

Community-University Research Partnerships for Workers' and Environmental Health in Campinas Brazil

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Abstract

Three partnerships between the University of Campinas, community, and public health care services are discussed in this article. A theoretical framework underpins the critical reviews of their accomplishments following criteria proposed by scholars of community-university partnerships and community-based participatory research. The article concludes that despite the significant achievements, there still remain important barriers for their development due to performance criteria that do not value research that partner with communities, health care services, or labor unions.

The background for the Brazilian Community-University Partnerships derives from the establishment of the Brazilian Unified Health System (SUS), which was founded on the principles of universality, equity, integration, and social participation (BRASIL 1988a, 1988b; Carvalho 2004). The concept of health adopted in the system evolved from the perspective that access to health services is a civil right and that it is the duty of the State to establish a relationship between production, society, environment, and health through Health Promotion (WHO 1978; Lalonde 1981; WHO 1986).

Incorporated into the SUS is the National Workers' Health Policy (2004), which affirms the worker's right to safe and healthy work conditions regardless of the character and nature of the work or the existence of formal work contracts. The old approach to workers health was to let solely to the private health services to take care of the workplaces but the national standards after 2004 recognized that general standards should be enforced by the state to ensure safe and health workplaces (WHO 1994; European Union 1997). The notion of workers' health has been proposed in Brazil to ensure worker participation in designing and controlling the work environment and environmental policies aimed at sustainable production (Pimenta and Capistrano-Filho 1988; Oddone et al. 1986; Wooding and Levenstein 1999).

The Brazilian Ministry of Health issued in 1996 the Operational Norm for Workers' Health, in which the basic premise of Article 1 reads "... universality and equity, in which all workers, urban and rural, with or without formal work ties, employed, unemployed, or retired, workers in public or private businesses, should have guaranteed access to all levels of health services." In 2003 the Brazilian government launched the National Network of Workers' Health Care Services (Rede Nacional de

Atenção à Saúde do Trabalhador – RENAST) to offer specialized secondary care and promote workers' health through Regional Worker Health Centers (CERESTs) responsible for regions that included various municipalities (BRASIL 2003, 2004). The CERESTs were created in approximately 150 metropolitan areas in the country during the period 2003–2006 (BRASIL 1988a, 1988b).

Since 2003, the RENAST has needed the support of the SUS network of health centers to provide primary health care, local resolution of health problems, and appropriate referrals of patients in need of specialized worker health care. There has been political and managerial tension throughout the country regarding how to incorporate the obligation to provide health care for workers, because it imposes a need for action on the worksite as well as the general environment. Thus, community-based participatory research (CBPR) focused on worker health issues can generate new realities and create pressure from popular leaders to speed up the process of integrating workers' health into the public health system.

Praxis for Freedom and Empowerment

This article is based on Freire's theory of popular education as a praxis for freedom and the Brazilian concept of collective health, which include population empowerment and provide guidelines for a reciprocal educational process between local communities and health professionals (Freire 1970; WHO 1986). This pedagogical process presumes the search for key conceptual or trigger words that are elicited in regular workshops and meetings with communities. These trigger words embody local, socially constructed meanings and needs identified by the community, which are then discussed in these meetings to design common concepts and propose social interventions. The words may be used to teach basic reading skills as well create popular awareness of local health priorities. A good way to use the trigger words is to play games that facilitate adult learning and participatory education; these activities became a common strategy to empower local communities and allow for consensus-building with health professionals and university researchers (WHO 1986; Pavan and Fonseca 2003). Next, the theoretical framework is analyzed based in operational aspects of health services research involving partnerships between universities, the community, and governmental agencies (Farrant et al. 2001; Silka 2001; Silka et al. 2008). We conclude by evaluating these partnerships with respect to their accomplishments, challenges, and failures (Ross and Downs 2006).

A Balanced Approach to Teaching, Research, and Service

The Brazilian Constitution requires that all universities engage in research, education, and service to the community (Brasil 1988a, 1988b). The University of Campinas (UNICAMP) has engaged in community-university partnerships to promote workers' access to public health services, to conduct workplace and environmental exposure assessment research, and to share knowledge with workers, community, professionals, faculty, and students.

Despite this government directive, it is easier to find research projects focusing on the interests of private companies rather than public and private research that target the

needs of workers and the general population. Funding constraints do not motivate faculty to respond to workers' demands by encouraging students and colleagues to conduct community-based research projects.

To address the intent of this directive, we successfully created research groups during the period 2001–2008 involving faculty, graduate, and undergraduate students. Three research projects were designed to listen to workers and record their points of view regarding hazardous workplace exposures. To obtain the collaboration of health care leaders, we supported the expansion of health care services and infrastructure, in an attempt to address their demands and strengthen relationships between health care professionals and research teams.

After initial agreements, we developed projects to study chemical workers' work environment exposures, informal community workers, and workers in a wholesale food market. The three projects aimed at improving the integration of health care services, community, and university.

Labor – University Partnership

The Unified Chemical Workers Union of Campinas sponsored the Association of Workers Exposed to Chemical Hazards (ATESQ), which was formed following a major workplace and environmental crisis caused by worker and community exposures to hazardous pesticides in the SHELL-CYANAMID-BASF plant located in Paulínia, in the state of São Paulo (1977–2002) (Químicos Unificados 2008; Rezende 2005). Employees and local union officers worked together to seek health care for employees chronically exposed to pesticides manufactured in the facility. Epidemiologists, physicians, union leaders, and former chemical workers built a partnership to support plaintiffs in criminal and civil lawsuits against these transnational companies, and to request public funds for delivery of health care and support for the needs of the retirees and unemployed (Rezende 2005).

The information that public and private actors had in their possession, but failed to make public or use to inform preventive actions, was called the “map of disinformation.” A survey carried out by the ATESQ estimated that 844 workers had worked in the facility owned sequentially by the corporations SHELL/CYANAMID/BASF between 1977 and 2002, remaining on the job for an average of 8.5 years. It became an objective of the ATESQ to obtain valid health assessments with follow-up and appropriate treatment when needed. In an effort to document and produce information that better characterized their exposure and contamination, ex-workers sought help from the SUS, UNICAMP, Federal and State Attorneys' Offices, and the Ministry of Labor and Employment to construct knowledge and enable monitoring of workers' health (Comissao de Ex-trabalhadores da SHELL 2001).

The university created obstacles by engaging in a semantic discussion about the evidence (or lack thereof) of “contamination by” or “exposure to” toxic substances, using models that were inappropriate for chronic and latent effects to occupational and

environmental exposure (Dovers 2002; Lax 2000; Levins 2003). Academic institutions also demanded autonomy to decide who would carry out the monitoring and/or research, and considered allegations by the union regarding occasional conflicts of interest among professors to be offensive. However, these obstacles did not impede university researchers from providing technical assistance to defend the company in court against the population, the union, and ATESQ (Químicos Unificados 2008).

ATESQ sought help from SUS at the federal and state levels and the municipal governments of Paulínia and Campinas . It also sought to constitute groups to call ex-coworkers for periodic health examinations in an effort to monitor the clinical evolution of the exposed group. Members of ATESQ noted that health care and monitoring agencies at all governmental levels failed to provide resources, refusing to consider or follow-up on the workers' health concerns and complaints (Comissao de Ex-trabalhadores da SHELL 2001).

The TRAPP Partnership: An Alternative Community-Based Surveillance Approach to Precarious and Dangerous Work

UNICAMP researchers wanted to improve the monitoring of workers' health by strengthening occupational health surveillance activities in informal work environments to control occupational risks as determinants of the health-disease process, and to increase awareness of the relations between precarious, informal work, and health (Cordeiro et al. 2005; Sato 1996; Silva et al. 2005; Teixeira 2002). A pilot research project on community-based participatory methods was conducted to monitor work-related injuries in the precarious informal sector. The project was called the "TRAPP project" (Trabalho Informal, Precário ou Perigoso: Abordagem de Ação Coletiva em Serviços de Saúde no SUS – Informal, Precarious or Dangerous Work: Collective Action Approach in Health Services in the Brazilian Unified Health System). This CBPR project was carried out in the city of Campinas, located in upstate São Paulo (Corrêa-Filho et al. 2003).

The study area in the period 2004–2005 included a region served by the Industrial District Health Center Number Three (IDHC-III), located in the southeast district of the county, which was divided into five districts. The IDHC-III was one of the forty-six health centers (HCs) that composed the Campinas health network in 2004. The IDHC-III was responsible for providing health services to one of the city's largest populations, in an area that included 20 neighborhoods and an estimated total population of 37,000 inhabitants.

The surveillance and interview forms were elaborated through participatory community meetings with twenty-six community health workers (CHWs) for about a year and a half. The total group was composed of CHWs, three university faculty members, two graduate students, and two sanitation technicians. This participatory

action research group was named the TRAPP Group. The group discussed concepts related to informal work and work safety that were also used to build a game that could be used by the community later. Data to be collected and collection methods were decided in these weekly meetings. The final results of this group work included the development of interview forms, the methodology of the research, and the “Knowledge” game, which is explained later in this article (Pavan and Fonseca 2003).

The CHWs asked to conduct approximately thirty additional hours of nightly meetings and institutional networking with churches and associations to explain their intentions and the objectives of the weekly pedagogical meetings for planning the research on work accidents after their collective decision-making.

Other health organizations were also involved in the network, including teaching and religious organizations, nongovernmental organizations (NGOs), community leaders, and education, labor, and environment inspectors. A group of health professionals from the Management Group of the Primary Health Care Center and a group of grassroots leaders who were members of the Local Health Advisory Board also participated in several additional network meetings.

Data was collected through prospective, ongoing direct observation by CHWs during weekly neighborhood walk-throughs. Groups or individuals working alone in informal and precarious jobs in the neighborhoods served by the participating health centers were identified and work accidents with injuries were recorded by sex, age, and hours worked per week.

One of the objectives of the additional community meetings was to discuss concepts related to precarious or dangerous work using techniques based on the educational approach of Paulo Freire, wherein trigger words were used to substitute numbers on a bingo card (Freire 1967). The group discussions led to an exchange of knowledge based on concepts elaborated by the CHWs with contributions from researchers. As a result of this very rich interaction, the first Portuguese-language edition of a popular health and safety education game was produced, called the “Knowledge Game” (Pavan and Fonseca 2003). The group created the game with the intention of providing a local instrument for community organizing, whereby community members would discuss and learn about work and health conditions and health promotion in work environments. It could also be used in community celebrations, schools, theater, and local meetings.

The CEASA Partnership: Public Policies in a Wholesale Food Market (CEASA)

We conducted a project on workers’ health promotion and disease and accident prevention from 2003 to 2008, funded by a public policy research grant from the State of São Paulo Research Foundation — FAPESP. It was developed through a partnership

among researchers, public sector managers, the Finnish Institute of Occupational Health, the University of Massachusetts (UMass) Lowell, and wholesale food market workers.

The main goal of this project was to develop analytical skills and mechanisms to implement public workers' health policies in public health care services, especially at primary health care centers. Another aim was to diagnose health conditions, work organization and work ability of workers and business owners in the wholesale fruits, vegetables, and flower market. The market catchment area included the Campinas metropolitan region, with five million residents in nineteen counties and one million in Campinas. This cross-sectional study included interviews with 1,006 workers.

CEASA's wholesale trade involves micro, small, and medium-sized enterprises. There are companies with two workers that sell in a small area shared with another twenty enterprises and use a small truck to transport food and other supplies, as well as larger enterprises in large enclosed areas with forty or more employees driving up to ten delivery trucks.

The market is government property of a public enterprise, and both the county and the CEASA administrations had to be convinced to allow a research project in the facility and to share administrative and budgetary data during a period of almost six years.

A local labor union was contacted, but it dismissed the existence of any health problems in the workforce. If any hazard could be found, workers were to blame. Despite the union leadership position, labor leaders agreed on participating as discussants.

Business owners were organized in a union representing about one thousand small, micro and medium-sized enterprises in the CEASA wholesale market. They supported our research initiatives and collaborated in data collection. We evaluated the successes and failures of this partnership.

The international partnership between UNICAMP and UMASS Lowell researchers focused on evaluating the feasibility of preventing back pain among informal workers (Monteiro et al. 2009). This project followed a previous local partnership experience of eight years that resulted in providing health care to workers, involving the health center, CEASA managers, and the community. Interviews and participatory observations were conducted in walk-throughs during day and night shifts. Students who were research assistants usually initiated interviews at dawn after 6 a.m. under senior researcher supervision. Interviews during the night shifts were conducted only by senior researchers. Subcontractors for security, cleaning, and repair services were also included in the investigation. A summary of each community-based research partnership is presented in Table 1.

Table 1: Workers' Health Inclusion in Public Health Services in Campinas: Location, Infrastructure, and Related Outcomes (Minkler et al. 2008).

PROJECTS:			
	TRAPP	Chemical Workers' Labor Union	Wholesale Vegetable, Fruit, and Flower Market
Research aim	To monitor informal and precarious workers' health to control and to reduce work-related injuries	To chart epidemiological information on workers' pesticide exposures	Diagnose the health conditions, needs, and environmental conditions of workers and farm workers. Evaluate workers' ability to work based on information regarding their musculo-skeletal composition, nutrition, stress, and aspects related to the work of teenagers and adults. Evaluate aspects related to health promotion, accident prevention on the job, and health problems associated with lower back pain.
Grant	Brazilian Ministry of Health UMASS Lowell	–	FAPESP Public Policy Research Project UMASS Lowell
Research methods	Longitudinal study	Workers' Group Semi-structured interviews	Epidemiological cross-sectional study Questionnaires Participatory observation Photos of different sectors of market
Policy/ educational approach	Support workers' representation on the Local Health Council (Health Center)	Share the experience of organizing the workers in graduate courses, specialized study courses, and in master theses and doctoral dissertation defenses	Share knowledge between workers and researchers. Share the experience gained from the project in graduate courses and specialized study courses. Undergraduate and graduate students gain first-hand experience in the work site.
Policy outcomes	Social learning Increased worker awareness Increased worker health commitment	Use of doctoral research data to inform the workers' legal case against corporations Increased visibility of organized workers in the academic environment Increased worker awareness	Broader actions and increased activities of ambulatory care. Professional trainings – specialization. Sharing of knowledge with workers. Increased worker awareness

Cross-Comparison of Partnerships

According to criteria from Minkler et al., the dimensions of community and partnership capacity relevant to the TRAPP, chemical workers, and CEASA partnership projects are

- **Leadership:** Community and union leaders were informed about environmental problems and those related to work.
- **Participation:** While the organized participation of the workers was permanent and ongoing with the chemical workers, it was transitory in the TRAPP project, and in the case of the CEASA project, it was timid but showed promise for development.
- **Skills:** In general, improvement was observed in the capacity to seek information about how to prevent diseases caused by on-the-job exposure to ergonomic risks and toxic and chemical products.
- **Resources:** The health care services associated with the projects received some additional resources that enabled important improvements in infrastructure. The effects were immediate but may not last in the absence of additional funding.
- **Social and organizational networks:** It was possible to improve relationships between professors, service organizations, unions, and community leaders. These are long-term benefits that may continue depending on new study and research agreements.
- **Sense of community and of partnership identity:** The academic community assimilated popular and union cultural values. Workers acquired a greater command of scientific concepts and their potential and limits for health promotion.
- **Understanding of community/partnership history:** Health care professionals acquired greater understanding of the relations between health care services and the university. Prior participation of faculty researchers in local health services helped to consolidate the partnerships due to well established connections.
- **Community/partnership power:** A common vision regarding environmental and worker health problems was constructed through sharing common views from different partners in the projects.
- **Shared Values:** The research team and their partners shared common values concerning workplace health promotion, work environment protection, sustainable production, and their relationships with social justice.
- **Critical Reflection:** the analysis of successes and failures is presented in Table 2.

Later we analyze each project to better distinguish its successes.

With respect to the TRAPP project, successes outnumbered failures as far as the level of community participation achieved. Direct participation of workers in local councils unfolded, giving them power to defend their own health. They continue to work in unsafe and unhealthy working conditions, exposed to contaminated water and waste with potential biological contamination. Due to the end of the project and federal funding, it was not possible to implement alternatives to change current work organization, such as the creation of cooperatives. Health professionals, especially the CHWs, felt that there was conflict between investing in internal priorities related to the structure of the health care centers, equipment, and human resources, and competing

investments in external activities related to occupational health surveillance and collection of epidemiological and environmental information.

The workplace and environmental crises due to workplace exposures to hazardous pesticides and our joint activities with the Chemical Workers Labor Union teach another set of lessons. Situations in which precautionary measures could have been adopted in the past were documented in their historical context, revealing details of how the chemical industry implemented the production of very hazardous agricultural pesticides (Breilh 1999; Tickner, Kriebel, and Wright 2003). Theoretical frameworks shared with ATESQ to allow workers to analyze the role of corporations, governments, the university, and all powerful actors opposed to workers' rights included Critical Epidemiology, the Precautionary Principle, and Right to Know (Breilk 2003; Bass 2001; Tickner, Kriebel, and Wright 2003).

The partnership found evidence that the powerful multinational corporations SHELL/CYANAMID/BASF rejected the adoption of preventive right to know practices, transmitting instead a false sense of security to chemical workers and facility neighbors (Bass 2001).

The response of public institutions was much delayed. The university failed to mobilize resources to produce information on the health of exposed workers, whether for purposes of medical evaluation, diagnosis, and treatment of the workers, or to carry out epidemiological studies (Comissao de Ex-trabalhadores da SHELL 2001). Workers' statements indicate that they met with health care providers who refused to recognize the existence of work-related diseases.

The disagreement between their own perceptions and symptoms and toxicological reports that denied any relationship with exposure to bio-persistent toxic substances was described as deceptive (Comissao de Ex-trabalhadores da SHELL 2001). The hegemonic use of scientific doubt and uncertainty was used to support conservative arguments about the benefits of hazardous production processes and practices and as an element to undermine the struggle for workers' health and safety (Dovers 2002; Lax 2000; Levins 2003). Union members and leaders learned that the ideology of safe use of toxic substances and controlled risk find strong support within the Academy. Renowned researchers defended the view contrary to the one espoused by chemical workers, proposing "safe" management of chemical risks as opposed to precautionary measures (Oliveira and Xavier 2004). The effort to inform is often overcome by measures that impede the democratic dissemination of information on the health of workers and the population and the environmental effects of hazardous production (John 2005; Pessanha and Menezes 1985).

The workers' experience to address the crises made it possible to unveil key aspects of a well-articulated policy of disinformation and health and safety negligence in the most industrially-developed state in Brazil. Lack of participation of the general public, workers and their labor unions in production decisions, and lack of access to

information were missing elements that prevented precautionary actions outlined in the Precautionary Principle (Kriebel and Tickner 2001; Tickner, Kriebel, and Wright 2003).

The most important aspect of the CEASA project was the formation of partnerships sharing a common vision about improving work conditions in such a large wholesale market, where there are more than one thousand enterprises of different sizes, as well as a wide variety of business owners, workers, and configurations of job tasks and hazardous exposures. These shared values made possible activities linked to important needs and goals identified by CEASA managers and workers. The Research team spent a great amount of time in the workplace during week days trying to understand the observed events and the social relationships involved in wholesale market operations. Guiding this field practice was the concept that it was more or as important to understand the social context of the observations rather than only record facts and practices observed.

Another theoretical framework for assessing the partnerships, based on Ross and Downs (2006), is presented in Table 2.

Table 2. Successes and Failures to Promote Social Justice through Workers' Health Inclusion in Public Health Services

Project	Success	Failures
TRAPP		
1. Invest in social learning	Research subjects and data collection forms were built collectively with community health workers (CHWs).	Learning gains were restricted to the primary health care services level.
2. Build a partnership	Health care professionals worked together with informal workers and grassroots leaders.	Epidemiological surveillance is still viewed as not trustworthy by the community and informal workers.
3. Monitor and mitigate disruptive forces	Community distrust in the health care services was minimized and preventive measures were offered.	Difficulties in maintaining preventive measures.
4. Rules of engagement roles and responsibilities of partners	Responsibilities were defined among health professionals, local leaders, informal workers, and university researchers.	CHWs could not continue to conduct workers' health surveillance
5. Collective construction of the knowledge base	Construction of a list of terms and their meaning regarding health, law, work, and environment for the CHWs and informal workers.	The "knowledge" game was not used after the project ended.

6. Allow stakeholders to define the progress and success	Priorities were set by the community.	Informal workers did not demand health promotion actions after the project ended.
7. Decision making is transparent. There is agreement about priority problems Viable alternative solutions.	Informal workers, grassroots leaders, and CHWs adjusted the priorities periodically.	Informal workers stopped their participation at the end of the project.
8. Identify strategic solutions	Use of protective equipment and vaccination were set as collective priorities.	The strategic solutions were effective in the short-term.
9. Delineate the capacity-building benefits	CHWs learned to recognize workplace and environmental hazards in the local informal job market.	CHW turnover prevented them from sharing the learned experiences.
10. Dissemination of results	CHWs and health professionals had access to the project results and papers.	It was difficult to inform and share the results with the community and informal workers.
Chemical Workers' Local Union		
1. Invest in social learning	To share knowledge and continuing education between workers, researchers, and community.	The Union leaders were not able to involve the residents' popular organization.
2. Build a partnership	To stimulate the construction of a social network — Campinas Local Union with Labor Unions of other countries	Difficulties to fund the workers' actions to build partnerships.
3. Monitor and mitigate disruptive forces	Support to Union struggle against chemical exposures in the workplace and provision of medical follow-up for workers and their families	Neither the University nor the Health Services gave support to the workers' struggle.
4. Rules of engagement, roles and responsibilities of partners	Local union and workers' association deliberated on which university researchers would be invited.	The workers were unable to convince the university to respect the conflict of interests involved in the case.
5. Collective construction of the knowledge base	To share knowledge with civil society in relation to workers' exposure, environmental pollution, environmental justice and workers' health	Despite workers' successful reconstruction of the cohort, the process took eight years and is still underway.

6. Allow stakeholders to define the progress and success	Building of public partnership among Health Center, workers and University researchers. The Union leaders learned how to count on institutional and public partnerships and how to evaluate their limits.	The Union leaders and ex-workers are still working alone without support from big Union Federations in the country.
7. Decision making is transparent There is agreement about priority problems and viable alternative solutions	The Union leaders and ex-workers are clear that access to health care services is their first priority.	Difficulties to ascertain long- term exposure effects and environmental impact on population's health
8. Identify strategic solutions	Demand for Health Services was the first issue in law suits.	Lawsuits take a long time and need for chronic exposure evaluation is not covered.
9. Delineate the capacity-building benefits	Worker leaders are able to understand and write epidemiological rates on their own.	Older leaders may not be replaceable.
10. Dissemination of results	To spread scientific knowledge about environmental issues among workers, students, researchers and society at large.	To publish results in scientific literature and public media requires much effort and is time consuming
Wholesale Vegetable, Fruit and Flower Market		
1. Invest in social learning	To share knowledge between workers, researchers, and community.	Difficulties in relation to continuing education for health promotion due to the work process.
2. Build a partnership	To improve actions of public partnerships – CEASA's management and Health Center coordination.	The political and institutional ties are fragile.
3. Monitor and mitigate disruptive forces	During the project it was possible to share common need for workers' health promotion among employers, employees, and CEASA managers.	Difficult to share a new approach to change work organization of marker porters because of São Paulo Porters' Union orientation

<p>4. Rules of engagement roles and responsibilities of partners</p>	<p>To share the responsibility for applying the main results of the research project by public partners.</p> <p>Written public commitment to support the project — CEASA, health care services and UNICAMP.</p>	<p>Commitment after the end of the project was not granted.</p>
<p>5. Collective construction of the knowledge base</p>	<p>To diagnose the workers' profile and the main problems regarding worker health, work organization, risks at work, work exposures — including chemical exposures, shift work, and life beyond work.</p>	<p>Difficulties related to disseminating research lessons to civil society, magazines and newspapers to develop public awareness.</p>
<p>6. Allow stakeholders to define the progress and success</p>	<p>Building of public partnership (CEASA Management, Health Care Center and University researchers)</p> <p>The Health Care Center manager learned how to count on institutional and public partnerships.</p>	<p>Workers did not have means to develop their health promotion activities through their union and the micro, small and medium enterprises.</p>
<p>7. Decision making is transparent There is agreement about priority problems and viable alternative solutions</p>	<p>Maintenance of the partnership in relation to decisions about workers' health and work processes during the period of the Project, 2003–2008.</p>	<p>Decisions related to workers' health and work processes may not continue in the companies and services, due in part to lack of social control.</p>
<p>8. Identify strategic solutions</p>	<p>To give support to new workers because approximately 20% of young workers have begun their work life in this workplace. It is necessary to protect young people when they start their work life.</p> <p>To create employers' awareness about the importance of food intake before and during the work day.</p> <p>To introduce breaks during the work day.</p> <p>To disseminate information about sleep and nap issues concerned to early wake up and long hours of work among workers.</p>	<p>It is necessary to modify the work process and it was not possible to do it within the limitations of this project.</p>

9. Delineate the capacity-building benefits	Health Care Center coordinator became a protagonist of the process.	Union leaders and CEASA enterprises managers did not fully engage in the health promotion activities proposed.
10. Dissemination of results	Among students – high school project, undergraduate, specialization and graduates students learned and participated in the project.	Dissemination of public policy results is difficult in scientific journals.

Discussion

Based on the Community Based Participatory Research framework, we believe that the gains in learning and social development processes were equally shared by investigators and participants (Minkler et al. 2008). Researchers positively benefited from learning about the power and the limitations of developing community learning as outlined by Freire (1967, 1970).

Reactions of workers to the learning processes were different in the case of IDHC-III and Chemical Workers Union from the workers at CEASA. While CEASA labor union officers blamed its members for workplace injuries, the IDHC-III incorporated concerns with workplace accidents and environmental issues in the local participatory democracy processes in the SUS. The Chemical Workers local even influenced UNICAMP administration by pressuring it to make public announcements of the conflicts of interest pertaining to workers' health research. Though it is not possible to objectively measure the institutional impact on changes in academic assumptions about the value of community research, the effects of these partnerships may change the university views and academic criteria in the long run. These conflicts were predicted by Freire when he commented that even oppressed people may be afraid of changes and may not always feel good about moving towards new forms of thinking and acting (Freire 1967, 1970).

Health professionals working at the public health care services also got new inputs from the discussions about the conceptual advances and limits on health promotion (Lalonde 1981; WHO 1978, 1986). They were especially surprised to know that there was international public recognition of Brazilian new concepts about workers' direct control over public policies that address their health (WHO 1994, 2006).

Chemical workers called researchers' attention to the need to create an adequate conceptual learning framework for new physicians, nurses, and students in other health professions. They proposed that college students in health professions be required to spend time in labor unions' facilities and workplaces, and that attempts be made to correct the biases introduced in the learning processes by academic conflicts of interest. A major challenge to implementing this strategy will be to provide students

with scholarships and grants to carry out this type of work, and to work with them to improve their skills as educators (Freire 1970).

Despite our positive assessment of progresses in community-university partnerships in Campinas, the intra-mural academic view of the university does not fully support this type of research, because its results usually do not achieve international recognition in high-profile scientific journals, mostly published in developed countries.

Conclusion

The partnership between public health care services and the university represents a stimulus to continuing education for students, researchers, and health professionals. After the projects discussed above ended, new efforts to maintain the partnerships were developed, reinforced by an initiative of CEREST to offer short-term courses for health care center employees on workers' health, empowerment theory, and health promotion.

An important characteristic of new health programs at UNICAMP is interdisciplinary education in workers' health, aimed at broadening the perspective of new health professionals and encouraging them to take up new roles in partnership with the university, workers, and community leaders. There is also concern about training new generations of university researchers, who should also be equally prepared. Furthermore, easy access to university resources should be provided, either through academic or extension services. Labor leaders and the community should be informed of special courses and programs that may support participatory educational approaches, whereby it would be possible to bring workers' knowledge to faculty and students and promote the reciprocal process of learning (Freire 1967, 1970).

Establishing community-university partnerships may be considered innovative and important due to particular aspects of community consultations to decide on research priorities before starting new projects. This research agenda-setting practice allows knowledge to be shared with workers and communities first.

The basic tenets of CBPR state that it is essential to understand the historical context, the power relationships among stakeholders, as well as share common values and ideological views on the main issues to be addressed (Oddone et al. 1986). The three projects described in this article point to cultural and organizational barriers to partnerships that are present not only inside universities but also in health care services and community organizations as well as labor unions. On the one hand, it is still difficult to find long-term funding for community-based participatory research. On the other, the evaluation of academic performance still overemphasize publishing study findings in well known scientific journals, which usually do not accept, understand, or value this type of research (Ross and Downs 2006).

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