

Evaluation of research strategies applied to Workplace Health Promotion

Avaliação de estratégias de pesquisa aplicadas à promoção da saúde no trabalho

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ABSTRACT

Introduction: Workplace Health Promotion (WHP) is conceptualized as a set of strategies and interventions to help people change their lifestyles and the environment where they develop their activities seeking to reach an optimum state of health. **Objective:** To present the results of a critical literature review about the more used research strategies and themes studied related to health promotion at workplace. **Methods:** We conducted a bibliographical research on the American Journal of Health Promotion. This journal was chosen because it contained important studies about WHP. We only included observational and interventional studies published from 2005 to 2009. **Results:** Thirty-two articles were included in this research. The observational studies were the most cited design than interventional studies. The measurement procedures most used were questionnaire (n= 14; 44%) and telephone survey (n=6; 19%). The two themes more recurrent in the analyzed articles were: financial questions (n=9;28%) and smoking control (n=5;15.5%). Dental health (n=1;3%) and the stress management (n=1;3%) were the two themes less present among the articles analyzed. **Final considerations:** WHP was exploited in various ways and the studies analyzed presented different types of evaluation. These data can support the planning and the actions with intersectoral and multidisciplinary approaches when implementing strategies to WHP.

KEYWORDS

Health promotion; Workplace; Occupational health.

RESUMO

Introdução: A Promoção de saúde no trabalho (PST) é conceituada como um conjunto de estratégias e intervenções que auxilia as pessoas a transformarem seus estilos de vida e seus ambientes de trabalho, buscando alcançar um estado ideal de saúde. **Objetivos:** Apresentar resultados de uma revisão crítica sobre as estratégias de pesquisa mais utilizadas e os temas mais estudados na promoção da saúde no trabalho. **Métodos:** Um levantamento bibliográfico utilizando-se o periódico “the American Journal of Health Promotion” foi realizado. Este periódico foi escolhido devido a importância de estudos na área publicados. Somente estudos observacionais e interencionais publicados entre 2005 e 2009 foram incluídos no estudo. **Resultados:** Trinta e dois artigos foram incluídos na pesquisa. Os estudos observacionais foram mais citados que os estudos interencionais. Os métodos de avaliação mais utilizados foram o questionário (n=14; 44%) e a entrevista por telefone (n=6; 19%). Os dois tópicos mais frequentes entre os artigos analisados foram: questões financeiras (n=9; 28%) e controle do fumo (n=6; 19%). Saúde bucal (n=1; 3%) e controle do estresse (n=1; 3%) foram os dois temas menos frequentes entre os estudos analisados. **Considerações finais:** A PST foi explorada de várias formas e os estudos analisados apresentaram diferentes tipos de avaliação. Estes dados suportam o planejamento de ações com medidas intersectoriais e multidisciplinares quando da implementação de estratégias para a PST.

PALAVRAS-CHAVE

Promoção de saúde; Saúde no trabalho; Saúde ocupacional.

INTRODUCTION

According to the Ottawa charter, Health Promotion (HP) is the process of enabling people to improve and increase the control of their health, therefore, HP is not just responsibility of health sector [1]. In the same direction the Luxembourg Declaration (1997) refers Workplace Health Promotion (WHP) as “the combined efforts of employers, employees and society to improve the health and well-being of people at work”. This can be achieved through a combination of: 1) improving the work organization and environment; 2) promoting active participation; 3) encouraging personal development” [2].

The concept of WHP has been intensely discussed both in public or private organizations and there is a consensus that the success of globalization can only be achieved if the institutions offers manpower healthy, skilled and motivated [3]. The literature reveals that several types of programs based on the philosophy of WHP are offered in workplaces such as programs that encourage physical activity, tobacco control, stress management, control of hypertension and weight, in addition programs aimed at preventing accidents and sexually transmitted diseases, topics related to nutrition, promoting and maintaining mental health and even activities involving detection / prevention of cancer in the work population [4].

Observing the bibliographical production on WHP is possible to notice a diversity of understandings and definitions on this subject, resulting in a variability of contexts and strategies used for achieve that. Therefore, there is a need to know the themes and the methodological designs utilized in this field of knowledge in order to help researches in the development of new studies. The aim of this article was to present the results of a literature review about the more used research strategies and themes studied related to health promotion in workplace.

METHODS

This research was conducted in the The American Journal of Health Promotion databases. We chose this database because it

contained articles which approaches targeted both to practitioners of WHP as for scientists interested in knowing the latest results and trends in the practice of health promotion and research related to this subject. The bibliographical research was limited from articles published from 2005 to 2009. We made our search using the key words: Health Promotion, Workplace, and Occupational Health. The inclusion criteria comprised only observational and interventional studies published in the journal and in the period cited above. The findings were analyzed according author, year, subject approaches/objectives, design, measurement procedures and conclusions cited in all articles included. The design of the studies was classified according to methodological criteria of Hulley et al. [5] and descriptive statistics was used to analyse the data.

RESULTS

The initial search resulted in 53 references, however, according to the inclusion criteria, 21 articles were excluded and 32 articles were included and analyzed. We verified that the principal study themes published related to worksite health promotion were: financial questions (n=9; 28%); smoking control (n=5; 15.5%), behavior changes (n=4; 12.5%), population health promotion in worksite (n=4; 12.5%), health promotion community design at worksite (n=3; 9.5%); culture change in worksite (n=2; 6%); measurement issues (n=2; 6%); dental health (n=1; 3%); stress management (n=1; 3%); medical self care (n=1; 3%).

Table 1 presents the findings related to the design of studies, data collection instruments used and the main findings of the studies that were part of this research. The observational studies accounted for 80% of the findings, followed by 20% of intervention studies. With respect to measurement procedures used for data collection in observational and interventional studies, it was found that most of the studies used questionnaires (n = 14; 44%) and telephone survey (n=6; 19%).

TABLE 1 - BIBLIOGRAPHICAL FINDINGS SECOND AUTHOR, YEAR OF PUBLICATION, SUBJECT APPROACH/OBJECTIVES, MEASUREMENT PROCEDURES USED AND OBTAINED RESULTS

	First Author/ Year	Subject approach/objectives	Measurement procedures	Conclusions of authors
1	Chikamoto [6]	Dental Health (to identify the magnitude of dental care costs and examine the relationship between behavioral risk factors and dental care costs).	Company's annual physical checkups	"This study suggests the relationships of smoking as well as age and sex to dental care costs in an employer setting".
2	Lynch [7]	Financial Analysis (to examine the relationship between health risks and medical care expenditures).	Medical expenditure data available in the fiscal year	"Such information provides a solid foundation for health promotion efforts in Japan and direction for subsequent investigations of health risks and medical expenditures".
3	Nishimura [8]	Financial Analysis (to examine the differences in medical care costs among individuals who carried the diagnosis of selected lifestyle diseases (diabetes mellitus, hypertension, and hyperlipidemia); individuals whose levels of risks (blood glucose, blood pressure, and total cholesterol) satisfied the diagnosis guidelines yet who did not carry the diagnoses; individuals who had these risks but whose risk levels were not high enough to satisfy the diagnosis guidelines and individuals without the risks).	Medical claims and health checkups	"In a Japanese employee population, the diagnosis status of diabetes mellitus, hyperlipidemia and hypertension was found to be associated with higher medical care costs while risk levels for the diseases were not in a 1-year time period".
4	Daly [9]	Applied Research Brief: Behavior Change (to explore the potential effectiveness of a proactive telephone-based intervention in increasing workplace adoption of health promotion initiatives).	Telephone interview at baseline and again 4 years later	"The findings of this study suggest that a proactive telephone-based intervention has the potential to be effective in increasing the prevalence of health promotion initiatives across a range of health topics in a large population of workplaces".
5	Barbeau [10]	Culture Change (Qualitative and quantitative research to understand the meaning and function of union membership in workers' lives and applied this information to health promotion intervention design).	Qualitative and Quantitative instruments developed by authors	"The findings provide a compelling rationale for considering unions as a channel for health promotion interventions".
6	Plotnikoff [11]	Behavior Change (to evaluate a 12-week workplace e-mail intervention designed to promote physical activity and nutrition behavior).	Electronic health messages intervention (e-mails) and control groups	"E-mail is a promising mode of delivery for promoting physical activity and nutrition in the workplace".
7	Thompson [12]	Culture Change (to identify factors related to formation, participation, and characteristics of employee advisory boards in blue-collar worksites).	Intervention activities by Employee Advisory Boards (EABs)	"It is possible to develop participatory structures in small, blue-collar worksites. More information is needed about factors related to levels of enthusiasm of EABs".
8	Dannenberg [13]	Applied Research Brief: Health Promoting Community Design (to assess the walkability in the workplace).	Questionnaire (five point scale to evaluate nine elements of walkability)	"Facility planners may find this walkability instrument useful in identifying and eliminating barriers to convenient walking opportunities in workplaces such as office parks and university campuses".

9	Finkelstein [14]	Financial Analysis (to quantify annual costs attributable to obesity, including both increased medical expenditures and absenteeism, separately for overweight and three categories of obesity among men and women with full-time employment).	Questionnaire (National Health Interview Survey – NHIS; Medical Expenditure Panel Survey - MEPS)	“Obesity results in significant increases in medical expenditures and absenteeism among full-time employees”.
10	Kenney [15]	Smoking Control; Stress Management (to examine the relationship between depressive symptoms and cigarette smoking in a large sample of American workers).	Telephone survey about Smoking and depression	“Findings highlight the need for increased cooperation between workplace mental health and medical health promotion programs and for tailoring smoking cessation programs to depressed workers”.
11	McCalister [16]	Stress Management (to test a theoretically and empirically based model linking potential protective resources to the outcomes of work stress and job satisfaction and replicating the relationship of work stress to job satisfaction while accounting for the potential influence of negative affectivity).	Questionnaire (Dispositional Resilience Scale and Likert Scale).	“Explanations of relationships depicted in the model, practical implications for reducing work stress and enhancing job satisfaction, limitations and future directions are discussed”.
12	Griffin-Blake [17]	Behavior Change; Fitness (to compare the effectiveness of stage-matched vs. social-cognitive physical activity interventions in a work setting).	Motivationally tailored materials and non-staged Social Cognitive Theory (SCT) materials	“Minimal-contact, one-shot physical activity interventions delivered at work can help people increase their participation in regular physical activity”.
13	Reime [18]	Smoking Control (to test the relationships among particular motives for smoking cessation, stage of readiness to quit, and sociodemographic characteristics).	Questionnaire (sociodemographic characteristics, smoking behavior, smoking history, readiness to quit smoking, motives to quit, such as coworkers' complaints and health-related or financial concerns)	“Motives for smoking cessation vary according to the individual's level of readiness to quit and sociodemographic background”.
14	Musich [19] (a)	Financial Analysis (to investigate the impact of health on job performance using two measures of productivity loss: a self-reported measure of health-related presenteeism and an objective measure of absenteeism).	Questionnaire (The Health Risk Appraisal -HRA)	“This study demonstrates an association between health metrics and self reported work impairment (presenteeism) and measured absenteeism”.
15	Nolan [20]	Applied Research Brief: Medical Self-Care (to evaluate the attitudes that affected employees' decisions to accept or decline the vaccine, preventive behaviors among employees who received the vaccine, and effectiveness of the educational modalities offered in improving knowledge of Lyme disease and Lyme disease vaccine).	Telephone interviews, pre-education and posteducation – vaccination.	“The results suggest that when a vaccine-related disease-prevention program is undertaken, attitudes about disease risks and vaccine risks influence decisions to accept vaccination, and in-person education should be a mandatory element of the program”.
16	O'Connell [21]	Applied Research Brief: Smoking Control (to replicate results of a pilot smoking cessation study and demonstrate applicability to a worksite setting).	Questionnaire (Impediment Profiler - IP)	“This study suggests that impediment profiling holds promise for smoking cessation and demonstrates feasibility in a worksite setting”.

17	Musich [22] (b)	Financial Impact (To investigate the impact of selected corporate environment factors, health risks, and medical conditions on job performance using a self-reported measure of presenteeism).	Questionnaire (The Health Risk Appraisal-HRA)	"The study provides initial evidence that health management programming may benefit on-the-job productivity outcomes if expanded to include interventions targeting work environments".
18	Lucove [23]	Applied Research Brief: Population Health (to estimate the employed population's exposure to perceived worksite policies and environments hypothesized to promote physical activity and to determine their relationship to leisure-time physical activity).	Telephone survey	"Worksite policies and environments are promising factors for future study in physical activity promotion".
19	Uslan [27]	Smoking Control (to examine correlates of smoking policies in a stratified sample of small worksites in Minnesota and to determine knowledge and attitudes of the owners and managers regarding the Minnesota Clean Indoor Air Act (MCIAA) rules that newly applied to their businesses).	Mail survey - Questionnaire about smoking	"Most small businesses in Minnesota do not have a smoking policy in writing and thus their employees are at risk of exposure to secondhand smoke at work".
20	Kruger [25]	Population Health - Worksite health promotion (to assess employees' attitudes toward potential barriers to and incentives for their likely use of worksite health promotion services).	Mail survey – Questionnaire about Perceived Use of Employee Health Promotion Services and Policies	"These Health Styles Survey data, in combination with needs data from an employer's own workforce, may help employers design wellness programs to include features that attract employees".
21	Plotnikoff [26]	Behavior Change (to compare the effects of stage-matched and standard print materials for physical activity change).	Targeted booklets, Canada's Physical Activity Guide and handbook.	"Physical Activity stage-matched materials delivered in the workplace are efficacious for women but not men".
22	Linnan [27]	Population Health – (survey to explore differences in manager beliefs about worksite health promotion programs).	Questionnaire about smoking, physical activity, healthy diet, and sun exposure.	"Targeted interventions to address manager beliefs, including differences by age, experience, and manager level, are worth consideration when planning worksite Health Promotion Programs".
23	Eisenberg [28]	Applied Research Brief: Smoking Control (to verify how worksite tobacco policies in Arizona changed between 1998 and 2001).	Telephone survey about tobacco policy	"Policy regression is a disturbing finding that should be further explored. Our findings suggest that efforts to promote workplace tobacco policies should not end when policies are in place".
24	Hunt [29]	Applied Research Brief: Population Health (To examine worker characteristics explicated in our social-contextual intervention model that might be associated with participation in a cancer prevention intervention).	Questionnaires about health behaviors; intervention based on an inclusive, comprehensive socialcontextual model targeting fruit, vegetable, and red meat consumption, multivitamin use, and physical activity.	"The combination of a comprehensive intervention with wide diffusion of program messages may have been more powerful in influencing participation and behavior change than characteristics of individual employees".
25	Mills [30]	Financial Impact (to evaluate the impact of a multicomponent workplace health promotion program on employee health risks and work productivity).	Health risk appraisal questionnaire, access to a tailored health improvement web portal, wellness literature, and seminars and workshops focused upon identified wellness issues.	"The results suggest that a well-implemented multicomponent workplace health promotion program can produce sizeable changes in health risks and productivity".
26	Fisher [31]	Applied Research Brief: Develop and test a reduced-item version of an established tool to measure employer supports for cardiovascular health.	Questionnaire (The Heart Check Lite Questionnaire)	"Both reduced-item versions demonstrated a moderate to strong ability to reproduce the results observed with the full Heart Check".

27	Della [32]	Measurement Issues (to describe the development of the leading by example (LBE) instrument).	Questionnaire (Leading By Example instrument - LBE)	"Management support for health promotion can be assessed using the LBE, a brief self-report questionnaire".
28	Dodson [33]	Applied Research Brief: Health Promoting Community Design (to examine the association of worksite policies and environments to physical Activity).	Telephone surveys – Questionnaire about physical activity behaviors and worksite policies supporting physical activity	"This study highlights the importance of supplementing health promotion information in workplaces with policies and environmental interventions. Particular consideration should be given to accessible stairways for onsite exercise and provision of exercise facilities and equipment".
29	Seaverson [34]	Quantitative Research: Financial Analysis (to examine the impact of financial incentives, communications strategy, and worksite culture on health risk assessment participation rates).	Standard client report, semistructured interviews with account managers.	"This study suggests that incentive value, incentive type, supportive worksite culture, and comprehensive communications strategy may all play a role in increasing HRA participation".
30	Rodbard [35]	Quantitative Research: Financial Analysis (to evaluate work absence, work productivity, and disruption of work, social, and family life among individuals of varying body mass index with or at risk for diabetes mellitus).	Questionnaire (General Health version 2.0, Sbeehan Disability Scale).	"The greatest impairment of work and daily activities was evident among obese individuals for all groups".
31	Pai [36]	Quantitative Research: Financial Analysis (to assess the association of taking incidental sickness absence with health risks and health status).	Questionnaire (The Health Risk Appraisal -HRA)	"Sickness absence is an important productivity concern of employers. Employers may implement early interventions to focus on preventable cause".
32	Schwartz [37]	Health Promoting Community Design (to examine associations of the built environment surrounding worksites and of work policies with walking behaviors).	Interviewers about worksite environment, work neighborhood, travel patterns, and policies related to physical activity.	"Locating worksites in walkable environments and implementing worksite policies may favorably influence employee walking".

DISCUSSION

The merit of this research is related to analysis and systematization of papers which published details of studies conducted in workplace. About the analysis of the types of approaches and programs implemented in this review, we found that most studies used informative strategies aimed to educate workers in topics related to behavioral aspects of health maintenance. Tones & Tilford [38] refers that this type of strategy represents the preventive model of health education that seeks to bring individuals to the standards of living well established by the biomedical sciences. In other words, health education allows people gain knowledge about health, but not awareness to ensure the best psychosocial conditions in this context.

According to this line of thought, we note that the articles analyzed showed more targeted approaches to health prevention. That is, although the actions developed have been called as "health promotions

actions", they showed a strong preventive component, which reduces the concept of Health Promotion (HP). This conceptual distinction is important, because prevention is an idea associated with Occupational Health (OH), and OH is dedicated to "all aspects of health and safety in the workplace and has a strong focus on primary prevention of hazards" [39].

Hence, OH is limited OH is limited to the health sector, that relates to the notion of risk and control, while the Health Promotion encompasses broader actions that go beyond the biomedical dimensions of health, since elaborates actions aiming" to enabling people to improve the control and power increase of their health" [1]. Therefore, the intersectoral actions may be a good way to develop WHP.

By the analysis of 32 articles we found that Health Promotion (HP) has been developed in the workplace in several ways, using different resources, with no protocol or standardization of procedures. Corroborating our findings, a study of Aldana [40] related the existence of more than 500 evaluation studies of programs with varying quality and methodology, a large number of

results on secondary descriptions of programs, a variety of articles reviewing multiple studies and summarize the growth in the number of scientific studies and evaluation of programs implemented in the workplace (workplace settings).

Thus, we recognize the difficulties to plan and evaluate actions directed to WHP due to their complexity but we think there is a strong necessity of develop strategies in this context mainly because WHO considers WHP as a priority for health promotion in the XXI century.

FINAL CONSIDERATIONS

We found that WHP was exploited in various ways and the reviewed studies presented different methodological designs. We suggest that future papers present more detailed explanations about cognitive, psychosocial, environmental and organizational barriers involved in the planning and execution of WHP actions in order to enable the enhancement of interventions published by others researchers.

REFERENCES

- Ottawa Charter - [cited 2012 Sept 5]. Available from: <http://www.phac-aspc.gc.ca/ph-sp/docs/charter-chartre/pdf/charter.pdf>.
- Luxembourg declaration, - [cited 2012 Sept 5]. Available from: <http://www.nhsemployers.org/Aboutus/Publications/Documents/The%20Luxembourg%20Declaration.pdf>.
- World Health Organization (WHO). The workplace: A priority setting for health promotion - [cited 2012 Sept 5]. Available from: http://www.who.int/occupational_health/topics/workplace/en/.
- Chapman LS. Expert opinions on "Best Practices" in worksite health promotion (WHP). *Am J Health Promot.* 2004 Jul-Aug;18(6):1-6.
- Hulley SB, Cummings SR, Browner WS, Grady DG, Newman TB. *Designing Clinical Research.* Lippincott Williams & Wilkins: Philadelphia, 2007.
- Chikamoto Y, Igarashi I, Yamada R. Relationships between behavioral risk factors and dental care costs in a Japanese worksite. *Am J Health Promot.* 2005 Jan-Feb; 19(3 Suppl):230-7.
- Lynch WD, Chikamoto Y, Imai K, Lin TF, Kenkel DS, Ozminkowski RJ, Goetzel RZ. The association between health risks and medical expenditures in a Japanese corporation. *Am J Health Promot.* 2005 Jan-Feb;19(3 Suppl):238-48.
- Nishimura Y, Chikamoto Y, Arima H. Association between lifestyle-disease diagnosis or risk status and medical care costs in a Japanese corporation. *Am J Health Promot.* 2005 Jan-Feb;19(3 Suppl):249-54.
- Daly J, Licata M, Gillham K, Wiggers J. Increasing the health promotion practices of workplaces in Australia with a proactive telephone-based intervention. *Am J Health Promot.* 2005 Jan-Feb;19(3):163-6.
- Barbeau EM, Goldman R, Roelofs C, Gagne J, Harden E, Conlan K, Stoddard A, Sorensen G. A new channel for health promotion: building trade unions. *Am J Health Promot.* 2005 Mar-Apr;19(4):297-303.
- Plotnikoff RC, McCargar LJ, Wilson PM, Loucaides CA. Efficacy of an E-mail intervention for the promotion of physical activity and nutrition behavior in the workplace context. *Am J Health Promot.* 2005 Jul-Aug;19(6):422-9.
- Thompson B, Hannon PA, Bishop SK, West BE, Peterson AK, Beresford SA. Factors related to participatory employee advisory boards in small, blue-collar worksites. *Am J Health Promot.* 2005 Jul-Aug;19(6):430-7.
- Dannenberg AL, Cramer TW, Gibson CJ. Assessing the walkability of the workplace: a new audit tool. *Am J Health Promot.* 2005 Sep-Oct;20(1):39-44.
- Finkelstein E, Fiebelkorn C, Wang G. The costs of obesity among full-time employees. *Am J Health Promot.* 2005 Sep-Oct;20(1):45-51.
- Kenney BA, Holahan CJ, North RJ, Holahan CK. Depressive symptoms and cigarette smoking in American workers. *Am J Health Promot.* 2006 Jan-Feb; 20(3):179-82.
- McCalister KT, Dolbier CL, Webster JA, Mallon MW, Steinhardt MA. Hardiness and support at work as predictors of work stress and job satisfaction. *Am J Health Promot.* 2006 Jan-Feb;20(3):183-91.
- Griffin-Blake CS, DeJoy DM. Evaluation of social-cognitive versus stage-matched, self-help physical activity interventions at the workplace. *Am J Health Promot.* 2006 Jan-Feb;20(3):200-9.
- Reime B, Ratner PA, Seidenstücker S, Janssen PA, Novak P. Motives for smoking cessation are associated with stage of readiness to quit smoking and sociodemographics among German industrial employees. *Am J Health Promot.* 2006 Mar-Apr;20(4):259-66.
- Musich S, Hook D, Baaner S, Edington DW. The association of two productivity measures with health risks and medical conditions in an Australian employee population. *Am J Health Promot.* 2006 May-Jun;20(5):353-63.
- Nolan K, Mauer MP. An evaluation of a Lyme disease prevention program in a working population. *Am J Health Promot.* 2006 Jul-Aug;20(6):379-82.
- O'Connell M, Comerford BP, Wall HK, Yanchou-Njike V, Faridi Z, Katz DL. Impediment profiling for smoking cessation: application in the worksite. *Am J Health Promot.* 2006 Nov-Dec;21(2):97-100.
- Musich S, Hook D, Baaner S, Spooner M, Edington DW. The association of corporate work environment factors, health risks, and medical conditions with presenteeism among Australian employees. *Am J Health Promot.* 2006 Nov-Dec;21(2):127-36.
- Lucove JC, Huston SL, Evenson KR. Workers' perceptions about worksite policies and environments and their association with leisure-time physical activity. *Am J Health Promot.* 2007 Jan-Feb;21(3):196-200.
- Uslan K, Forster JL, Chen V. Smoking policies in small

- worksites in Minnesota. *Am J Health Promot.* 2007 May-Jun;21(5):416-21.
25. Kruger J, Yore MM, Bauer DR, Kohl HW. Selected barriers and incentives for worksite health promotion services and policies. *Am J Health Promot.* 2007 May-Jun;21(5):439-47.
 26. Plotnikoff RC, Brunet S, Courneya KS, Spence JC, Birkett NJ, Marcus B, Whiteley J. The efficacy of stage-matched and standard public health materials for promoting physical activity in the workplace: the Physical Activity Workplace Study (PAWS). *Am J Health Promot.* 2007 Jul-Aug;21(6):501-9.
 27. Linnan L, Weiner B, Graham A, Emmons K. Manager beliefs regarding worksite health promotion: findings from the Working Healthy Project 2. *Am J Health Promot.* 2007 Jul-Aug;21(6):521-8.
 28. Eisenberg M, Lopez D, Lee HR. Tobacco policy regression in Arizona worksites. *Am J Health Promot.* 2007 Sep-Oct;22(1):22-4.
 29. Hunt MK, Stoddard AM, Kaphingst KA, Sorensen G. Characteristics of participants in a cancer prevention intervention designed for multiethnic workers in small manufacturing worksites. *Am J Health Promot.* 2007 Sep-Oct;22(1):33-7.
 30. Mills PR, Kessler RC, Cooper J, Sullivan S. Impact of a health promotion program on employee health risks and work productivity. *Am J Health Promot.* 2007 Sep-Oct;22(1):45-53.
 31. Fisher BD, Golaszewski T. Heart check lite: modifications to an established worksite heart health assessment. *Am J Health Promot.* 2008 Jan-Feb;22(3):208-12.
 32. Della LJ, DeJoy DM, Goetzel RZ, Ozminkowski RJ, Wilson MG. Assessing management support for worksite health promotion: psychometric analysis of the leading by example (LBE) instrument. *Am J Health Promot.* 2008 May-Jun;22(5):359-67.
 33. Dodson EA, Lovegreen SL, Elliott MB, Haire-Joshu D, Brownson RC. Worksite policies and environments supporting physical activity in midwestern communities. *Am J Health Promot.* 2008 Sep-Oct;23(1):51-5.
 34. Seaverson EL, Grossmeier J, Miller TM, Anderson DR. The role of incentive design, incentive value, communications strategy, and worksite culture on health risk assessment participation. *Am J Health Promot.* 2009 May-Jun;23(5):343-52.
 35. Rodbard HW, Fox KM, Grandy S; Shield Study Group. Impact of obesity on work productivity and role disability in individuals with and at risk for diabetes mellitus. *Am J Health Promot.* 2009 May-Jun;23(5):353-60.
 36. Pai CW, Mullin J, Payne GM, Love J, O'Connell G, Edington DW. Factors associated with incidental sickness absence among employees in one health care system. *Am J Health Promot.* 2009 Sep-Oct;24(1):37-48.
 37. Schwartz MA, Aytur SA, Evenson KR, Rodríguez DA. Are perceptions about worksite neighborhoods and policies associated with walking? *Am J Health Promot.* 2009 Nov-Dec;24(2):146-51.
 38. Tones K, Tilford S. Health promotion. Effectiveness, efficiency and equity. 3rd ed. Nelson Thornes, UK. 2001.
 39. World Health Organization - WHO. Occupational health. Disponível em: http://www.who.int/topics/occupational_health/en/. Data do acesso: 05. Set. 2012.
 40. Aldana S. Financial impact of health promotion programs: a comprehensive review of the literature. *Am J Health Promot.* 2001;15:296-320.

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