ORIGINAL ARTICLE

WORKING, SAFETY AND HEALTH CONDITIONS IN THE ECONOMICALLY ACTIVE AND EMPLOYED POPULATION IN URBAN AREAS OF PERU

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ABSTRACT

Objectives: The present study aims to know the work, safety and health conditions at the jobs of the economically active urban population in Peru. Materials and Methods: A cross-sectional study was carried out based on a probabilistic sample of multistage areas in which 3122 people over 14 years of age distributed nationwide participated. Results: The majority were men (53.6%) between 30 and 59 years (50%). As for working conditions, most people work more than 48 hours per week (39.8%), and Monday through Saturday (44.7%). Regarding the safety, hygiene, ergonomic and psychosocial conditions, the results showed a lower risk exposure. Regarding health conditions, the majority report that the identification and evaluation of occupational hazards is not carried out in their workplace (35.9%), they do not have occupational health services (40.7%) or a delegate or a Health and safety committee (39.4%) and no occupational medical evaluations (39.3%). Conclusions: The economically active urban population of Peru is more frequently exposed to noise, solar radiation, awkward postures and repetitive movements, work at a fast pace with little control and hide their emotions; In addition, occupational health is not managed adequately in workplaces. These conditions may affect the health of workers and the quality of work.

Keywords: Working Conditions; Occupational Risks; Employment; Occupational Health (Source: MeSH NLM).

INTRODUCTION

Employment generates economic and social growth and affects workers’ health and well-being, i.e. it can be a source of improvement or harm. Paid work is the main source of income for most people, and it is a strong component of their social identity (1).

Workers are exposed to conditions that affect their health, either positively or negatively. Such conditions involve the characteristics of the work organization, its environment and immediate surroundings, which can be considered physical, chemical, psychosocial, mechanical, and environmental risk factors, among others. Therefore, occupational health and safety conditions are established in organizations, these are related to the implementation of measures to eliminate or reduce the risk of suffering injuries, damaging health, material damage to equipment, machines or infrastructure. Similarly, workers’ health management, and preventive activities and resources involved within the organizations, are included (1,2).

Therefore, a worker with adequate working, safety and health conditions is strongly identified with the organization’s policies which are strengthened, as well as his or her motivation and productivity. On the contrary, if the workplace has precarious conditions, the workers’ health could be affected, in addition to the previously mentioned aspects, which generates a high social cost (2).
According to the International Labor Organization, there is a high frequency of deaths caused by work accidents or diseases, related to poor occupational safety and health practices. These health issues generate a high social and economic cost, due to losses related to working time, production development, medical care and rehabilitation of workers, as well as the payment of compensation.\(^3\),\(^4\).

On the labor aspect, Peru maintained an economic growth that allowed a 2.4% increment of formal employment from April 2013 to March 2014\(^5\), and Metropolitan Lima showed a variation of 6.6% during first quarter 2019\(^6\).

In addition, under the Occupational Safety and Health Act, employers must create means and conditions to protect workers’ health and safety\(^7\) by developing management systems according to their needs, and report to the Ministry of Labor any occupational accidents and diseases that occur in their organizations\(^8\).

Occupational surveys on working conditions are valuable tools for obtaining information to develop strategies for promoting health and preventing negative events for working groups. These surveys are useful for monitoring workers’ health\(^9\), and working, employment and health conditions worldwide.

As indicated in the National Plan for Occupational Safety and Health 2017-2021\(^8\), there are national statistics on occupational accidents and diseases; however, they do not express all of the occurrences, nor do they record the working conditions of the economically active population (EAP). For this reason, the aim of the present study was to determine the safety and health conditions at work of urban economically active occupied in Peru, by applying a population survey.

**MATERIALS AND METHODS**

**Study Design**

A cross-sectional design study based on a probability sample associated to geographical areas, in which the likelihood of being selected is associated with geographical areas in the scope of study, which is also multi-stage. The sample was designed to give reliable estimates at the national urban level.

**Sample Framework**

The sample framework was obtained from the statistical information of the National Institute of Statistics and Informatics (INEI in Spanish), from the 2007 Census and updated with information from the Household Targeting System (SIS-FOH in Spanish) 2012-2013, a system used by the INEI for conducting population surveys\(^10\). The population comprises the habitual residents, over 14 years old, from urban private dwellings nationwide. The sample used was requested from the INEI, which included clusters with information on blocks, dwellings, population and EAP from 252 districts of Peru.

**Participants**

Residents of urban areas of Peru, over 14 years old, who work or have worked, at least for one hour, the week before the survey or who are temporarily absent from work due to vacation, illness, leave, etc.\(^11\). Children under 14 years old and those children whose surveys showed errors in completion were excluded.

**Sample**

The sample was probabilistic, area-based, stratified and multi-stage. With a known population and applying the proportion formula with a confidence level of 95%, a permissible error of 2.7%, a non-response rate of 10% and a design effect of 1.2. The calculated sample was 3,120 persons distributed in 520 clusters.

The sampling was carried out in several stages. First stage: selection of clusters with probability proportional to the size of the households (clusters: group of households defined by the INEI that include approximately 100 to 150 households). Second stage: selection of blocks within each cluster (systematic random sampling with random start). Third stage: random selection of households in the selected blocks (random sampling through a random number chart). Fourth stage: random selection of the person to be interviewed. The unit of analysis was the working person, selected among people who work in each household.

**KEY MESSAGES**

**Motivation for the study:** To know the working, safety and health conditions of the urban economically active occupied population of Peru.

**Main findings:** The urban economically active occupied working population is more frequently exposed to noise, solar radiation, uncomfortable postures and repetitive movements; they work fast with little control and hide their emotions; moreover, occupational health is not managed in the workplace. These conditions can affect workers’ health and the quality of their work.

**Implications:** Knowing working and health conditions of the economically active population will allow the establishment of guidelines for improvement within the framework of the Law on Safety and Health at Work.
Variables
Socio-demographic variables, such as sex, age, education, job, economic activity of the company and number of workers. Working conditions, including employment conditions (weekly working hours, working days, type of relationship, contract, form of contract, type of workday, remuneration), other conditions such as safety, hygiene, ergonomic and psychosocial factors, resources and preventive activities (information or training on occupational risks, evaluations, measurements or controls of possible risks, access to occupational health services, occupational health and safety or hygiene committee, occupational medical examination, and workers participation). Health conditions, such as the perception of health, as well as injuries, and occupational diseases.

Instrument
The Basic Questionnaire on Working, Employment and Health Conditions in Latin America and the Caribbean (CTESLAC in Spanish) (12,13) provides information on workers' perceptions of working, employment and health conditions in their workplaces. It has 77 questions which include socio-demographic characteristics, employment conditions, work, health, resources, and preventive occupational health activities in the work centers, and family characteristics of the respondents. It was developed by the Network of Experts on Surveys of Working, Employment and Health Conditions (RED ECTS in Spanish), based on surveys of working conditions used in Spain, Colombia, Argentina, Chile, Uruguay and Central America, in order to improve the comparability of survey results in Latin America and the Caribbean.

The answers to the questions include: frequency of the condition (always, several times, sometimes, very few times and never; or if it presents or not a certain condition), the completion time of the questionnaire is of 25 minutes and the results are expressed according to the answer options.

For this study, a group of 34 experts in occupational health (doctors, psychologists, nurses and medical technologists) reviewed and adapted the questionnaire. They discussed the relevance of each item, and the application of a pilot questionnaire to 34 workers in Lima, Ica and Arequipa. The partial response rate (i.e., the omission of information in some of the questions) (14) was 3.2%.

An acceptable correlation was found in safety (0.52-0.77), hygiene (0.29-0.50) and ergonomics (above 0.3). However, the psychosocial aspect showed a low correlation (less than 0.3). Overall, the questionnaire has a high reliability of the safety, hygiene and ergonomic aspects (15). It is important to point out that, regarding the correlation of psychosocial conditions, we consider that it does not affect the gathering of information, since the questionnaire is not a diagnostic instrument and therefore allows for the collection of relevant information on working conditions.

The final version of the questionnaire consists of three filter questions and 87 Likert-scale questions. An adequately trained interviewer applied the questionnaire to the participants in their homes, with an average duration of 20 minutes.

Procedure and statistical analysis
The information-gathering phase took place from November 2016 to June 2017. The process was gradual and on different dates, however, it was simultaneous at some points. For this purpose, experienced surveyors were called in, and the team of researchers trained them in occupational health, working conditions, handling the questionnaire and selecting the respondents in the field. The questionnaire was printed on paper and applied to each participant.

For the selection of the household, in each cluster (according to the criteria of the INEI, as a subpopulation, which has characteristics present in the population, with attributes such as geographical location, being over 14 years old, worker (16), the following procedure was taken into account: at random, in each block, the households were selected (nine households, of which three were replacement households, in the event that a possible participant was not identified), and then, for the random selection of the occupied EAP member, within the households, the Kish (or random) chart was used.

To calculate the confidence intervals (sampling errors), the statistical program SPSS 20, complex samples section, was used, which provides the sample variability estimators for population parameters (the elaborated frequency plan contained: the file plan, the frame stratum, the cluster and the expansion factor by district, for the construction of the expansion factors, the selection probabilities in each stage were taken into consideration), such as totals, means, ratios and proportions for the different estimation domains, and the algorithm used by SPSS is based on the method of the variance estimators of the final clusters (17).

Ethical aspects
The study was approved by the Institutional Committee of Ethics and Research of the National Institute of Health. Informed consent (assent for those under 18 years old) was applied, which was codified and guarded by the research team.
RESULTS

Out of 3,126 questionnaires applied, 4 were eliminated because of errors in the filling process. As can be seen in Table 1, men had the highest participation (56.6%), between 30 and 59 years of age (50%), and of secondary level education (32.9%).

In terms of employment, most were service workers and shop and market assistants (30.8%), from wholesale and retail trade sector, in the repair of motor vehicles and motorcycles (31.0%), and worked in small centers, that is, between 1 and 10 persons (66.7%).

Regarding working conditions (Table 2), 39.8% worked 49 hours or more per week; 44.7% worked from Monday to Saturday; and 61.1% worked split shifts, morning and afternoon. Regarding the net monthly income of the participants, the highest percentage received remuneration between 851 soles and 1,700 soles (40%); 51.8% were dependent workers; and regarding the form and type of contract, 26.8% had a written contract and 33.1% a temporary contract. With respect to the social protection coverage of the interviewees, 67.2% said that they did not contribute to any retirement system and 53.5% did not have any health insurance (Figure 1).

With respect to exposure to occupational risk factors, less than 6.5% of those surveyed indicated that they are often or always exposed to falls at the same or lower levels; more than 7% of workers reported that they are often or always exposed to a level of noise that forces them to raise their voice to talk to another person and more than 8% reported that they are often or always exposed to solar radiation for a minimum period of one hour per day. Their tasks make them keep uncomfortable or forced postures (12.9%) or to make repetitive movements (21.6%). Psychosocially, they must work very fast (13.9%) and hide their emotions or feelings when doing their work (12.9%) (Table 3). With regard to resources and preventive activities, 7.7% of the workers reported having received poor information about occupational risks. With regard to the identification and evaluation of occupational risks, 35.9% of the dependent workers did not have a risk evaluation for their job in the last 12 months; 40.7% did not have an occupational health service or area in their work center; 39.4% did not have a prevention delegate or supervisor or an occupational health and safety or hygiene committee; 39.3% did not have an occupational health examination in the last 24 months, and 36.5% indicated that their work center did not hold regular meetings to discuss health and safety issues (Table 4).

Finally, regarding the participants’ perception of their health in general, the majority (49.9%) responded that their health was good. A total of 9.1% reported that they had suffered some injury or damage due to an accident at work, and 4.5% reported that they had suffered from one or more diseases caused by work (Table 5).

DISCUSSION

Perú’s urban occupied active population has a profile characterized by a high percentage of workers with long working hours, low social protection coverage (the highest percentages of workers were not registered in any retirement plan or health system), and independent workers have long working hours, low pension coverage and low economic income. These situations can affect workers’ health and performance, as well as the quality of their work, which could be related to informality or precariousness of employment. These results are different from those reported in Colombia (18), Argentina (19), Chile (20) and Central America (21), where most workers do have these systems.

A total of 9.2% of participants always work in noisy environments, a frequency of exposure lower than the observed in other countries of the region (19-21), which in general exceed 15%. This differs to the report made in 2017, when 59.2% of the occupational illnesses notified to the Ministry of Labor and Employment Promotion (MTPE in Spanish) of Peru (22) were due to hearing loss or deafness caused by noise. However, this higher percentage of hearing-related illnesses may be explained by a lower quantity of reported cases from other pathologies.

Between 9.1% and 21.6% of surveyed subjects suffer from uncomfortable postures, they lift or move loads, or make repetitive movements. These figures are lower than those observed in the surveys carried out in Colombia, Argentina, Chile, Central America and Uruguay (23). However, no musculoskeletal diseases related to such exposure were reported in the MTPE (22) during 2017. Regarding psychosocial conditions, between 12% and 41% of the population surveyed said that they always work too fast or hide their emotions, or that they never influence the amount of work assigned to them, similar to that found in surveys in other countries (19-21).

It should also be noted that this is the first time that Peru gets information on prevention and resources from companies, which, according to the regulations (7), they are the ones that must carry out these preventive activities. The surveyed subjects report that their work organizations do not identify nor evaluate occupational risks at workplace, provide occupational health service, consider a prevention delegate or supervisor at the workplace, provide annual occupational medical evaluations. These reported information by the subj-
Table 1. Socio-demographic characteristics, jobs, economic activity and number of workers in the company, Peru, 2017

| Characteristics | n     | %  | 95%CI |
|-----------------|-------|----|-------|
| **Sex**         |       |    |       |
| Male            | 1,638 | 53.6| 51.3-55.9 |
| Female          | 1,484 | 46.4| 44.1-48.7 |
| **Age (years)** |       |    |       |
| 14-19           | 415   | 13.0| 11.5-14.6 |
| 20-29           | 736   | 23.2| 21.5-25.0 |
| 30-59           | 1,543 | 50.0| 47.5-52.6 |
| ≥ 60            | 428   | 13.8| 12.2-15.5 |
| **Education**   |       |    |       |
| No education    | 31    | 0.8 | 0.6-1.2 |
| Kindergarten    | 1     | 0.2 | 0.0-0.3 |
| Incomplete Primary school | 171  | 4.5 | 3.8-5.3 |
| Complete Primary school | 176  | 5.0 | 4.2-6.0 |
| Incomplete Secondary school | 350  | 10.7| 9.4-12.1 |
| Complete Secondary school | 1,012| 32.9| 30.8-35.1 |
| Incomplete non-university higher education | 276  | 9.5 | 8.2-11.0 |
| Complete non-university higher education | 431  | 13.6| 12.2-15.2 |
| Incomplete university education | 231  | 7.9 | 6.8-9.2 |
| Complete university education | 441  | 14.9| 13.1-17.0 |
| **Workplace**   |       |    |       |
| Service workers, and shop and market assistants | 950  | 30.8| 28.9-32.8 |
| Fundamental occupations | 559  | 17.2| 15.8-19.0 |
| Construction, building, handicrafts, electricity and telecommunications | 410  | 12.9| 11.5-14.4 |
| Scientific and intellectual professionals | 365  | 12.1| 10.8-13.7 |
| Industrial machinery operators, assemblers and transport drivers | 242  | 7.3 | 6.3-8.4 |
| Managers and administrative employees | 227  | 8.4 | 7.3-9.6 |
| Technicians | 183 | 6.4 | 5.4-7.5 |
| Farmers and skilled workers, agriculture, forestry and fisheries | 147  | 3.3 | 2.7-4.1 |
| Members of the Executive, Legislative and Judicial Sectors and senior staff of the public and private administration | 30   | 1.2 | 0.8-1.7 |
| Military and police occupations | 9    | 0.4 | 0.2-0.7 |
| **Economic activity of the company** |       |    |       |
| Wholesale and retail trade; repair of motor vehicles and motorcycles | 958  | 31.0| 29.0-33.1 |
| Transport and storage | 252  | 8.0 | 6.9-9.2 |
| Accommodation and Catering Activities | 234  | 7.1 | 6.2-8.2 |
| Manufacturing Industries | 221  | 6.8 | 5.7-7.6 |
| Administrative and support service activities | 213  | 7.6 | 6.5-8.9 |
| Agriculture, livestock, forestry and fisheries | 201  | 6.6 | 5.8-5.5 |
| Teaching | 188  | 5.9 | 5.0-6.9 |
| Other service activities | 182  | 5.6 | 4.8-6.6 |
| Professional, scientific and technical activities | 176  | 6.5 | 5.4-7.8 |
| Construction | 130  | 4.4 | 3.7-5.3 |
| Human healthcare and social work activities | 98   | 3.5 | 2.8-4.5 |
| Public administration and defense; mandatory social security schemes | 70   | 2.2 | 1.7-2.9 |
| Activities of households as employers; | 70   | 2.4 | 1.9-3.1 |
| Artistic entertainment and recreational activities | 28   | 1.0 | 0.7-1.6 |
| Financial and insurance activities | 25   | 0.8 | 0.5-1.3 |
| Information and Communications | 19   | 0.6 | 0.4-1.1 |
| Mining and quarrying | 17   | 0.4 | 0.2-0.8 |
| Supply of electricity, gas, steam and air conditioning | 17   | 0.8 | 0.5-1.3 |
| Water supply, wastewater disposal, waste management and decontamination | 16   | 0.5 | 0.3-0.9 |
| Real estate activities | 7    | 0.3 | 0.1-0.7 |
| **Number of employees in the company** |       |    |       |
| 1-10            | 2,156 | 66.7| 64.3-69.1 |
| 11-100          | 736   | 25.3| 23.1-27.6 |
| 101-499         | 153   | 5.3 | 4.4-6.5 |
| ≥ 500           | 77    | 2.7 | 2.1-3.5 |

95%CI: 95% Confidence Intervals
*a* Weighted percentages according to expansion factors
Table 2. Employment conditions by weekly working hours, working days, type of workday, remuneration, role, contract and type of contract in workers in Peru, 2017

| Conditions of employment                                      | n     | %     | 95%CI   |
|--------------------------------------------------------------|-------|-------|---------|
| **Weekly working hours**                                     |       |       |         |
| ≤ 40                                                         | 1,071 | 32.2  | 30.3-34.2|
| 41-48                                                        | 826   | 28.0  | 26.0-30.0|
| ≥ 49                                                         | 1,225 | 39.8  | 37.6-42.0|
| **Working days**                                             |       |       |         |
| From Monday to Friday                                        | 596   | 20.2  | 18.5-22.0|
| From Monday to Saturday                                      | 1,366 | 44.7  | 42.7-46.7|
| From Monday to Sunday                                        | 807   | 24.5  | 22.8-26.2|
| Weekends and holidays only                                   | 73    | 2.0   | 1.6-2.7 |
| Irregular, non-fixed or mobile days                          | 280   | 8.6   | 7.5-9.9 |
| **Type of workday**                                          |       |       |         |
| Morning and Afternoon                                        | 1,883 | 61.1  | 58.9-63.3|
| Continuous during morning                                   | 519   | 16.1  | 14.4-18.0|
| Continuous afternoon - night                                 | 221   | 6.5   | 5.6-7.6 |
| Continuous night - dawn                                      | 24    | 0.8   | 0.5-1.2 |
| Rotating shifts except night shift                           | 64    | 2.1   | 1.6-2.8 |
| Rotating shift including night shift                         | 131   | 4.0   | 3.2-4.9 |
| Irregular or variable workdays according to the days         | 150   | 4.7   | 3.8-5.7 |
| Others                                                       | 130   | 4.7   | 3.6-6.0 |
| **Remuneration, PER (USD)**                                  |       |       |         |
| ≤ 850 (≤ 259)                                                | 1,284 | 37.9  | 35.8-40.2|
| 851-1,700 (260-520)                                          | 1,206 | 40.0  | 37.6-42.4|
| 1,701-2,550 (521-780)                                        | 334   | 11.8  | 10.3-13.5|
| 2,551-3,400 (781-1040)                                       | 73    | 2.7   | 2.1-3.6 |
| 3,401-4,250 (1,041-1,300)                                   | 37    | 1.4   | 1.0-2.1 |
| 4,251-5,100 (1,301-1,560)                                   | 18    | 0.5   | 0.3-0.9 |
| ≥ 5,101 (≥ 1,561)                                            | 10    | 0.3   | 0.1-0.5 |
| No answer                                                    | 160   | 5.4   | 4.4-6.5 |
| **Type of bond**                                             |       |       |         |
| Employer                                                    | 250   | 8.4   | 7.2-9.8 |
| Independent worker                                           | 1,087 | 35.4  | 33.2-37.6|
| Dependent worker                                             | 1,657 | 51.8  | 49.4-54.2|
| Household worker                                             | 31    | 1.0   | 0.7-1.4 |
| Unpaid family worker                                         | 97    | 3.4   | 2.7-4.4 |
| **Form of contract**                                         |       |       |         |
| Written                                                      | 887   | 26.8  | 24.7-28.9|
| Oral or verbal                                               | 624   | 20.4  | 18.7-22.2|
| No contract                                                  | 263   | 8.8   | 7.6-10.2 |
| Don't know / Don't answer                                    | 11    | 0.2   | 0.1-0.5 |
| NA                                                           | 1,337 | 43.8  | 41.5-46.1|
| **Type of contract**                                         |       |       |         |
| Fixed indefinite or permanent                                | 610   | 18.5  | 16.8-20.3|
| Temporary                                                    | 1,036 | 33.1  | 31.1-35.3|
| Internship, scholarship or practicum                         | 10    | 0.2   | 0.1-0.4 |
| Don't know / Don't answer                                    | 129   | 4.3   | 3.5-5.4 |
| NA                                                           | 1,337 | 43.9  | 41.5-46.1|

95%CI: 95% Confidence Intervals, NA: No Answer
1 USD= 3.27 PER (change rate for 2017)
* Weighted percentages according to expansion factors
Working conditions in Peru

As for the perception of health, this is similar to that found in the surveys of Colombia, Chile and Central America, which perceive, in a high percentage, that their workers are healthy, and have a low percentage of accidents and oc-

Table 3. Working conditions according to safety, hygiene, ergonomics and psychosocial aspects of workers in Peru, 2017

| Working Conditions                        | Always | Several times | Sometimes | Almost never | Never | DK/DA |
|-------------------------------------------|--------|---------------|-----------|--------------|-------|-------|
| SC: Risk of falls on the same level       | 170    | 5.5           | 228       | 6.5          | 409   | 12.1  |
| SC: Risk of falls on different level      | 220    | 6.5           | 207       | 5.8          | 350   | 10.5  |
| SC: Exposure to machines or tools         | 440    | 12.9          | 249       | 7.4          | 384   | 11.5  |
| HC: Exposure to noise                     | 260    | 9.2           | 324       | 10.6         | 536   | 17.3  |
| HC: Exposure to chemical risks (breathe)  | 263    | 7.9           | 281       | 8.0          | 468   | 13.9  |
| HC: Exposure to biological risks          | 87     | 3.0           | 73        | 2.4          | 129   | 4.2   |
| HC: Exposure to radiation                 | 448    | 13.9          | 307       | 8.8          | 450   | 13.4  |
| EC: Exposure to unnatural postures        | 373    | 12.9          | 426       | 13.4         | 827   | 26.3  |
| EC: Exposure to lifting load              | 269    | 9.1           | 396       | 11.6         | 825   | 26.4  |
| EC: Exposure to repetitive motions        | 638    | 21.6          | 594       | 18.9         | 741   | 23.1  |
| PC: Exposure to a high pace of work       | 377    | 13.9          | 525       | 16.6         | 973   | 30.9  |
| PC: Exposure to less control at work      | 430    | 15.1          | 512       | 17.2         | 869   | 27.7  |
| PC: Risk of hiding emotions               | 374    | 12.9          | 486       | 15.4         | 698   | 20.4  |
| PC: Not applying knowledge                | 1253   | 41.0          | 759       | 24.3         | 650   | 20.0  |
| PC: Not learning                         | 1002   | 33.2          | 681       | 21.7         | 874   | 26.9  |
| PC: High amount of work                   | 603    | 19.4          | 461       | 14.6         | 669   | 21.9  |
| PC: Perception of the salary              | 350    | 13.3          | 571       | 18.8         | 1040  | 33.3  |

SC: Safety conditions; HC: hygiene conditions; EC: ergonomic conditions; PC: psychosocial conditions; DK/DA: don’t know / don’t answer

Data can be explained by the fact that not all employers have implemented the guidelines of the Occupational Safety and Health law in their organizations, or, that workers are not correctly informed about it.

Figure 1. Employment conditions by social protection coverage according to the pension system, 2017
Table 4. Resources and preventive activities and identification and evaluation of occupational risks for workers in Peru, 2017

| Preventive resources                                      | n   | %  | 95%CI    |
|-----------------------------------------------------------|-----|----|----------|
| Occupational risk information or training \(^b\)          |     |    |          |
| Very well informed                                        | 320 | 11.2| 9.6-13.1 |
| Well informed                                             | 1,333| 45.0| 42.3-47.7|
| More or less informed                                     | 2   | 0.1 | 0.0-0.3  |
| Misinformed                                               | 275 | 7.7 | 6.6-9.0  |
| Very misinformed                                          | 20  | 0.5 | 0.3-0.9  |
| Not informed                                              | 979 | 29.0| 26.6-31.5|
| Don’t know / Don’t answer                                 | 193 | 6.5 | 5.2-8.2  |
| Assessments, measurement or control of potential risks \(^c\) |     |    |          |
| Yes                                                       | 545 | 16.4| 14.8-18.2|
| No                                                        | 1,111| 35.9| 33.6-38.2|
| Don’t know / Don’t answer                                 | 131 | 4.3 | 3.5-5.4  |
| NA                                                       | 1,335| 43.4| 41.0-45.8|
| Access to occupational healthcare service or area \(^d\)    |     |    |          |
| Yes                                                       | 462 | 14.3| 12.7-16.0|
| No                                                        | 1,268| 40.7| 38.5-43.0|
| Don’t know / Don’t answer                                 | 47  | 1.3 | 1.0-1.8  |
| NA                                                       | 1,345| 43.7| 41.3-46.1|
| Health, safety or hygiene committee at work \(^e\)         |     |    |          |
| Yes                                                       | 515 | 15.7| 14.1-17.4|
| No                                                        | 1,216| 39.4| 37.2-41.7|
| Don’t know / Don’t answer                                 | 49  | 1.3 | 1.0-1.9  |
| NA                                                       | 1,342| 43.6| 41.3-46.0|
| Occupational Medical Examination \(^f\)                    |     |    |          |
| Yes                                                       | 550 | 16.7| 15.0-18.5|
| No                                                        | 1,212| 39.3| 37.1-41.5|
| Don’t know / Don’t answer                                 | 23  | 0.6 | 0.4-0.9  |
| NA                                                       | 1,337| 43.4| 41.1-45.8|
| Employee participation \(^e\)                              |     |    |          |
| Yes                                                       | 615 | 19.3| 17.4-21.3|
| No                                                        | 1,138| 36.5| 34.4-38.7|
| Don’t know / Don’t answer                                 | 36  | 0.9 | 0.6-1.4  |
| NA                                                       | 1,333| 43.3| 40.9-45.6|

95%CI: 95% confidence intervals, NA: No answer

\(^a\) Weighted percentages according to expansion factors.

\(^b\) Are you informed about the risks to your health and safety related to your work?

\(^c\) Do you know if any assessments, measurements or monitoring of potential health risks have been carried out in your workplace during the last 12 months?

\(^d\) Do you have access to an occupational healthcare service or area at your workplace?

\(^e\) Is there a delegate, supervisor, health, safety or hygiene committee in your workplace?

\(^f\) Have you had an entry, periodic or retirement medical occupational examination in your workplace during the last 24 months?

Among the advantages of this study, it should be mentioned that, in order to obtain the information, the surveys were applied in the households, having as a common filter people who had worked, at least one hour, in the week prior to the interview. Unlike the surveys carried out in Colombia \(^{18}\), Argentina \(^{19}\), Chile \(^{20}\) and Uruguay \(^{21}\), where the interviews took place in the formal workplaces.

Among the limitations, it should be mentioned that the information collected has not been verified. That is, the instrument collects the perceptions of the workers and this information is based on their honesty (we do not verify the conditions in their workplaces), which is common in this kind of study. Similar surveys were conducted in the European Union since 1990, every five years \(^{22}\). However, and despite the fact that information was not verified, this study provides for the
In conclusion, there is ample room for occupational risk prevention among Peru’s urban occupied economically active population, especially among dependent workers with long working hours, low social protection coverage and low economic income, poor occupational health management in their workplaces; situations that might affect their health and performance, as well as the quality of their work.

This first task provides the basis for monitoring and surveillance of the working, employment and health conditions of the urban occupied active population in Peru. Similar studies should be carried out periodically. In addition, occupational health information should be disseminated to raise awareness in the workers (independent and dependent) and their employers in order to reduce exposure to occupational risks and prevent work-related accidents and diseases.

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Table 5. Perception of health, injuries and occupational diseases in workers in Peru, 2017

| Questions | n  | %  | 95%CI |
|-----------|----|----|-------|
| Health Perception\a\b | | | |
| Very Good | 292 | 11.2 | 9.6-13.1 |
| Good | 1,531 | 49.9 | 47.5-52.3 |
| Regular | 1,110 | 33.3 | 31.1-35.5 |
| Bad | 167 | 4.8 | 3.9-5.8 |
| Very bad | 13 | 0.5 | 0.3-0.9 |
| Don’t know | 3 | 0.1 | 0.0-0.4 |
| Don’t answer | 6 | 0.2 | 0.1-0.5 |
| Workplace injuries\c\d | | | |
| Yes | 299 | 9.1 | 7.7-10.7 |
| No | 2,811 | 90.5 | 88.9-91.9 |
| Don’t know | 3 | 0.1 | 0.0-0.5 |
| Don’t answer | 9 | 0.3 | 0.1-0.6 |
| Occupational diseases\d\e | | | |
| Yes | 110 | 4.5 | 3.4-6.1 |
| No | 2,997 | 95.0 | 93.4-96.1 |
| Don’t know | 5 | 0.2 | 0.1-0.5 |
| Don’t answer | 10 | 0.3 | 0.2-0.7 |

95%CI: confidence intervals
\a\b Weighted percentages according to expansion factors.
\c In the last two weeks, in general, which of the following statements reflect your health state?
\d During the last 12 months, have you suffered any injury or damage due to an accident at work?
\e During the past 12 months, have you suffered from one or more illnesses diagnosed by a doctor, caused by work?

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