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Workplace adaptation of people with disabilities in the construction industry

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Abstract

The purpose of this research was to identify the workplace adaptations of workers with disabilities in the construction industry in Pernambuco, Brazil. The research was conducted in two stages. The first phase aimed to identify companies that have workers with disabilities in their building construction sites and which jobs they perform. In the second phase, phone call was made by the researchers to the construction sites to verify that workers with disabilities were working in the sites, explain the purpose of the research and request company authorization to participate in the study. After match the best day to visit, the researches visited the construction sites to interview each of the workers with disabilities and their supervisors that answered a socio-demographic questionnaire. The results of the research allowed to identify that the majority of workers with disabilities were male, had physical disabilities, not using prostheses or ortheses. Most deficiencies were caused by diseases, while more than half of individuals with disabilities did not complete high school. The most prevalent job was the laborer, while about half of the cases, companies made adjustments in the workplace, of which all were of organizational type, and no financial investment for labor inclusion was necessary.

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1. Introduction

People with disabilities (PD) represent about 15% of the world population, or one billion people [1]. While in Brazil this figure is 23.9% of the population, i.e. there are 45.6 million PDs in Brazil [2]. The inclusion of this population in the social-labor environment has been discussed and encouraged in many countries through various laws, for example from quotas set for the employment of people with disabilities. In Brazil, laws establish a quota of 20% for public sector enterprises and 2% to 5% for private companies with over 100 employees.

Despite the attempts to include PD at work, the number of such people seeking employment and of those receiving job opportunities remains low. A recent study showed that in 27 countries, working-age persons with disabilities experienced significant labor market disadvantage and worse labor market outcomes than working-age persons without disabilities. On average, their employment rate, at 44%, was over half that for persons without disability (75%) [3]. In the meantime, in Brazil, of 48.5 million people employed in 2013, only 357.797 were declared as people with disabilities, representing 0.7% of total [4].

Some companies have hired workers with disabilities without using appropriate methods to do so. Thus, there was no prior analysis of accessibility conditions, neither of the demands of their jobs, nor of these people's potential [5]. In a survey conducted by Chi et al [6], out of the 540 case studies that were analysed, in only 3 of them the employers conducted an analysis of the tasks and the functional abilities of disabled workers with regard to jobs under an inclusion program.

Therefore, there is a need to compare the demands of the job and the PD's capabilities. The goal is that the demands of work do not exceed the functional capacities of the worker with a disability and that the workplace is accessible and safe. PD's jobs should allow or facilitate the development of their individual skills and abilities, while also preventing the progression of their existing deficiencies and/or the emergence of new ones [7]. Consequently, this prevents the worker with disabilities from having to make a great effort to adapt to the job or the job's falling far short of their professional qualifications [8].

Accordingly, it is essential to understand the interaction between PD and the elements of the work system, because when verifying the knowledge of the tasks, the physical, intellectual and organizational demands of jobs, in addition to the functional capabilities of workers with disabilities, the jobs can be properly adapted for them [9].

The construction industry is the fifth largest employer in Brazil between the sectors of economic activity, with about 2.8 million workers. However, between the years 2009 and 2010, it was the sector that had the biggest increase in workers [4]. Despite the importance of this economic sector in Brazil, there is a lack of publications on labor inclusion of PD in this sector in the country [10]. This occurs not only in Brazil, because according to Newton and Ormerod [11], there has been no previous research on construction industry employment and people with disabilities.

According to the survey results of Newton and Ormerod [11], workers with disabilities typically work in offices rather than construction sites, in most construction companies. Furthermore, the types of impairment that they have are not known, the relationship between environment and impairment and the impacts of that environment, such as the type of work are not known either.

In this context, there is a need to identify which jobs are performed by workers with disabilities and what adaptations are made. Thus, the purpose of this research was to identify the workplace adaptations of workers with disabilities in the construction industry in Pernambuco, Brazil.

2. Methods and techniques

The survey was applied between June and December 2014 in building construction sites in the metropolitan region of Recife, in the state of Pernambuco, Brazil. The research was conducted in two stages. The first phase aimed to identify companies that have workers with disabilities in their building construction sites and which jobs they perform. This step was performed from information of SINDUSCON-PE (Union of the construction industry of Pernambuco) about the presence of workers with disabilities in the construction undertakings of Pernambuco. There were eighteen companies that had workers with disabilities in the building construction sites.

In the second phase, phone call was made by the researchers to the construction sites to verify that workers with disabilities were working in the sites, explain the purpose of the research and request company authorization to

participate in the study. After contacting the companies, one company was excluded because the work was performed outside the metropolitan area of Recife, another company not authorized research, while in 5 companies the work was completed or near completion and individuals with disabilities had been fired. Thus, 11 companies agreed to participate. Thus, after match the best day to visit, the researches visited the construction sites to interview each of the workers with disabilities and their supervisors that answered a socio-demographic questionnaire.

This study was submitted to and approved by the Ethics Committee in Research of the Federal University of Pernambuco and given the registration number 674.220/2014. The jobs evaluated were selected according to the following criteria: the jobs should be active throughout the period of the work and should be typical of the construction field sector.

3. Results

From SINDUSCON-PE information, were identified 24 construction sites of buildings of 11 companies that had workers with disabilities performing their jobs at the construction sites. In these sites, it was found 45 PDs, of which 43 were males (95.55%) and 2 women (4.44%).

Of the 45 workers, 29 (64.44%) had physical disabilities, 8 (17.77%) partial visual impairment (monocular), 2 (4.44%) total hearing impairment, 5 (11.11%) partial hearing deficiency and 1 (2.22%) multiple disabilities. The average age of the workers was 41.33 years old, the average time for the onset of the disability was 25.22 years, whereas the average time the workers had exercised the function in the company was 3.15 years. Only 11.11% (n=5) of the workers used prosthesis or orthosis. Regarding the origin of deficiencies, 40% (n=18) said they were caused by disease, 31.11% (n=14) of the workers said they were from accidents, 15.55% (n=7) said they were congenital and only 13.33% (n=6) said it was caused by an accident at work of which five were in construction industry.

Table 1. Types of disability per jobs.

Jobs	Physical	Monocular	Total hearing impairment	Partial hearing deficiency	Multiple disabilities	Total
Laborer	9	1	1	0	1	12 (26.66%)
Bricklayers	3	1	0	2	0	6 (13.33%)
Bricklayer assistants	2	2	0	0	0	4 (8.88%)
Stockman assist	3	1	0	0	0	4 (8.88%)
Porters	3	0	0	1	0	4 (8.88%)
Carpenters	3	0	0	0	0	3 (6.66%)
Electricians	1	1	0	0	0	2 (4.44%)
Foreman	1	0	0	0	0	1 (2.22%)
Concrete mixer assistant	1	0	0	0	0	1 (2.22%)
Sharpener	1	0	0	0	0	1 (2.22%)
Concrete mixers	0	0	0	1	0	1 (2.22%)
Painter	0	0	1	0	0	1 (2.22%)
Steel fixer	0	1	0	0	0	1 (2.22%)
Stockman	1	0	0	0	0	1 (2.22%)
Plasterman	0	0	0	1	0	1 (2.22%)
Production assistant	0	1	0	0	0	1 (2.22%)
Plumber's assistant	1	0	0	0	0	1 (2.22%)
Total	29	8	2	5	1	45

In addition, 42.23% of workers had completed high school and 57.77% had not completed high school. With respect to the job performed, 12 (26.66%) were laborer, 6 (13.33%) bricklayers, 4 (8.88%) bricklayer assistants, 4 (8.88%) porters, 4 (8.8%) stockman assist, 3 (6.66 %) carpenters, 2 (4.44%) electricians, 1 (2.2%) foreman, 1 (2.2%) concrete mixer assistant, 1 (2.2%) Concrete mixers, 1 (2.2%) painter, 1 (2.2%) steel fixer, 1 (2.2%) stockman, 1 (2.2%) plasterman, 1 (2.2%) production assistant, 1 (2.2%) plumber's assistant and 1 (2.2%) sharpener. Table 1 is shown the distribution of types of disability in relation to the functions performed by the employees.

In relation to adaptation in performing work, it was found that for 23 (51.11%) workers adaptation was not carried out and in 22 (48.88%) cases, adaptation was performed. In addition, all the adjustments made were of organizational type, of which 14 (66.66%) cases were only permitted workers carried out light work, not being allowed to handle heavy objects or tools, 8 (38.09%) cases was not allowed workers to work in height and 1 (4.76%) the employee was not squatting tasks or objects caught or ground tools. Thus, financial investments for those accommodations were not necessary. In addition, currently, regarding the need for further job accommodation, 97.77% and 100% for workers with disabilities and bosses, respectively, said it was not necessary.

4. Discussion

In the survey, it was found that 95.55% of the workers with disabilities were male. This result is different from the data of RAIS [4] in Brazil for people with disabilities to all sectors, for 64.84% (232 thousand) of workers were male, while 35.15% (125.8 thousand) female. No data was found within Brazil about the difference of jobs according to the economic sector or the gender of people with disabilities. This prevalence of males found in the survey can be explained by the Brazilian general population data, as there were 2.8 million workers in the construction sector in 2013, of which 2.6 million (90.7%) were males and 246.6 thousand (9.3 %) were female. In the state of Pernambuco, out of 145.2 thousand workers, 134,700 (92.75%) were male and 10.5 thousand (7.25%) female [4].

Workers with disabilities were most of the research sample, corresponding to 64.44% of the individuals. This result showed a higher percentage of subjects with physical disabilities than the data from the 2013 RAIS [4], in which the number of workers with disabilities in the labor market in Brazil was 50.71% or 181 464 PD, also higher than in the state of Pernambuco, which was 50.73% or 6,385 workers.

The average age of respondents was 41.33 years, similar to results observed by RAIS 2013[4], shows that about 50% (24 million) of workers with and without disabilities, have Age between 30 and 49 years.

The survey data showed that the use of prosthesis by the workers was 11.11% (n = 5). According to Langton and Ramseur [12] and Schwanke and Smith [13], the use of assistive technology equipment may enable the carrying out of tasks at the job locations, increasing employment opportunities for people with disabilities. Thus, it is believed that the use of the prosthesis enabled the individual to perform activities, allowing a productive life at work.

Accidents at work occurred in the construction industry account for 25% of all accidents and 83.33% of the occupational accidents. It was expected that a higher proportion of occupational accidents in this industry, given that the survey was conducted in this economic area. By analyzing the Statistical Yearbook of Social Security 2013, it is observed that there were 61,889 accidents in construction, representing a decrease of 3.55% compared to the year 2012, even with an increase of employment contracts of 1.4% in the year 2013 [14]. This decrease in the number of occupational accidents may be related to a greater appreciation and investment in occupational safety area by the sector's companies.

Regarding the school education of the workers with disabilities, it was found in the survey that 57.77% of them had not completed high school. This result was similar to research Farias and Lucca [15], in which 55% of the study population had not completed high school. According Selander et al [16], in the increasingly competitive labor market, vocational skills becomes essential, since the lack of workers' technical qualification limits their chances of being allocated to new types of work, which can lead to difficulty in inclusion or reintegration of these individuals in the labor market. However, this factor did not appear to be a limiting factor in this study, because the data of 2013 year shows that 57.22% RAIS or 56.85% of workers (with and without disabilities) of the construction industry sector in Brazil and in the state of Pernambuco, respectively, had not completed high school [4].

Regarding the distribution of the functions performed by the population which was studied, we found that 26.66% (n =12) were laborer, 13.33% (n=6) bricklayers, 8.88% (n=4) bricklayer assistants, 8.88% (n=4) porters,

8.88% (n=4) stockman assist, 6.66 % (n=3) carpenters and 4.44% (n=2) electricians. Thus, it is noticed that most workers performed auxiliary functions in construction, requiring less professional training, besides that, they generate lower wages and are less valued. This result may have occurred because of the low educational level of the participants, the decreased functional capacity as a result of the disability and also because of prejudice and ignorance of the capabilities of the person. According to Tshobotlwane, Haupt and Chileshe [17] and Kaye[18], disabled workers take low-skilled jobs and low wages and are not adequately represented in valued positions in civil construction companies.

The companies made organizational adjustments at worksite for 22 (48.88%) workers with disabilities to carrying on activities. It was observed that all the adjustments made were of organizational and the majority of adaptations were that only permitted workers carried out light work, not being allowed to handle heavy objects or tools. This result is consistent to the findings the research of Hartnett et al [19] that 43.9% of employers made accommodations for employees with disabilities. In the findings of Stoddard [20], 64% of the employers that had adapted jobs to PDs said that they had redistributing non-essential tasks to other workers. While in the research of Newton and Ormerod [11], 73% of employers in the construction industry made adaptations in work organization to PD (e.g. transferring disabled people to other jobs, rearranging work duties). Thus, the redistribution of tasks and requesting help from another employee to perform non-essential tasks were useful adaptations to be borne in mind when including a PD at work [21]

In addition, financial investments for those accommodations in this research were not necessary. Schartz et al [22] published the results of 259 companies that had made adaptations of the job for PDs and found that in the first year after the accommodation, 49.4% of the employers said they had not spent anything on adaptations. As to the others, the average cost in the first year was US\$600. Additionally, the estimates for the direct benefits obtained such as, increased productivity and a decrease in absenteeism from 0 to US\$116,000. Thus, according to Guimarães, Martins and Barkokébas Junior [21] it is verified that is not always necessary to make major physical changes in the work environment nor to provide sophisticated, technological aids to adapt the workplace to an individual with disability. Starting with organizational changes such as, the redistribution of tasks, changes in working hours and the provision of suitable prostheses and orthoses, it is possible to achieve the accommodation of workers with disabilities.

In this context, the main benefits obtained by companies based on job accommodation to individuals with disabilities were: retaining skilled workers, an increase in worker productivity, eliminating the costs of training new employees, improving relations between workers, and an increase in the morale and general productivity of the company [23,24].

The survey results have some limitations, since the number of companies, worksites and workers with disabilities are small, allowing not ensure the profile of workers with disabilities in this sector of the economy. Therefore, the performance of new studies is needed in this industrial sector with a larger number of companies, worksites and workers with disabilities.

5. Conclusion

The survey results enables identify that most workers with disabilities were male, had physical disabilities, not using prostheses or orthoses. In addition, most deficiencies were caused by diseases, while more than half of individuals with disabilities did not complete high school.

The most prevalent job found in this study was the laborer, while about half of the cases, companies made accommodation in the workplace, of which all were of organizational type, so no financial investment for labor inclusion is not necessary these workers with disabilities.

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