

A SAMPLE OF THE EXPOSURE TO ERGONOMIC RISKS UNDER THE VIEW OF THE PROFESSIONALS IN THE BAKERY INDUSTRY

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1. Context

Estimates raised in the year 2017 indicated that 2.78 million deaths occur worldwide each year associated with the work, a value above the 2.33 million deaths estimated in 2014 already. A large share of work-related mortality shaft occupational diseases, accounting for 2.40 million (86.3%) of the total estimated deaths (HÄMÄLÄINEN *et al.*, 2017). This shows, in relation to the causes of death, that the estimated number of work-related illnesses considerably exceeds the number of actual accidents (e.g.: work-related injuries).

It is worth remembering that globally there are around 337 million occupational accidents per year, which means 923 thousand accidents per day or ten accidents occurring every second. Such information represents only a sample of the scale of the problem faced by the area of Occupational Health and Safety (OHS), as accidents and occupational diseases come to commit 4% of global GDP (OIT, 2013).

In Brazil, only in the year 2016, there were over half a million work accidents, where 2,265 workers died and 12,442 were permanently disabled (AEAT, 2016).

It is also necessary to highlight the discrepancy between the information cited above with the data related to work accidents collected by the Brazilian Institute of Geography and Statistics (IBGE, 2014), since the latter considers workers with informal ties, self-employed professionals, military and statutory, while previous data do not consider this remarkable portion of the population. In this context, the number of occupational accidents in Brazil is 4,948,000, with the number of occupational diseases reaching 3,568,095 cases.

The artifact to be studied in this article is the bakery industry, which presents copious unhealthy environments and postural inadequacies during the execution of their work activities. Indeed, the demands related to ergonomic hazards in these locations appear to be significant, with the potential for the presence of a significant rate of absenteeism caused by illness and accidents.

As the Ministry of Labor and Social Security data (BRAZIL, 2018a), the baking industry in Brazil recorded only in 2009, 761 work accidents, with 78.3% corresponding to typical accidents, 18.3% to commuting accidents and 3.4% to occupational diseases.

In this context, this article aims to verify the frequency of occurrence of manifestations related to ergonomic risks in the occupational routine of workers of the bakery industry in the southern region of Rio Grande do Sul.

2. Method

The research can be classified as objectives as descriptive and as the technical procedures is essentially a field survey (SILVA e MENEZES, 2005), being the object of study composed by workers of the bakery industry. This study was developed based on the research paths summarized in Figure 1.

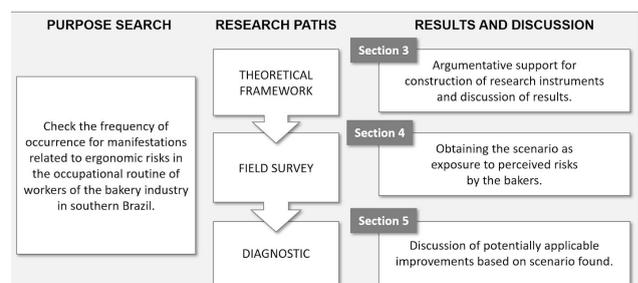


Figure 1: Research Methodology Summary

Source: Authors (2019)

The data collection procedure consists of a set of questions arranged in three constructs:

- First construct: allowed identifying the socioeconomic characteristics of workers;
- Second construct: composed of 22 affirmative sentences, which were answered on a Likert Scale, which ranged from “strongly disagree” to “totally agree”. The sentences were focused on the occupational routine of the interviewees;
- Third construct: It contained 5 open questions, which addressed issues such as pathologies present in the bakers' personal daily life, presence of pain at the end of the workday (through a diagram of painful areas) and suggestions for improvement.

3. Results

Once the theoretical framework that guided the construction of the instrument to be applied in the field and its effective application was established, a discussion based on the collected data could be developed.

First construction: It was found that in the environments analyzed there is a predominance of male workers, mostly belonging to the age group between 30 and 40 years old. One of the factors that can justify this result is the requirement of a high physical demand for the execution of the activities of this profession. However, this hypothesis is not conclusive since aspects associated with the relationship between gender issues and insertion in the profession may also influence to some extent the entry of males in the sector.

Second construction: The results confirmed some hypotheses raised throughout the article and demonstrated that the main determinants of the performance loss during the baking process by the interviewees' conception were: unsatisfactory thermal comfort, predominantly standing work postures and long working hours. In this sense, we identified some ergonomic actions that can be implemented and involve aspects such as adequacy of physical facilities, changes in the distribution of tasks and postural requirements, in addition to reorganization of working hours.

Third construction: The results showed that the most common pathologies in the life of these workers are: rhinitis, back pain, joint pain and varicose veins. Also, the shoulder, wrist and arm joint and the thigh, knee and calf joint were cited as body parts with frequent occurrence of pain or discomfort at the end of the workday. Figure 2

illustrates these pain manifestations regarding intensity (mild, moderate, severe) of the 31 respondents. Regarding Personal Protective Equipment (PPE), most respondents said they use gloves, boots, apron, mask and cap daily.

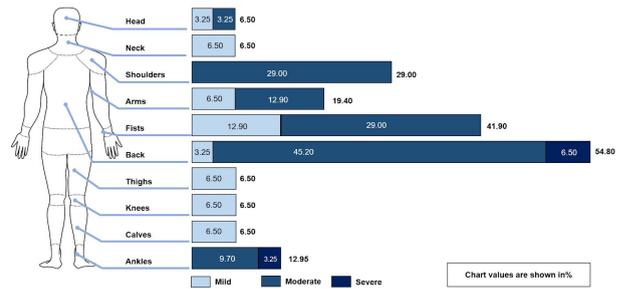


Figure 2: Incidence distribution of pain manifestations in relation to the intensity at the end of the workday
Source: Authors (2019)

Among the suggested recommendations, it is possible to mention the need for actions directly in the physical facilities of the bakers, in order to soften high temperatures and suspended particulates in the workplaces. Examples that can be performed using more high ceilings in kitchens, as well as installation of exhaust fans. Although some actions involve high costs, in some cases the simple relocation of equipment, for example through layout change, can provide minimization of such risks.

Referring to the long working hours, we have here a challenging aspect because it tends contours that often go beyond the business organization. A possibility of action in this field necessarily involves the attention to the responsible control of schedules, guided by the limits of the current laws. Here, it is worth pointing out that performance-focused studies often highlight that productive efficiency develops as time decreases, showing that overtime and longer working hours often do not fall on higher process efficiency.

Regarding standing postures as mentioned above, regulatory standard No. 17 (BRAZIL, 2018b) recommends that seats should be used at workplaces respecting ergonomic characteristics. Less costly actions such as taking breaks and alternating postures or rotating tasks can also be interesting and relatively easy to implement.

4. Conclusion

The present study exposed the main occupational risk agents to which bakery professionals are subjected to the theoretical framework. In this sense, several items were identified, among which the presence of noise, joint pain, headaches, inadequate thermal comfort/ventilation, manual load transport, standing work, physical effort,

muscle fatigue, movements breathing, breathing problems caused by wheat flour aspiration, presence of insects and rodents in the occupational environment, work accidents, absence or shortness of rest period, long working hours, biological imbalance, night work, stress, mental fatigue and problems from memory.

The field survey brought up three main challenges encountered in the sector under study. The first refers to standing for long periods, which overloads the cardiovascular system, which can cause pain in the lower limbs, varicose veins, and even cervical spine overload, denoting the need for actions mainly aimed at the possibility of performing the work. sitting or alternating postures and tasks. The second challenge refers to exposure to inadequate temperatures, with workers recurring expressions of dissatisfaction with this agent. The third challenge concerns the long working hours, which in the case of the interviewees, indicates bringing problems such as restrictions on social and family life, as well as impacting on periods and quality of sleep. There is evidence that points to the desire on the part of workers to adapt or reduce workload.

The results point to a scenario where the occupational daily life of the bakery industry imposes on its workers several challenges and pathological agents with harmful effects in terms of ergonomics. At the same time, although complex, many of these agents seem likely to be mitigated by simple low-cost actions, which points to the ample opportunity for detailed ergonomic studies in the sector studied

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