

Integrative Review: Ergonomics in the Worksites of the Company Employee

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ABSTRACT: The workstations were modified over time according to the adaptation to the new organization. It is observed that the handling of loads is responsible for much of the muscle traumas are caused among the workers. Approximately 60% of muscle problems are caused by lifting loads and 20% by pulling and pushing equipment that will be loaded. Thus, in the knowledge society methods were organized to improve working conditions in the organizations' environment. Thus, the objective of this article is to analyze the light of the integrative review the ergonomic applicability in the workstations of the company employee. To do so, the bibliometric analysis was performed from a systematic search in the Scopus database. As a result, it was identified that the research emerges in the field Medicine; Social Sciences; Health Professions; Engineering; Business, Management and Accounting; Computer Science; Decision Sciences; Dentistry; Earth Sciences and Planetary Sciences; Materials Science and Psychology.

Keywords:ergonomics, workplace, Organizations.

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I. INTRODUCTION

In the knowledge society we experience a competitive landscape in organizations, which are increasingly looking for greater productivity. Thus they seek to innovate and perfect the process in a new system, in which the condition of the workstation is observed. The organization seeks to improve the productivity and automation of its processes, making its lead time and its just. in time to be executed with excellence in their jobs.

However, organizations need to provide good working conditions for their workers with good health, safety, comfort and well-being to increase productivity. This is how ergonomics came about.

Ergonomics is the study of the adaptation of work to man, that is, the work station to which man is exposed in the organization. Ergonomics is not only the relationship between the man and the machine, it is related to all the activities that the employee performs in the workplace. By evaluating your conduct within the workplace, several relevant factors may occur, affecting physical and psychological health. Evaluated what occurs during and after this work. Everything is necessary so that the work can achieve the desired results (LIDA & BUARQUE, 2016).

There are several definitions of ergonomics, all of which seek to emphasize the interdisciplinary character and purpose of their study, which is the interaction between man and work, in the man, machine and environment system. Evaluating the interfaces of the productive system, where information and human motivation, machinery and environment are exchanged. Enhancing the execution of the work.

"Ergonomics is the study of the relationship between man and his work, environment teamwork and, in particular, the application of the knowledge of anatomy, physiology and psychology in solving the problems that arise from this relationship" (LIDA & BUARQUE, 2016, PAGE 02).

Ergonomics is a very broad study, because without ergonomics companies would not be prepared to offer workers appropriate job positions to perform the task proposed, thus increasing their productivity within the organization.

Based on this contextualization, the objective of this study is to analyze the light of the integrative review the applicability of ergonomics in the workstations of the company employee. To do so, the article is organized into five sections. The first one explained here, entitled Introduction, presents a research context. In the second section, the methodological procedures traced in the research are described. In the third section, the data, the results and a bibliometric analysis of this research are presented. In the fourth section, the final considerations are made. Finally, in the fifth section, the references used are listed.

II. METHODOLOGICAL TRACK

To meet the research problem proposed in this study, a methodology classified as exploratory-descriptive was used. This methodology aims to delimit the subject and increase the familiarity of the researchers with the fact, besides clarifying the concepts inherent to the subject under study (MARCONI; LAKATOS, 2010).

As a method of research in the literature, we used systematic search in an online database, followed by a bibliometric analysis of the results. Bibliometry is an information-based methodology that uses mathematical and statistical methods to map documents and publication patterns from bibliographic records stored in databases (FEATHER; STURGES, 2003; SANTOS, KOBASCHI, 2009). Thus, the bibliometric methodology allows, for the cited authors, relevant counts as: production by region; timeliness of publications; research by area of knowledge; counts of literature related to the study citation; impact factor of a scientific publication. These counts allow to visualize mathematical and statistical data that corroborate for the systematization of the result of a research and the minimization of the occurrence of intersections when looking for a certain theme.

2.1. Procedures for Data Collection

For the bibliometric analysis, the study was organized in three distinct stages: planning, collection and outcome. These steps took place in an integrated way to answer the research question: How is the applicability of ergonomics to the employees of the company? Planning began in November 2018, when the survey was conducted. In the planning scope, the Scopus database <<http://www.scopus.com>> was defined as relevant, due to its contribution in the academic environment, its interdisciplinary character, its constant updating and also because it is one of the re-sums and bibliographical references of peer-reviewed scientific literature.

Considering that the research problem, the search terms were delimited in the planning phase, namely: "ergonomics at the company employee's workplaces" As a basic principle for the search, we chose to use the terms in the fields "Title", "abstract" and "keyword", without any temporal, language or other restrictions that may limit the result.

In the data collection phase, a total of 52 indexed works was recovered, with the first record dated from 1979 and the last one from 2018.

As a result of this data collection, it was identified that the works were written by 163 authors, linked to 145 institutions. A total of 160 keywords were used to identify and index publications, which are distributed in 11 areas of knowledge. It was identified that of the universe of 52 scientific works, all are articles peer-reviewed composing the sample for a bibliometric analysis in the area of Medicine; Social Sciences; Health Professions; Engineering; Business, Management and Accounting; Computer Science; Decision Sciences; Dentistry; Earth and Planetary Sciences; Materials Science and Psychology which allows us to weave the state of the art of the theme from the database consulted.

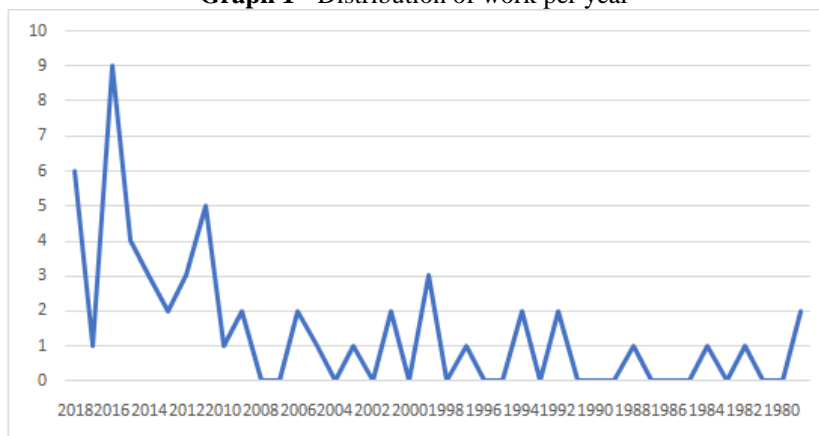
For the bibliometric evaluation of the results, the results were exported to a bibliographic management software called EndNoteWeb (Web-based software) and in an integrated way the organization of a data sheet was worked out. Thus, the relevant information was classified according to: temporal distribution; key players, institutions and countries; type of publication in the area; main keywords and most referenced works.

III. PRESENTATION OF DATA AND DISCUSSIONS

It was initially analyzed the time distribution of the works, which allowed to identify that the first publication was dated 1979 with two articles and followed for 2 years without publication, that is, from 1980 and 1981, there was no record. In 1982, there was an isolated publication and in 1983 there was no publication. Already in 1984 it had a publication. From 1985 to 1987 there was no publication. In 1988, there was a publication. Already in the years of 1989 to 1991 there was no publication. In the year of 1992, it had a small growth with two publications in the area. Already in the year of 1993 it did not have any publication. In the year 1993 there was no publication. In the year of 1994 there were again two publications in the area. And in 1995 and 1996 there were no publications. In the year 1997 there was a publication and in the year 1998 there was no publication. In the year 1999 there were three publications and in 2000 there was no publication. In 2001 there were 2 consecutive publications of the year 2002 without publications. Already in 2003 there was 1 publication. In the year of 2004 there were no publications. In 2005 there was a publication. In the year of 2006 there was a considerable increase in the publications with 2 articles. In the year 2007 and 2008 there were no publications. In 2009 there was an increase in publications with 2 publications, followed by 2010 with 1 published document. In 2011 there was an increase in publications with 5 publications. In 2012 there was a decrease again with 3 published articles. In 2013, a decrease was now identified with 2 articles and 2014 followed with an increase in the publication of articles with 4 published works. In the year 2015 there was an increase in the publication with

the publication of 4 articles. In 2016, there was another increase with 9 publications and in 2017 there was a decrease in the publication 1 gift article and in the year 2018 there were 6 publications so far. This frequency shows the discontinuity and lack of research in the area. For better visualization the graph 1 was elaborated.

Graph 1 - Distribution of work per year



Source: Prepared by the authors (2019).

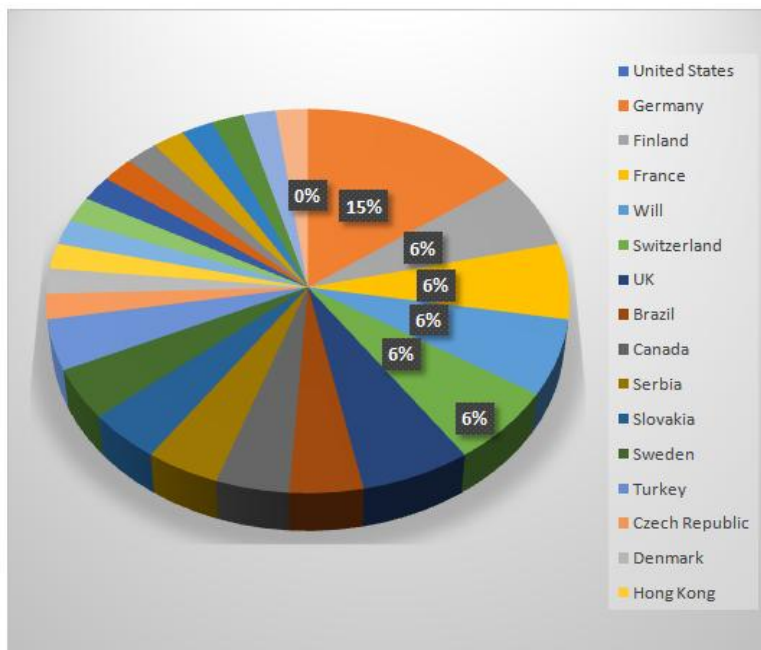
Two papers published in the year 1979, the first article was Arrangement of municipal occupational health services for small workplaces, authors Tolonen, M., Has-si, J .. This work is explicit about the planning and implementation of health services occupational skills for small companies and companies due to the municipal health centers.

The second also published Ergonomics in small workplaces with special reference to occupational health services of the authors Waltari, L., Jarvenpaa, I., Tolonen, M., Hassi, J. was a case study on the pains caused by the poor position of the works in companies.

However, it can be seen that the researches in the area can be considered incipient, since they are, according to quantitative analysis, in small proportion and ascendancy with discontinuity moieties for up to two consecutive years. These data also allow us to point out that in the globalized world there is a lack of research on the subject of applicability and compliance with the rules of ergonomics in the jobs of the employee of the company.

From a systemic look and directed to the 52 works, a diverse list of countries that stand out in the research regarding applicability as well as compliance with the rules of ergonomics in the workstations of the company collaborator is observed. With significant emphasis on the United States with an average of 16% of total publications, a total of 9 articles. Secondly, Germany stands out with 13% of the publications, that is, 7 papers and Brazil is in 8th place with only 4% of the publications, which makes it possible to highlight that this area is not highlighted as a research and in the national scenario, according to chart 2 below:

Graph 2 - Percentage of the distribution of research by country



Source: Prepared by the authors (2019).

Another quantitative analysis based on a bibliometric look is related to the number of authors that appear in the result of this search, which allows to affirm that authors do not stand out in this line of research. The area is under construction and development and the researchers who work there are still in varying numbers. In Table 1 the main authors in this area were organized, being cited for having at least 2 publications in the area as indexed in the scopus database.

Table 1 - Authors with more publications in the area their affiliations and countries

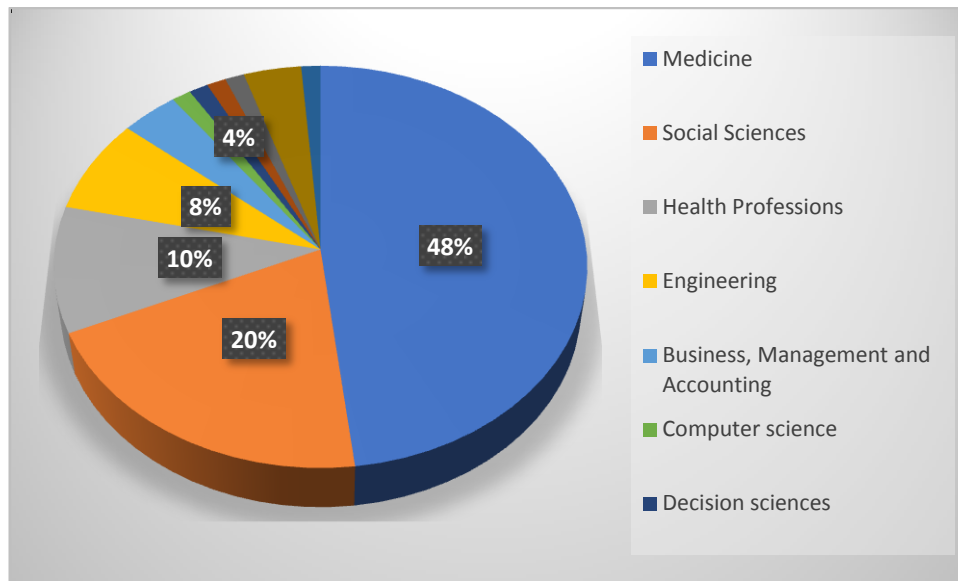
Author	Number of posts	Affiliation	Country
Hassi, J.	2	Center for Research in Environmental and Respiratory Health	Finland
Tolonen, M.	2	Department of Public Health	Finland

Source: Prepared by the authors (2019).

On the basis of table 1, the number of publications, the university of origin and the respective country are also described, and so it can be observed that there are 2 authors who stand out with discussions and publications on this subject 2 are from Finland. The other authors have only one publication in the area. Based on the general survey, it was possible to analyze the areas of concentration of articles that are in the following fields of knowledge: Medicine; Social Sciences; Health Professions; Engineering; Business, Management and Accounting; Computer Science; Decision Sciences; Dentistry; Earth and Planetary Sciences; Materials Science and Psychology.

The highest number of publications is in the area of Medicine with 48% of the publications, followed by the Social Sciences area with 20% and health professionals with 10% and engineering with 8%, according to chart 4 below:

Graph 3-Percentage analysis of knowledge areas of the publication



Source: Prepared by the authors (2019).

Another analysis, based on the bibliometric analysis, based on the group of works retrieved in the Scopus database, were the keywords used that are synthesized in 160 different words. The highlight was the Ergonomics 42 occurrences followed by Human 33, article 30, Adult 23, Male 21, Work Environment 20, Female 18, Human 15, Human Engineering 12, Musculoskeletal Disease 12, Questionnaire 12, Occupational Health 11, Major Clinical Study 10, Occupational Diseases 10, Priority Journal 10, and Work Environment with 10 repetitions frequency. The other occurrences were not considered in this article, because they appear with the frequency considered low being, they 9 times only.

In the analysis of the keywords, it is noticed that the discussion about the applicability of ergonomics in the workstations of the collaborator of the company has as an emphasis an active proposal to share the meaning and meaning of ergonomics in the organizations.

Finally, searching for a qualitative analysis, it was noticed that this debate also involves the concern of organizations in adapting the productive environment to the physical and psychological conditions of the worker. Thus, in this integrative review, despite the relevance and emphasis of the subject, studies on the applicability of ergonomics in the company employee's work were not identified in this integrative review.

IV. FINAL CONSIDERATIONS

Dealing with ergonomic applicability practices in the company's collaborator jobs involves discussing aspects related to innovative technologies that provide quality in the workplaces in organizations, where they provide adequate physical, environmental and psychological conditions for the employee.

The scientific mapping of the production related to the theme "applicability of ergonomics in the company employee's workstations", made in the Scopus database, allowed a bibliometric analysis of the theme describing the main contemporary discussions and the intersection between the areas. As a result, it was identified that the research emerges in the multidisciplinary field, intersecting the discussions with the field areas Medicine; Social Sciences; Health Professions; Engineering; Business, Management and Accounting; Computer Science; Decision Sciences; Dentistry; Earth and Planetary Sciences; Materials Science and Psychology.

It is proposed that studies in the different areas be analyzed by an integrated view of new ways of applying ergonomics to the employees of the company, promoting networks of information that lead the human being to new scenarios and new tools that can provide quality in jobs. The theme lacks research that integrates the applicability of ergonomics in the work positions of the company's collaborator, so it is suggested that studies that contemplate themes on different forms of applicability of physical conditions, psychologies in the environment to the works that follow the directives of ergonomics.

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