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Documentary analysis of accidents at work: a survey with 3160 cases occurring in 2010 within the State of São Paulo

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Abstract

The study evaluated the information contained in the Service reports workplace accidents recorded by the Reference Center on Occupational Health in the city of Araraquara/Brazil in the period of January to December 2010. We performed a quantitative desk research. Through these numbers is possible to diagnose a profile closer to the reality of accidents that affect workers in the region. During the period under review were reported 3160 cases of occupational accidents being the month of December with the largest number of records. From 3,160 accidents, 2637 (83%) are the registered workers, 2,374 (75%) were typical accidents and 2,155 (68%) minor accidents. The industry sector contributes strongly and negatively in the incidence of occupational accidents occurred, with 964 cases in Araraquara. The contusion was the most pronounced injury (917 cases). The results also revealed that, accidents and illnesses recorded in the country, occurred in young people (18 to 30 years old), and most of them are males. Those workers have an accident rate almost four times larger than females, registering 2,512 (79%). By these analyses of the most affected victims' profile, we can implement an intensive care policy, promoting a closer inspection, getting better facilities, checking and educate employees about the importance of using safety equipment. This can be a way to decrease or even eliminate these accidents.

Keywords: Accidents at work, quantitative analysis, Araraquara.

1 Introduction

"The work is considered by many scholars as an elevated human socialization, that represents learning and a permanent contact between people. It means a dialectical comprehension, provides creativity, imagination and progress for some people and for others, the suffering, the dissatisfaction and the disease ". (MIELNIK, 1976, p.49).

The history of humanity has some interesting moments, but these have never been treated as historical facts and they changed the meaning of human trajectory. One of them, for sure, concerns the imprecise time when some men decided to use hands to do things and called this work (...). In fact, what the man could see, was the job as slavery practice and worst: that work would kill, maim and make (O`NEIL and MORAES JR, 2004, apud MONTEIRO, 2007)

According to Hale & Glendon (1987), the accidents point that the capacity of control of the system was exceeded and, frequently, as last preceding factor to the injury, can be identified some aspect of the behaviour of the victim.

According to Zocchio (2001), preventing accidents at work is the duty of all; all of us have obligations to fulfil with regard to accident prevention; entrepreneurs and business leaders of all sizes and branches activity, employers and workers, professionals of all categories and the simple citizen.

According to the Brazilian Standard for Registration of Accidents (NB18), the work accident is identified as a discrete occurrence and undesirable, related to the performance of work, which causes personal injury or taking place near or remote risk of injury (ABNT, 1975).

Barata, Ribeiro and Moraes (2000), reviewing the occurrence of accidents at work in municipalities in the State of São Paulo with more than 80 thousand inhabitants, it was pointed out that only 28.9% of the cases were reported through the CAT (Work accident report). In relation to employees governed by the consolidation of labor laws, the proportion of cases registered was 42.1%, which corresponds to less than half of the cases with obligatory issuance of CAT.

The present work aims to identify, quantify and evaluate the occurrence of accidents at work by releasing the information contained in the Report of Damaged Care Labour (RAAT), provided by the database of the Reference Center on Occupational - CEREST Araraquara, a midsize city in the State of São Paulo/Brazil, with approximately 200,000 inhabitants, describing the profile of workers who suffered accidents in the period of January to December 2010.

One of the main contributions to assist the understanding of work accident is the treatment of information from data made available; the research will contribute to complement to official statistics on accidents at work that have occurred in the municipality of Araraquara/SP, that was registered through the Reference Center on Occupational - CEREST of the municipality.

For Bedrikow (1996) "count the number of accidents at work, distribute them according to the characteristics of the occurrences and victims and present the results through the indispensable basis for statistics constitute an indication, application and control of measures prevencionistas".

1.1 Methodological Procedures

This is a quantitative descriptive documentary research approach, that based on registered data about worker accidents by CEREST Araraquara.

According to Barros and Lehfeld (1986), descriptive research is one in which the researcher observes, records, analyzes and correlates facts or phenomena (variables) without manipulating them, trying to discover the frequency with which a phenomenon occurs, its nature, characteristics, causes, relationships and connections with other phenomena.

Trindade (2003) mentions that the analysis of quantitative data and the crosses between the various information collected, will produce something of quality, enabling the researcher to draw conclusions that could not be drawn without lifting and crossing of quantitative information.

2 Work Accidents

The first law of work accidents in industrial Europe came in the third quarter of the nineteenth century, giving employers the liability for accidents at work; in 1884, a German law established the obligatory insurance against accidents (LOPES, 1983).

The work presents constantly serious risks for the population despite of the fact that it being important. In a study conducted by Sivieiro et. al. (2009), some information related by labour, from the International Labour Organization (ILO) on accidents at work are presented, as for example, the daily death of approximately 5,000 people.

"The roots of the problem reside in the formation of the imperfect men. Accidents do not happen, are caused. By lack of communication, lack of supervision, by faulty planning, human errors, such as aggression, distraction, fatigue, indiscipline, arrogance and avarice. (LIMA, 1976, p. 67)

2.1 In the World

According to the International Labour Organization – ILO, it has been occurring approximately 250 million of work accidents and 160 million occupational diseases or of work per year, throughout the world; the equivalent of 685 thousand accidents of work per day, 475 per minute and 8 per second. (BARTOLOMEU, 2002)

According to ILO estimates (MPAS / SPS, 2004), in 2004, the case fatality index (per 100,000 workers) was 5.3 deaths for countries of the industrialized economies. In China the figure was 11, 1, and in India 11.0. In Latin America was around 13.5 and the rest of Asia and Africa it was registered above of 20.0 deaths.

2.2 In Brazil

According to Revista Proteção (2002) in Brazil, there is a sum of problems of sub-registries or failures of notification, that makes 63% of the 70 million workers who represent its Economically Active Population are excluded; therefore, the annual statistics of occupational accidents is based on the number of workers enrolled in the National Social Security Institute (INSS), which represents only 27% of workers in Brazil.

The reasons to explain the high number of occurrences of the work accidents are diverse, involving failures in projects of work systems, equipment, tools, and disability in maintenance processes of various elements working components. The Human Factor occupies a very important place as cause related to work accidents, including psychosocial characteristics of the worker, negative attitudes towards the prevention activities, aspects of personality, lack of attention, among others. (DI LASCIO, 2001)

Diesat (2008) also demonstrates the concern about Brazil, which is in fourth position in relation to deaths due to accidents at work; according to data from the International Labour Organization (ILO) there are 2.2 million deaths worldwide every year.

3 Classifications of Workplace Accidents

Alpha

The classification applied by the National Social Security Institute (INSS), (2009) to differentiate the types of accidents at work is as follows:

- Typical Accidents - accidents that arise from the characteristic of the professional activity carried out by accident.
- Accidents on the way to work - accidents that have occurred on the route between the residence and the place of work and vice versa.
- Occupational disease – deseases ou illnesses that are caused by special conditions at work and with which the workers are in contact. According to Sciencedaily (2005) Ill-health and illness caused by work can have a major impact upon the injured person . Unlike workplace accidents which arise from a single incident, industrial disease and occupational ill health is caused over a period of time, sometimes even over many years. The most common workplace illnesses are cancers from exposure to hazardous substances, musculoskeletal diseases, and respiratory diseases caused by exposure to pathogens, and hearing loss. (Injury Board, 2012)

4 Methods and Materials

It was analyzed the information from the database produced by the Report of Damaged Care Labour (RAAT), provided by the Reference Center on Occupational in Araraquara - CEREST, for the period January to December 2010. The distribution of accidents was made using the following characteristics: gender, function, type of accident, branch of activity, age, nature and type of injury .

The Municipality of Araraquara, place of execution of this research, is located in the interior of the State of São Paulo, and in 2010 had a population of 208,725 inhabitants. It was considered the first Brazilian city in the ranking IFDM (Human Development Index), which takes into account the criteria of employment, income, education and health. (IBGE, 2010).

Alpha

The CEREST of Araraquara receives the information directly from the health units that assist the injured. The Reports of Damaged Care Labour- RAAT are opened at the units, communicating and completing a detailed questionnaire about the work accident. The RAAT is an instrument of monitoring in work accidents, that makes possible a base of data about the occurrences of accidents; this is the base for the accomplishment of monitoring to the workstations, aiming at to the implantation of corrective and preventive measures to prevent new occurrences.

During the collection of data, the forms need to be filled in two copies: one is destined to the CEREST, in case that suspicion of occurrence of illnesses related to the work for statistical data, and another to the victim exists. Then, the Communication of the Accident at Work - CAT must be filled by the company or by the workers and delivered in an Agency of Social Security by the issuer. (MPS, 2011)

In the study have been used 6 health units in which the letters A,B,C,D,E and F replace the names. According to CEREST, 3,160 accidents were notified by RAAT, but only 349 were investigated and 252 were notified in reportable information system Notification-SINAN where are forwarded workers who suffered serious work accident or with minors injuries; accident at work by exposure to biological material; cancer related to the work; occupational dermatitis, injuries for repetitive efforts; induced auditory loss for noise; upheaval mental related to the work; pneumoconiosis; poisonings exogenous.(CEREST,2011)

The Work accident reports - CAT were not used, because these are filled by workers injured or firms responsible for the direct route to the INSS. Some instances were filled without sufficient information compromising in some cases the proper identification of the event.

5 Results

5.1 Annual Statistics

In Table 1, it is the annual closing for unit of health and are demonstrated the monthly numbers obtained through analysis of RAATS for the period from January to December 2010.

Table 1: Number of RAAT opened in the city of Araraquara / SP in 2010 (N = 3160)

Unit	January	February	March	April	May	June	July	August	September	October	November	December
A	123	133	214	177	132	193	183	220	184	234	173	259
B	37	36	63	73	43	64	78	78	106	108	63	99
C	9	2	1	2	9	7	2	1	0	3	4	2
D	0	1	0	0	0	0	0	6	10	0	8	2
E	0	0	2	0	5	1	3	1	0	0	0	0
F	2	0	2	5	1	1	1	0	0	2	2	0
TOTAL	171	172	282	257	190	266	267	306	300	347	250	362

The normal working week in Brazil is 44 hours over a six-day period that represents a 220 working hours a month. (Deloitte,2010) It is possible to observe that the biggest taxes of work accidents had occurred between the months of October and December; 347 and 362 respectively. As opposed to these findings, the smallest indexes were in January (171) and February (172). An explanation for these numbers can be: initially because in the end of year, characterized by increased sales, there is an increased flow of production in various fields of activity and refracting proportionately in increase of temporary hires, mostly inexperienced workers.

The analysis indicates the October month as one of most critical, fact that coincides with the beginning of the acts of contract of the temporary workers, characteristically of little experience. The month of December is the most hires flow due to the end of time-limits for end-of-year festivities; these are indications of an environment more susceptible to errors. Compared to the months of January and February, the explanations for the drop in accidents may be related to decreased production activity

according to the natural decline in sales at the end of the year, coinciding with the end of temporary contracts, as well as being this a period traditionally used for vacation time.

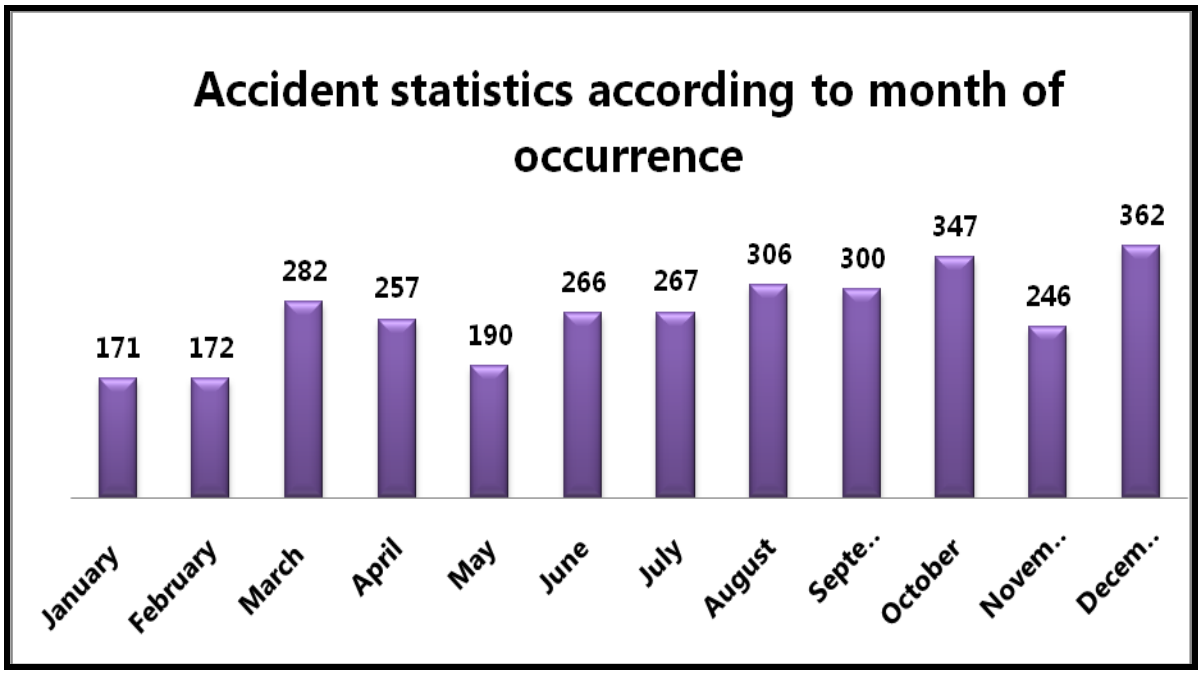

Figure 1: Statistics of Accidents according to month of occurrence. (N = 3160), Araraquara, SP, 2010

5.2 Distribution of injured workers, according to gender.

The occurrence of accidents at work by gender shows the male as dominant, with a total of 2512 (79%) compared to 648 (21%) were female, as can be seen in Figure 2.

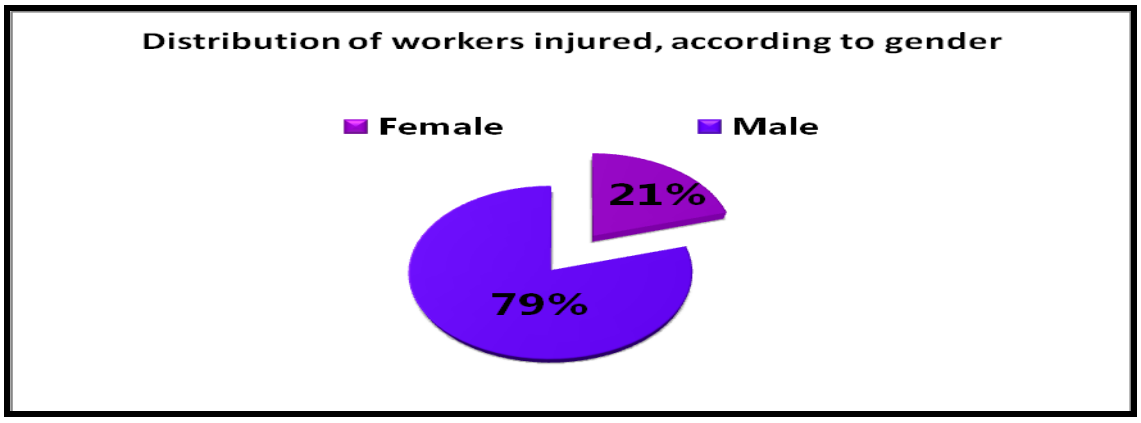

Figure 2: Distribution of injured workers, according to gender. (N = 3160), Araraquara, SP, 2010

For a better understanding of the problem, it will be placed on topics some important information taken from International Labor Organization published in the year 2009, which reports that men carry out their duties with greater exposure to the risks of accidents at work as well as have a higher probability of being victims of fatal accidents and other types of work-related deaths; tend to be more exposed to the risks posed by substances which are carcinogenic or allergenic circulatory and respiratory diseases; adopt preventive and protective methods of job execution less than women.

5.3 Distribution of injured workers, according to the function.

It identified in the present study that the occurrences of industrial accidents with professionals with registers correspond the 2,637 (83%) cases. That's about eight times the second index, which are accidents were classified as professionals that don´t have specific function 333 (11%) occurrences. Then it

comes the autonomous workers who registered 101 (3%), other with 57 (2%) and 32 (1%) domestic cases. The results mentioned above are showed in Figure 3.

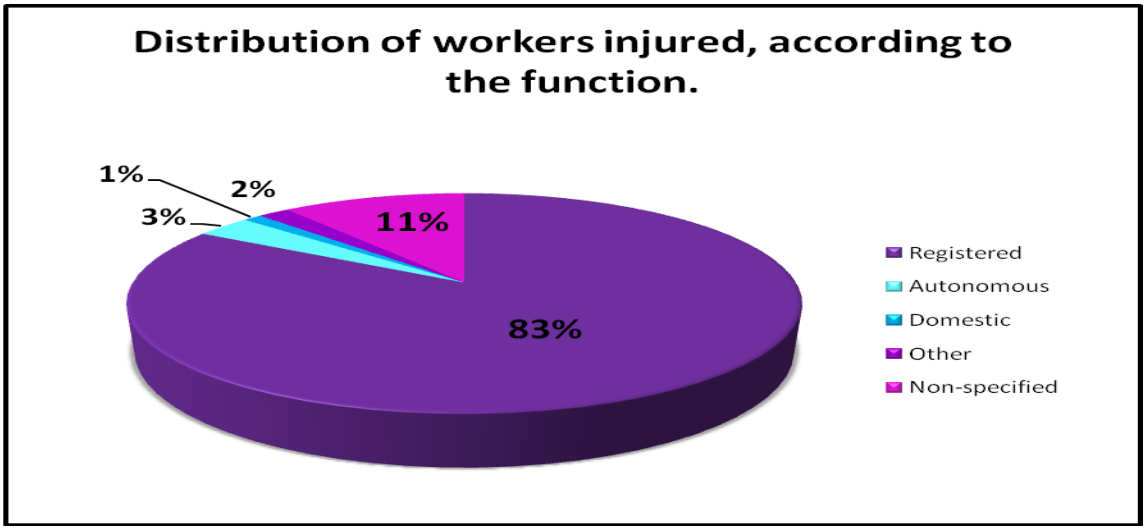

Figure 3: Distribution of in injured workers, according to the function. (N = 3160), Araraquara, SP, 2010

5.4 Distribution of injured workers, according to the type

Among the types of work injuries identified, the typical accident that occurred during the time of exercise of professional activity is much higher in occurrence than all the others. In the study of Barata, Ribeiro e Moraes (2000) were also analyzed the occupational accidents according to nature, and it was found that typical accidents were more common than accidents on the way to work.

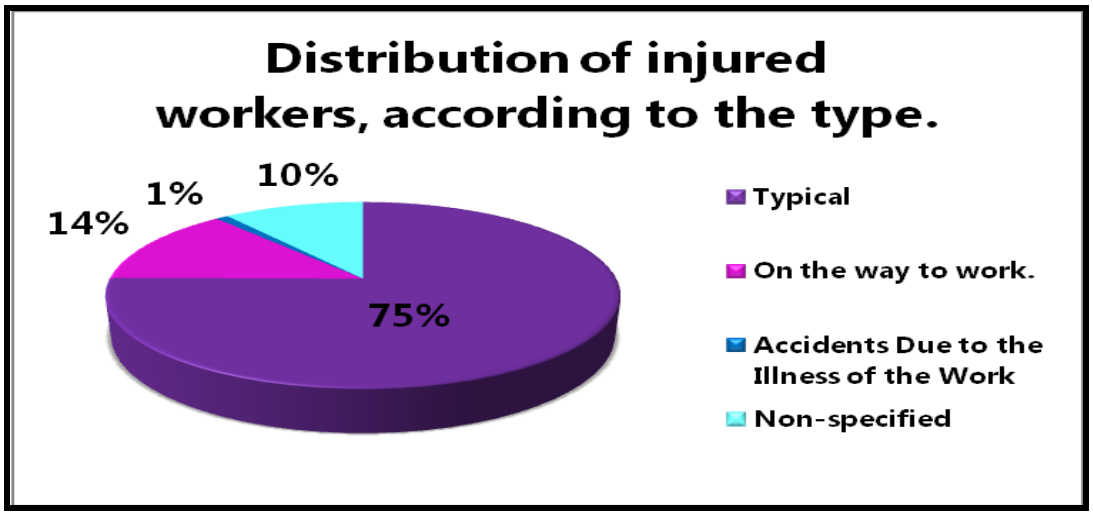

Figure 4: Distribution of injured workers, according to the Type. (N = 3160), Araraquara, SP, 2010

5.5 Distribution of injured workers, according to activity branch

According to Silveira et al. (2005) occupational accidents occur in any type of institution, industry and profession, however some workers are more susceptible to suffer accidents than others. In Araraquara, the branch of activity which was the largest number of cases of accidents reported by RAATt was the industry with 964 cases.

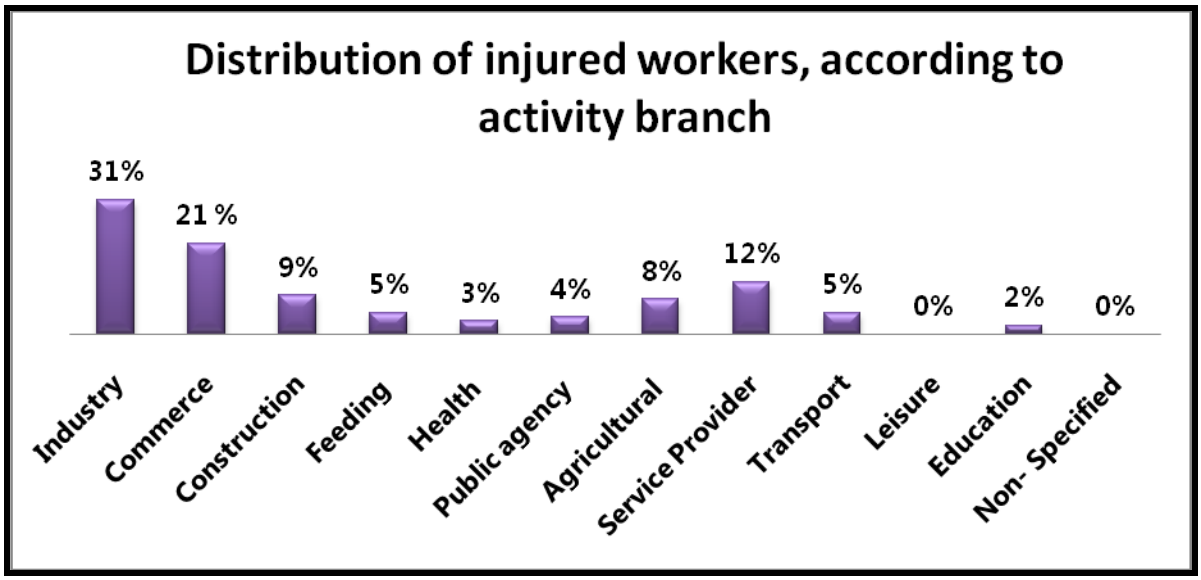

Figure 5: Distribution of injured workers, according to activity branch. (N = 3160), Araraquara, SP, 2010

5.6 Distribution of injured workers, according to age

Figure 6 shows the frequency of occupational accidents according to age. The group with the highest number of accidents is what comprises workers between 18 and 30, in which 1654 cases are registered. Secondly, the group 31 to 40, in which are recorded 793 accidents.

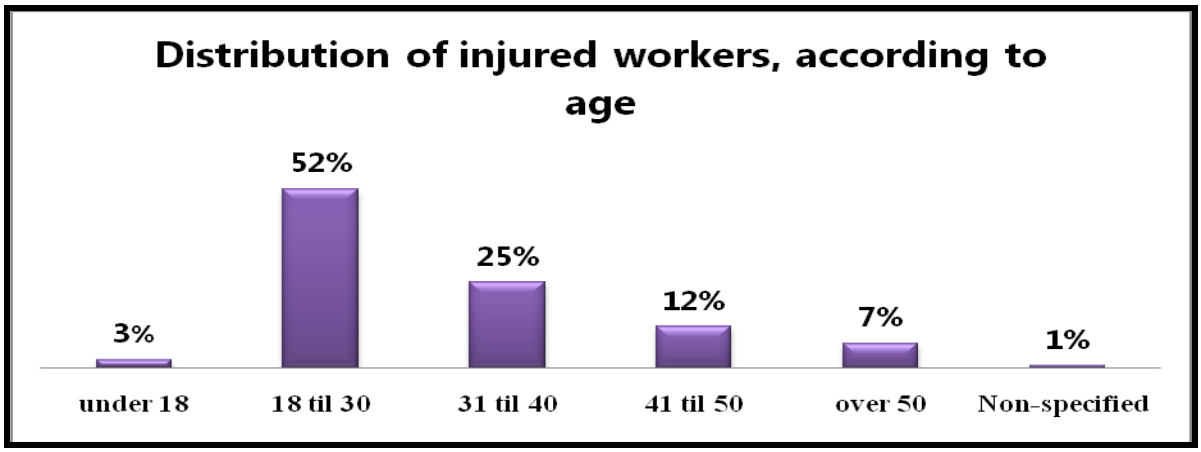

Figure 6: Distribution of injured workers, according to age. (N = 3160), Araraquara, SP, 2010

The largest index established (aged 18 to 30 years) have the complication that often are inexperienced workers and often unaware or existing risks discrediting the work environment, therefore, the main victims of accidents at work.

5.7 Distribution of injured workers according to the nature of the accident.

Considering the analysis of the nature of accidents in the municipality reported, it can be seen that light accidents have the largest index of 2155 (68%) cases with injured. Fatal accidents have the lowest index with 16 (1%) cases, as shown in Figure 7.

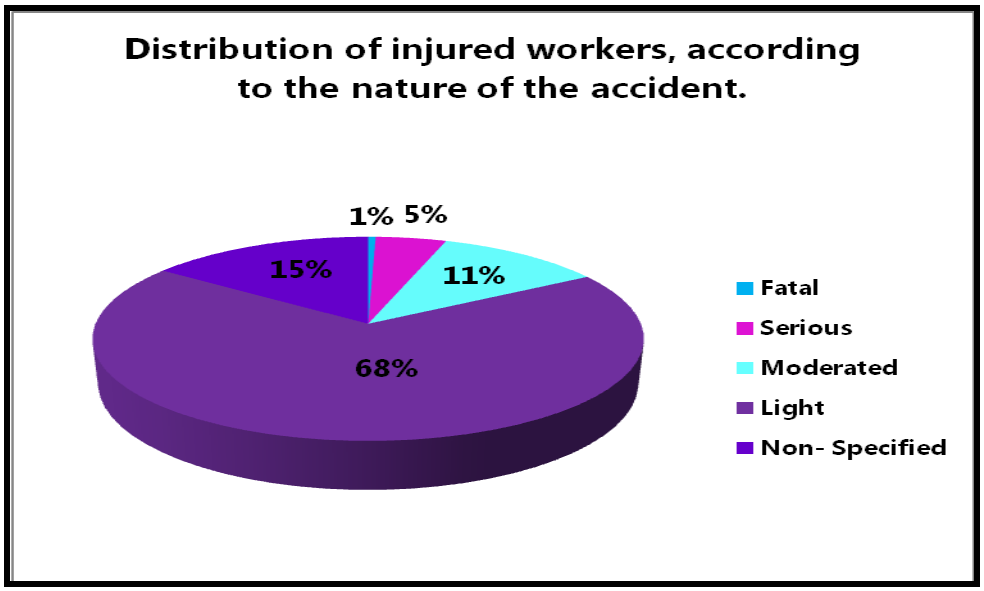

Figure 7: Distribution of injured workers, according to the nature of the accident. (N = 3160), Araraquara, SP, 2010

5.8 Distribution of injured workers, according to type of injury

According to Whiting and Zernicke (2001), the lesion is accompanied by physical, emotional and economic costs are unavoidable, as well as loss of normal function and time, beyond the physical suffering, disability and caused disorder. The survey points out that the most common type of injury is the contusion with 917 cases; Ferreira (1986) defines contusion by "tread; grind; wound in the fall; seriously injure; hurt themselves".

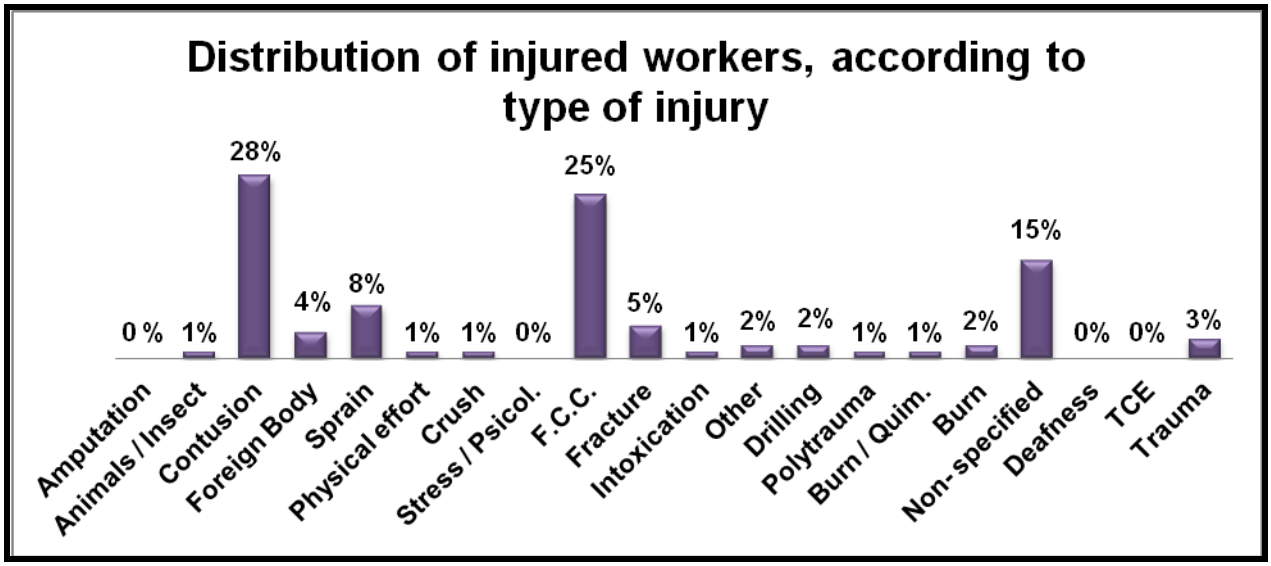

Figure 8: Distribution of injured workers, according to type of injury. Araraquara, SP, 2010 (N = 3160).

6 Conclusion

This study contributed to a better understanding about the distribution of accidents that took place in the Araraquara city. It was possible to highlight the importance of the work accident reports and the analysis of their indicators. The information in RAATs are sufficient and they have large number of information, but the municipality of Araraquara must to promote training to its professionals who working at health units , public or private; they should be taught how to fill in RAATs up, properly, in order to obtain better results.

To do this it would require hiring a larger number of employees to do severe inspection in the units of health; this is not easy in a public administration with no much resource to use.

According to Herzer (1997), the description of the incident should contain as much data as possible to carry out a correct analysis allowing identification the causes of the accident.

With the verification of the sectors most affected, we can implement a policy of intensive care, promoting close inspection, getting better facilities, checking and educating employees about the importance of using safety equipment. Training should encourage the employee to prevent themselves and pay more attention in the activities, especially with young males, who are suffering more at risk of harm at work, once they lack maturity; special attention must be given to that segment.

One of the important evidences that were showed in this research is that the correct filling out the reports, by the companies and the care units, can help to understand the nature of the accidents besides of developing an efficient data base. Many accident events are omitted by the companies in order to avoid preoccupations with the public administration related to human labor. In order to get a better condition to analyze this scenery and understand the real characteristics of occupational accidents, some appropriate measures can be taken, as public actions and programs about the problem, beside the increase the public control on the reports.

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