) ³⁰	Training with person-centeredness, respect, and dignity	Significant improvements in systolic and diastolic blood pressures were found between the baseline screening and the 17th month screening.	More than 80% of the respondents were reading food labels when grocery shopping, using less salt in their diets, determining the fat content of meat before buying, and using healthier fats in their diets.

Table 5

Non-Intervention Study Design, Characteristics and Sample Outcomes

	AUTHOR(S)	SAMPLE DESIGN	STUDY CHARACTERISTICS	STUDY OUTCOMES
Examining Low-Wage Worker Health	Linnan et al. (2008) ¹	Nationally representative, cross-sectional telephone survey of worksite health promotion programs stratified by worksite size and industry type.	Worksites with more than 750 employees consistently offered more programs, policies, and services than did smaller worksites. Only 6.9% of responding worksites offered a comprehensive worksite health promotion program.	Increasing the number, quality, and types of health promotion programs at worksites, especially smaller worksites, remains an important public health goal.
	DeJoy et al. (2014) ⁵²	National workplace health promotion surveys	Findings from the four previous national surveys of workplace health promotion activities (1985, 1992, 1999, and 2004, respectively)	Future surveys should place greater emphasis on assessing program quality, reach, and effectiveness. Both employer and employee input should be sought.
	Harris, Huang, et al. (2011) ⁵³	Data from the Behavioral Risk Factor Surveillance System, Medical Expenditure Panel Survey and Bureau of Labor Statistics.	Describe low-socioeconomic status workers' diseases, health status, demographics, risk behaviors and workplaces.	In order to decrease chronic diseases among low SES status workers, we need to focus workplace health promotion programs on workers in low-wage industries and small workplaces.
	Chou, Beckles, et al. (2015) ⁵⁴	Data from 2007 to 2010, cross-sectional household survey, National Health Interview Surveys	Respondents aged 25–64 (n=69, 845 adults)	Odds of hearing impairment were significantly higher for people with some college or less education than for those with a college degree or more.
	Burgess et al. (2009) ⁵⁵	Minnesota Health Care Programs' pharmacy claims databases (05-06) and mixed-mode survey protocols	A cohort of smokers who recently filled a prescription for nicotine replacement was stratified by race, and then subjects were selected by simple random sample from each race, oversampling the non-White groups (N= 1,782)	Results suggest the need for research on factors specific to women's work roles or workplaces that inhibit cessation as well as cessation programs tailored to low-income, employed female smokers.
	Ross et al. (2007) ⁵⁶	Cross-sectional analysis of the pooled 1996, 1998 and 2000 waves of the Health and Retirement Study	Among 10,088 older working adults, overall preventative care use ranged from 38% to 76%.	In unadjusted and adjusted analysis, the working poor remained significantly less likely to receive preventative care.
Job stressors experienced by low-wage workers	Meyer (2014) ³⁹	Data from the National Survey of Midlife in the United States (MIDUS)	In order to determine the effects of grouping by occupation, and racial discrimination in hiring or promotion, on control scores from the Job Content Questionnaire in Black and White subjects.	Individual racially-based discrimination appears a stronger determinant than structural segregation in reduced job control in Black workers, and may contribute to health disparities in the workplace.
	Blake et al. (2011) ⁵⁷	Random sample cross-sectional pilot telephone survey	Black, white, and Latino employed mothers and fathers were recruited from a low/moderate income urban area in upstate New York	Low- to mid-income parents living in urban areas found that work affected personal eating habits (e.g., less eating at home), which negatively impacted their health

	AUTHOR(S)	SAMPLE DESIGN	STUDY CHARACTERISTICS	STUDY OUTCOMES
	Miranda et al. (2015) ⁵⁹	Standardized questionnaires	The cross-sectional associations between workplace stressors and obesity, cigarette smoking and physical inactivity of nursing home employees.	Workplace stressors were strongly associated with smoking, obesity, and physical inactivity, even among lowest-status workers. Current working conditions affected younger workers more than older workers.
	Kendzor et al. (2012) ⁶⁰	Data from a randomized controlled trial on smoking cessation among African American smokers	379 African-American smokers from Houston, TX	Unemployment was negatively associated with smoking cessation, both at the individual level (when the participant was unemployed) and the neighborhood level. Smoking cessation programs for low-wage workers may want to consider how the workplace could support smoking cessation
	Zhang et al. (2016) ⁶¹	Focus groups with employees, in-depth interviews with manager	Findings from employees and top and middle managers in 3 nursing homes about facilitators and barriers of an occupational health/health promotion program	Organizational support at multiple levels is necessary for a successful intervention. The three most important factors were: management support, financial resources, and release time to participate.
	Hammerback et al. (2015) ⁶²	42 Interviews of 60–90 minutes	Study participants were 42 couples with one or more members working in 1 of 5 low-wage industries in the Seattle/King County metropolitan area of Washington State.	Employees are most interested in efforts focused in nutrition and physical activity. Employees and their partners are interested in workplace health promotion if it addresses behaviors they care about.
Increasing health care access for low-wage workers	Price et al. (2013) ⁶³	Implementation of mHealth devices and surveys	Demonstration of mHealth devices and a survey were individually administered to 80 Hispanic migrant farm workers	Most participants were receptive to using mHealth technology and felt it would be helpful in various ways since most Hispanic MFWs have access to mobile phones.
	Moore et al. (2016) ⁶⁴	Surveys	Sociodemographic characteristics and attitudes towards receiving physical and mental health education and screenings for AA men in barbershops and other settings.	Overall, barbers did not believe they could influence the decision-making of AA men; best case scenario, only 33% felt they could influence young men 18–29 years old.
	Collinsworth, et al (2014) ⁶⁵	Qualitative, semi-structured interviews	5 Community Health Workers, and 7 Primary Care Providers	CHWs play a variety of roles in helping patients overcome barriers to diabetes control and can be successfully integrated into a health care system's care coordination strategy
	Kangovi et al. (2014) ⁶⁶	A 2-armed, single-blind, randomized clinical trial was conducted between	During hospital admission, CHWs worked with 446 patients to create	Patient-centered CHW intervention improves

	AUTHOR(S)	SAMPLE DESIGN	STUDY CHARACTERISTICS	STUDY OUTCOMES
		April 10, 2011, and October 30, 2012, at 2 urban, academically affiliated hospitals.	individualized action plans for achieving patients' stated goals for recovery. The CHWs provided support tailored to patient goals for a minimum of 2 weeks.	access to primary care and quality of discharge while controlling recurrent readmissions in a high-risk population. Health systems may leverage the CHW workforce to improve post hospital outcomes by addressing behavioral and socioeconomic drivers of disease.
	Wilson, et al. (1997) ⁶⁷	Questionnaire measuring health beliefs following a worksite health screening	150 questionnaires completed by blue-collar workers in a large manufacturing plant in the Midwest	Participants who completed the health screening perceived fewer barriers and reported higher self-efficacy than those who did not. This could have implications for designing effective health screenings.
Low-wage employers and their readiness to implement health promotion programs	Hannon, Garson, et al. (2012) ⁶⁸	A cross-sectional survey of a national sample	Sample of mid-sized employers (100–4,999 employees) representing 5 low wage industries.	Readiness scales showed that employers believe WHP would benefit their employees and their companies, but they were less likely to believe that WHP was feasible for their companies.
	Hannon, Hammerback, et al. (2012) ⁶⁹	Five 1.5-hour focus groups with semi-structured discussion guides.	The focus groups were conducted with 34 representatives of midsized (100–999 workers) workplaces in the Seattle metropolitan area, WA.	Most participants viewed WHP as appropriate, but many expressed reservations about intruding in workers' personal lives. Barriers to implementing WHP included cost and time.
	Laing et al. (2012) ⁷⁰	The American Cancer Society's HealthLinks is a workplace health promotion program that targets 3 modifiable health risk behaviors: physical inactivity, unhealthy eating and tobacco use.	The employers' implementation of HealthLinks in small workplaces was evaluated. Mason County, WA, a rural low-income community with elevated obesity and smoking rates was targeted.	When offered resources and support, small and low-wage workplaces increased implementation of evidence-based workplace health promotion best practices designed to reduce modifiable health risk behaviors associated with chronic diseases.

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