

Maquila Workers' Health: Basic Issues, What is Known, and a Pilot Study in Nicaragua

Lylliam López N. MPH^a, Luis Blanco R. MS^b, Aurora Aragón B. PhD^c and Timo Partanen PhD^d

Abstract

Occupational health issues identified in maquilas include respiratory, musculoskeletal, psychological problems, and accidents. This study identifies the basic health issues, as well as the sources and investigational methods needed for drafting health standards for maquilas. It sets out conceptual guidelines, suggesting general methodological strategies appropriate for studies of workers' health and its determinants in the maquiladora sector. The conceptual-methodological model is based on 1) a review of relevant studies, 2) a mixed methods pilot feasibility study within the community of workers and social actors of a textile maquila in Nicaragua, and 3) the conceptual-methodological integration of a literature review with the results of the pilot study.

The main issues identified are the organization of work, health, governmental regulation, family and gender, infrastructure and environment. Methodological recommendations focus on the

principle of triangulation; the use of anonymous questionnaires and focus groups to examine specific issues; individual interviews with management personnel and members of the community; and the value of family members as key informers on the impact on family, environment and community. Observation of actual work procedures is ideal but not always possible. A joint health and safety committee and a health services unit would be key instruments in the prevention of accidents and illness and in health promotion and care.

Key words: maquila, database, methodology, issues, standards, health

Introduction

Globalization has brought with it a growth in transnational companies who have installed maquiladora factories in the underdeveloped countries in Asia, Africa and Latin America. These companies take advantage of better conditions for production such as sufficient raw material, cheap labor, and attractive tax and customs incentives offered by governments hoping to attract investment. In Central America, maquiladora industries were first set up in the 70s and grew very rapidly in the 80s. Since then there has been continued growth of these industries¹.

By 1996 there were around 250,000 people working in maquilas in Central America, representing some 25-30% of the workforce employed in industry. By then, in Guatemala, Honduras, El Salvador and Costa Rica maquilas

a Lylliam López N. MPH, Centro de Investigación en Salud, Trabajo y Ambiente. Facultad de Ciencias Médicas, Universidad Nacional Autónoma de Nicaragua-León.

b Luis Blanco R. MSc, Centro de Investigación en Salud, Trabajo y Ambiente. Facultad de Ciencias Médicas, Universidad Nacional Autónoma de Nicaragua-León.

c Aurora Aragón B. PhD, Centro de Investigación en Salud, Trabajo y Ambiente. Facultad de Ciencias Médicas, Universidad Nacional Autónoma de Nicaragua-León.

d Timo Partanen PhD Instituto Regional de Estudios en Sustancias Tóxicas, Universidad Nacional, Heredia, Costa Rica

had created 170,000, 61,000, 50,000 and 49,000 jobs, respectively¹. In Nicaragua maquila growth began a little later, but by 2001 these companies were employing 40,000 workers². Production in these maquilas is centered mainly on textiles (clothing) and electronics¹, with capital mainly from Korea, the United States, Taiwan and Nicaragua^{3,4}.

According to the International Labor Organization (ILO), women make up 75-90% of the workforce in maquilas. In Mexico, for example, by 1998 50-60% of workers were women between the ages of 17 and 25⁵. In Nicaragua 73% of workers are women and, of these, 60% are 21-30 years of age and 23% are 18-20 years old. The majority are single mothers, heads of households and family breadwinners⁶. Most women maquila workers in Mexico have not been educated beyond primary school; jobs in the maquiladoras do not require a high level of schooling³. In contrast, in Nicaragua 37% have attended high school and/or vocational training and around 19% are university-educated⁵.

Salaries in Central American maquilas are so low that they are inadequate to cover the cost of the basic family needs⁷. Sometimes workers supplement earnings with productivity bonuses. In Nicaragua, the minimum monthly salary varies across different sectors of the economy. Approximate figures are \$40 in the agricultural sector, \$94 in construction and \$67 in the maquila sector (\$2.23 per day and \$0.28 per hour); this salary does not even cover half the cost of the basic family needs⁷.

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Objective

The purpose of this communication is to set out conceptual guidelines and a general recommendation on methodological strategies to adopt in studies of workers' health and its determinants in the maquiladora sector. The

conceptual-methodological construct is based on 1) a literature review; 2) a pilot feasibility study of data-gathering methods undertaken in Nicaragua; and 3) the conceptual-methodological integration of the literature review with the results of the pilot study. The results of this study are intended to help improve working conditions in the maquila sector and to establish principles of health promotion for maquila workers, including the creation of standards specifically for maquilas.

Methods

1. Literature Review

Relevant studies and data were identified using the ILO, PAHO and Entrez-PubMed databases and by searching local sources in Nicaragua, including existing governmental standards. The review was of the conventional, qualitative type.

2. Pilot feasibility study

The study was carried out in a textile maquila in Managua established in 1991, one of the first created with US capital. Production is approximately 60,000 items per week and there are some 600 employees, including management. To gather the necessary data, 9 individual and 5 group interviews were conducted with key informants and a total of 30 questionnaires were completed. Individual interviews were held with the manager, the company's occupational health physician, a trade union member, representatives from the Ministries of Health, Work, and Education and Culture, and a physician from the maquila workers' community. Group interviews were conducted with maquila workers, former workers, and workers' families. Questionnaires were completed by workers (10), supervisors (5), joint committee members (4), members of Human Resources (1) and workers' relatives (10). It was not possible to directly observe production procedures due to lack of access to the production process. Questionnaires were distributed to workers with support from representatives of the Maria Elena Cuadra Movement of Working and Unemployed Women.

3. Conceptual-methodological integration

Integration of data and conclusions from (1) and (2) took place continuously throughout the study. Thus the pilot study made use of conceptual categories of the content and methodological principles which emerged from the bibliographical review. These categories and principles were adapted and finalized once the study had been completed.

Results

Literature Review

General conditions in Nicaragua are described here, among which are the health determinants of the health of the population, including maquila workers, and specific data is presented on the health of maquila workers in general and in particular of those in Nicaragua.

Nicaragua is undergoing a process of political, social, and economic reconstruction after 10 years of war. The country does not yet have the capacity to meet the basic needs of the entire population. In 2003, 48% of the population lived in by poverty; this is closely linked to unemployment in 11.6% to 12% of the economically active population, according to figures from the Nicaraguan Central Bank (*Banco Central de Nicaragua*)⁸ and the Nicaraguan Institute of Statistics and Census (*Instituto Nicaragüense de Estadísticas y Censos, INEC*), respectively. Underemployment stands at approximately 32%⁹. Although Nicaragua has been characterized by being a primarily agricultural country, it remains a major concern that it is not producing enough food for the population⁷. As the main source of employment, maquilas become the road to salvation for the country's development. The Presidential Decree creating free trade zones proclaims that the existence of a regime of export-oriented free trade zones is in the national interest because they promote job creation, investment and exports.

In Nicaragua, the maquila boom began in 1992 with 17 clothing companies and 9,000 workers. By 2003, there were 62 companies and 53,330

jobs⁴. In economic terms, the statistical records of national free trade zone corporation show that exports by maquilas accounted for 27.3 million dollars in 1994, 7.5% of the country's total exports; by 2000, exports had risen to 300 million dollars and the proportion of total exports to 32%¹⁰.

The capital behind these companies is 27% from the US, 27% from Taiwan, 19% from Korea, and 10% national capital. The remaining investors are from Italy, Hong Kong, Mexico, Honduras, Belize, Guatemala, and the Netherlands. The majority produce for the US market. Of these companies, 58% produce clothing, 16% tobacco products, 4.8% cardboard boxes and the rest cover embroidery, shoes, decorations, vehicle engine wiring harnesses, furniture, domestic appliance assembly, edible oils, and telecommunications. These factories are spread among 11 municipalities of the country, with 55% in the capital⁵.

Poor occupational health and safety conditions in these factories have meant an increase in both short-term and long-term health problems suffered by workers⁴. Workers are frequently exposed to toxic substances, such as solvents and glue, and subjected to repetitive manual labor. It has also been shown that there are reproductive risks for women exposed to solvents and solder in the electronic maquila sector¹¹. In addition, job insecurity, poor relations among workers and between workers and employers, and inadequate supervisor support were identified as predictors of depression in a group of women working in an electronics maquila in Mexico¹². Among the health problems mentioned most frequently are neurotoxic symptoms, upper respiratory tract irritation, chest pain, allergies, hair loss, insomnia, dizziness, weakness, pain, numbness of the hands, and chronic pain in elbows, back and arms⁶. In addition, workers in Mexican electronics factories report psychological and musculoskeletal problems, gastritis, colitis, hypertension, myalgia, and neuralgia¹³. Accidents and injuries such as burns have been reported.

In 2002, the Maria Elena Cuadra Movement of Working and Unemployed Women presented their diagnosis of the main issues, advances and setbacks for female maquila workers in Nicaragua. They found that forty-five maquiladora companies in operation in 2001 generated some 40,000 direct jobs and 110,000 indirect jobs; 73% of employees are women and, of these, 82% are 30 years old or younger, 42% are single mothers earning a salary of 29-58 dollars a month; 67% are operators. In terms of health, they report that 68% have received medical care in health insurance clinics. Also, 25% reported having suffered accidents at the factory and 55% said they had suffered work-related injury or disease⁶.

The Nicaraguan Political Constitution sets out certain social rights. These include the right of Nicaraguans to work in accordance with their human nature (Art. 57) and the right to social security (Art. 61). In addition, reference is made to various labor rights and conditions including the right to strike; to physical, psychological and moral integrity; to respect for honor and reputation; equality in the eyes of the law; legal guarantees and non-discrimination by gender. The Labor Code regulates what is set out in the Constitution and establishes the powers and functions of the Ministry of Labor (MITRAB) which is the main administrative authority responsible for assuring compliance with labor legislation and with collective and individual bargaining by workers. Regulations have set out guaranteeing the right to organize in trade unions, the right to protection for trade union officials, the right to collective bargaining, the right to occupational health and safety, and the right to medical consultations, among others.

However, while 94% of maquila workers reported having signed a work contract, 64% of these workers allege not to have been given a copy of the contract. 80% knew there was a collective agreement but only 58% claimed to know what it contained. The majority (75%) did not know the labor code, and only 66% had a social security card.

With regard to working hours, 27% report working on a piecework system in which the shift ends when they reach their production target. 23% do 11-15 hours of overtime a week and 20% do 16-20 hours. This happens despite the fact that the law states that overtime should not exceed 3 hours a day or 9 hours a week. 63% say that at the factories where they work, overtime is compulsory¹⁴. Some 9% had restrictions place on access to toilets. 70% claim there are no recreational programs for workers.

Furthermore, job insecurity in these companies is pervasive due to the high turnover of personnel. This occurs via sudden firings, termination of contract with no explanation, trade union repression, etc.⁵ (José Benito Escobar Confederation of Trade Unions, 2003). Employers allege that this is due to variable buyer demand rendering it untenable to keep a fixed number of permanent workers⁷.

This labor insecurity affects living conditions for workers and their families both directly and indirectly. It effects not only working conditions but also their economic consequences. Workers who have been laid off find it difficult to find work in the same sector and therefore to be able to pay for food and for their children's education. The emotional impact on unemployment on workers is often manifested when their former work colleagues don't interact with them for fear of being fired themselves⁸.

A study undertaken by the Nicaraguan Center for Human Rights (CENIDH) found that at several maquiladora factories there has been an violations of workers' rights, including the right to join a trade union, protection for trade union officials, the right to strike, job security, salary, collective bargaining, occupational health and safety, maternity rights, average leave and social security benefits⁸. Women say they have suffered sexual harassment (11%), physical violence (6%), verbal abuse or psychological pressure (49%), and have been forced to carry out tasks not covered by their contract (33%)⁷; 66% of women who became pregnant were not given alternative tasks more suited to their condition. Labor cases against

maquila companies drag on for between one and three years, benefiting employers, despite the law stipulating that labor cases must be decided within 30 days, with 60 days for any appeal.

70% of workers are unaffiliated to any trade union organization. Causes mentioned by workers include lack of trade union presence in the company or that unions are not reliable; almost 50% did not answer this question. This situation reflects the fact that there are few trade unions and the existing unions have shaky organizational structures, shop stewards with limited trade union experience facing employers with little knowledge of labor laws, workers' rights and duties⁵.

Employers reject trade union organization to the point that the main activists or unionized workers are fired under Article 45^{1,15} or forced to resign. Blacklists of workers who should not be hired because they are trade unionists are circulated to other companies.

Pilot feasibility study

Our results describe field work findings related to organization of work, health, gender, infrastructure and environment in the community and regulations.

Organization of work

Working hours at the maquila are from 7AM until 5PM, with a 15-minute break, making total hours worked 9.6 hours a day, 48 hours a week. Overtime is not compulsory. There is no recreational program.

The initial contract is for one month. New employees must have experience working at other maquilas. If they show they are able to achieve 70% of the task assigned to them, they are hired. The contract is indefinite and workers do not know its content nor are they given a copy.

Salaries depend on position. There are supervisors, operators and assistants. Basic salary for an operator is 250 cordobas per week (\$17.00), but with incentives this can reach to 700 cordobas (\$47.00). If they do not reach 70% of their target, they are paid only 50% of their incentive. If they fail to turn up for work without justification, they

lose a day's pay. If their machine is damaged, they are guaranteed the 50% incentive payment. If they fail to turn up for three consecutive days, they are dismissed. Vacation time is sometimes paid for (instead of giving the employees time off) and is usually granted when there is less demand for production. There is no trade union, only a joint committee on health and safety.

Production is organized along three lines: Quality Control, Ironing, and Packing. Each line produces a specific type of clothing and is divided into three parts: Services, Assembly 1 and Assembly 2. The finished item of clothing is assessed in Quality Control, and if it has any defect or stain, it is returned to the operator. Finally, the clothing approved by Quality Control is sent to Ironing and then to Packing. Contrary to the other processes, in the ironing process it is typically only males who are employed.

Health

All workers are enrolled in the Nicaraguan Social Security Institute. The company has a clinic which is run by a nurse who is present all day and a physician who attends three hours a day. Clinic activities include diagnosis and treatment of common illnesses but do not include prevention. The types of health problem seen most frequently by the company physician are: respiratory, due to exposure to fluff (asthma, rhinitis, bronchitis and influenza); dermatological (dermatitis, eczema); musculoskeletal (arthritis and osteoarthritis). Musculoskeletal problems are diagnosed mainly in people who have been working for longer than seven years at the maquila and are related to ergonomic issues at work such as maintaining a static posture for prolonged periods. All these diseases are conceptualized by the physicians as common illnesses unrelated to work. Other diseases mentioned are eye problems and parasitosis. The commonest accident is piercing by needles. Should medication be required, this is supplied by Social Security. Workers do not generally associate the use of equipment and working conditions with their health problems.

Gender

Workers do not think about gender issues except in terms of equal opportunity in contracting. However, they mention the existence of abuse and sexual harassment, although these cases are not reported. The long working days for women, mostly single mothers, cause problems in their families. Since the mothers have no support for the education and the care of their children, who are left alone for many hours. In some cases children have shown signs of depression as a result of being left on their own for most of the day. Anxiety is another problem suffered by many mothers since they have no idea how their children are while they are alone at home. Women face unstable relationships with their partners when they return home late due to their long working hours. Labor tasks are not changed when a woman is pregnant. Verbal and psychological abuse of pregnant women has been reported.

Infrastructure and environment in the community

The community where these workers live is a village which has basic utilities, public telephones, recreational centers, and health services. The presence of these companies has had a negative socio-economic influence on the community due to the proliferation of bars and places of prostitution visited by men. Part of their salary stays in the bars negatively affecting family finances.

Liquid and solid waste from these companies affects the community. Waste water is discharged into sewers and waterways without first undergoing treatment. Waste water from the maquilas ends up in rivers and lakes.

Regulations

The company is governed by internal regulations approved by the Ministry of Labor. These regulations are based on the requirement of client safety. Workers receive a copy of these regulations but they are not read nor discussed. Clients send in auditors who visit the maquilas to check compliance with non-discrimination, working hours, environmental conditions, emergency procedures, etc.

Conceptual-methodological integration

Conceptual Issues

Combining the results of the literature and the pilot feasibility study, 7 main conceptual headings and 89 subheadings were identified (Table) as germane to the description of the maquilas, their workers and their workers' context.

The role of gender in organizing work is seen as overarching concern relevant to all the other concepts. It can be thought of as an axis transversal to the others.

Many of the subheadings can be included under two or more concepts, but each was assigned to one particular concept.

Methods

Considering the relevance of systematic diagnostic methods in the study of health risks, the use of *focus groups* is possible on, at the most, three of the issues. Workers and former workers have the greatest degree of knowledge about the organization of work and their experiences in the workplace. *Questionnaires* have the benefit of anonymity, but they cannot be completed at the workplace and should be simple. *Interviews* can be used for family members, a good source of information on repercussions on the community, environment, and family. Individual interviews are feasible with plant managers, supervisors, experts, officials, and other key informers in the community. Group discussions could provide information on very specific issues such as certain issues of gender, or estimation of symptoms, particularly musculoskeletal conditions.

Observation is central to understanding production processes. This is aided by the selection of objects for observation, the degree and type of organization, records, analysis and interpretation¹⁶. However, any data gathering might be impossible within the factory and might need to be done elsewhere and out of working hours.

Table: Conceptual Headings and subheadings

<p style="text-align: center;">1. Organization of work by gender</p> <p>Contracts, types of contract, subcontracts, seasonal work, disciplinary practices, home work, pace of work, working hours, employee turnover, mechanisms for balancing work and family life, breaks and use of toilets, communication among workers, production incentives, piecework, job turnover or insecurity, relations between manager and workers, training, transport service.</p>
<p style="text-align: center;">2. Working procedures and work environment by gender</p> <p>Products and production, exposure to dangerous conditions, biomechanical stressors, workspace, workplace cleanliness and facilities, harassment, atmosphere at work, health and safety services, health and safety committee, environmental impact and administration.</p>
<p style="text-align: center;">3. Occupational health and well-being by gender</p> <p>Accidents, pre- and post-employment illness, symptoms, physical and mental health, length of service, absenteeism, bio-indicators of exposure, early indicators of ill health, interference of work in private life and effects of work on the health and well-being of workers and their families.</p>
<p style="text-align: center;">4. Socio-demographic and socio-economic factors by gender</p> <p>Workers' age, level of education, length of service, marital status, number of children, dependents, family organization and responsibility, occupational health services, social security, social services, multiple employment, income and free time, housing, participation in community life, social network, community, migration.</p>
<p style="text-align: center;">5. Community environment and infrastructure by gender</p> <p>Health services, social services, childcare facilities, school, utilities, food, safety, waste management, leisure, employment, environmental pollution and decontamination, community organizations, informal economic activities, nutritional state of the community, population displacement.</p>
<p style="text-align: center;">6. Employer and worker participation by gender</p> <p>Trade unions and other workers' organizations, employers' associations, joint committee, workers' participation in the organization of work, contact with community organizations, role in setting up and implementing standards.</p>
<p style="text-align: center;">7. Regulatory context by gender</p> <p>Law and politics (work, social, environment, job-related, health and social security), regulation of tax-free zone, responsibilities and mandates of regulatory bodies and agencies, interaction between agencies and regulatory bodies, collective and individual bargaining, mechanism of certification and codes of conduct, treaties and recommendations.</p>

In general, multiple sources of data and methods of gathering information (triangulation) are required for understanding the most important aspects of gender-based health standards. A quick assessment, interviews, observations, and documentary analysis can be broadened to include focus groups. Multiple sources of data generally exist at all levels in the community and in companies. Contextualization is a prerequisite, since data sources and methods vary from one population and location to another. In order to estimate prevalent symptoms, especially musculoskeletal disorders, further investigation is required. Gender must be seen as an axis running through all issues such as considerations of specificity and equity.

Discussion

The concepts (headings in the table) and research methods identified in this article serve as a basis for descriptions and comprehensive studies of the maquilas and their workers from the point of view of their health. The issues cover not only conventional aspects of occupational health but also the interconnected aspects of family and community health.

The headings also identify a large number of conditions which can serve as a basis on which to draw up labor regulations and standards as well as occupational health and safety norms for the maquila sector. Many (if not all) standards need to be defined and applied by gender, that is, separately for men and women.

The priority in considering maquila companies is to seek strategies for short- to medium-term solutions addressing three main problems: legal framework, health and safety conditions, and ongoing study and monitoring. Despite the fact that the labor rights included on the Nicaraguan labor code are incorporated in a *legal framework*, these rights are continually infringed. This happens mainly because the laws are not enforced. The implementation of these rights, therefore needs strengthening and the political will - in effect, specific government policies - must also change in

order to improve working conditions for the workers.

Another priority is improving the *conditions of workplace health and safety*. This requires a joint committee with the active participation of workers and a training program on the main risks and diseases to which workers are exposed, so that they themselves become responsible for monitoring the risks present in the work environment. The other aspect is the needs to be undertaken are ongoing *study* and *monitoring* aimed at identifying occupational risks and general risks to health which affect workers both in the short and long term.

A functioning joint committee on health and safety and a comprehensive health care unit for workers providing early diagnosis, timely treatment, prevention of disease and accidents and worker health promotion promoting workers' health are important mainstays in managing occupational health and safety in maquilas and improving conditions in the work environment.

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References

1. International Labor Organization. Maquilas en Centroamérica; Guatemala City 1997.
2. Corporación Nacional de Zonas Francas de Nicaragua. Statistical records. Managua, Nicaragua 1999: Corporación Nacional de Zonas Francas.
3. Wolf HM, Bernal ML, Martínez C. Dinámica 2003 en la maquila en Centroamérica, 2003. <http://www.rebellion.org/economia/030905maquila.htm>
4. Confederación Sindical de Trabajadores – José Benito Escobar. Diagnóstico de la Maquila en Nicaragua y Plan Estratégico del Trabajo Sindical, Managua, Nicaragua 2003: CST-JBE.

5. Kourous G. Occupational health and safety in the maquiladoras. *Borderlines* 1998;47;6.
6. Ramos S, Vargas J. Diagnóstico avances y retrocesos en la maquila de Nicaragua. Managua, Nicaragua 2002: Movimiento de Mujeres Trabajadoras y Desempleadas María Elena Cuadra.
7. Sieg U, Palacios E. Maquila en Nicaragua. ¿Una esperanza? Conflictividad laboral en la maquila. Un análisis desde la práctica de los derechos humanos. Managua, Nicaragua 2003: Centro Nicaragüense de Derechos Humanos (CENIDH)
8. Nicaragua en cifras. Managua, Nicaragua 2006: Banco Central de Nicaragua.



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