

Bibliometric and systemic analysis of the relationship between quality of work life and productivity during the COVID-19 pandemic

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Abstract.

BACKGROUND: The COVID-19 pandemic brought with it changes in the way of working and the well-being of workers. **OBJECTIVE:** To identify research trends on work life quality and its impact on productivity in the context of the COVID-19 pandemic.

METHOD: The Proknow-C constructivist methodology was used, with which a bibliographic portfolio of 49 articles obtained from the Web of Science was prepared, resulting from four stages of search between 2012 and 2022; a bibliometric analysis was performed on that database and bibliometric networks were created with the software VOSviewer; the systemic analysis of the articles was carried out, thus showing theories, definitions and indicators; and areas of opportunity of research were identified.

RESULTS: The most important high-impact specialized journals and authors, articles considered central, most used keywords such as job satisfaction, quality of work life and COVID-19, as well as the most representative countries such as European and Asian, are presented.

CONCLUSION: It was found that the health sector is one of the most studied, allowing researchers from other sectors the opportunity to delve into the issue of the affectations of the quality of work life reflected in productivity and common variables were synthesized such as job satisfaction, well-being, motivation and security, among others.

Keywords: COVID-19, efficiency, job satisfaction, quality of life, working conditions

1. Introduction

The COVID-19 pandemic has affected the quality of work life (QWL) for employees with new forms of work and negative consequences, but it has also brought flexibility and adaptation, making the importance of work life quality a relevant topic for employees and organizations [1–7]. Changes have been seen in the productivity of employees due to not having the necessary tools or working conditions

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to perform their work satisfactorily and maintain the same level of QWL that they had before [8–12].

Based on the literature published in one of the main databases, Web of Science (WOS), it is sought to provide information to organizations and academics on the relationship between productivity and QWL in the pandemic. Still, the lack of research on QWL in the context of the pandemic presents an opportunity for further investigation. This work began with the desire to understand the perception of work life quality among the staff of a faculty at a university in Mexico, identifying the main factors that affected their productivity in their work areas during the pandemic. Therefore, it was decided to conduct this bibliometric and systematic study at the same time.

The objective of this research is to identify research trends on work life quality and its impact on productivity in the context of the COVID-19 pandemic. The study seeks to analyse the existing literature on QWL, identify gaps in the literature, and present a list of relevant studies on QWL in different professions and conditions, including the impact on health professionals and teachers, as well as in the organizational management of companies. Given that changes in QWL caused by the conditions of the pandemic have affected productivity, various studies have been carried out in this line of research [13–17].

2. Materials and method

The Proknow-C (Knowledge Development Process-Constructivist) constructivist methodology was used to form the methodological structure that allowed the construction of knowledge, in four stages, according to the terms, options and delimitations of the researcher [18]. This methodology has also been used in other studies [19, 20]. The four stages are: 1) Select works on the subject: search in databases to form the bibliographic portfolio. 2) Carry out the bibliometric analysis of the portfolio: use of VOSviewer to identify the main authors, journals, publications and keywords. 3) Describe the systemic analysis by synthesizing the theoretical approach, models or variables of the documents. 4) Reason and justify research questions and opportunities.

The VOSviewer software allows the elaboration of maps with network data to visualize their co-occurrences, in order to analyse bibliometric networks based on the distance between two nodes that reflect the strength of the relationship between them

and the grouping of similar nodes by colours of according to their proximity or distance [21]. Hence, the description of the VOSviewer program is presented, which has also been used in various studies [22–24].

Four searches of the main Web of Science collection were performed as of May 20, 2022 to create the bibliographic portfolio (Table 1).

In the end the last two were combined. The documents obtained were filtered and discriminated to obtain the most representative, forming a bibliographic portfolio with 49 open access documents between 2012 and 2022 used for bibliometric and systemic analysis.

3. Results

3.1. Bibliometric analysis

This section presents the results obtained from the 4 stages of the Proknow-C methodology. Thus, Table 2 shows the general results of the first three searches.

Search 4 was made by combining searches 2 and 3 in WoS. 151 results were obtained between 1980–2022, 59 open access. Those published between 2012–2022 were chosen, resulting in 49 in the portfolio. 16 of the 216 authors who address this combination of topics have at least 2 co-authorships. Although the 16 authors published twice on the subject, the 5 with the highest production were selected and Table 3 was supplemented with the institution to which they belong and the total number of times that all their publications have been cited in WoS.

Only 12 of the 49 publications have been cited 10 times or more. The most important are found in Table 4. Other relevant ones are those of [1, 2, 13, 25, 26]. Only [2] use a qualitative method, the others quantitative.

Table 5 shows information from the most relevant journals that address the three aspects.

Of the 167 keywords used by the authors, those whose frequency was equal to or greater than 3 were selected (Fig. 1). The most relevant keywords due to their relationship with other nodes and the strength of their connections are job satisfaction with 11 occurrences, quality of work life (11), COVID-19 (10), quality of working life (6), Saudi Arabia (5), productivity (4) and quality of life (4).

Table 1
Search structure in Web of Science

Search	Variables	Equation
Search 1	Quality of work life	TS=(quality of NEAR/3 worklife OR quality of NEAR/3 work life OR quality of NEAR/3 work-life OR “quality of working life”)
Search 2	Quality of work life and COVID-19	(TS=(quality of NEAR/3 worklife OR quality of NEAR/3 work life OR quality of NEAR/3 work-life OR “quality of working life”)) AND TS=(COVID-19 OR COVID19 OR coronavirus* OR SARS-CoV-2 OR “COVID 19”)
Search 3	Quality of work life and productivity	(TS=(quality of NEAR/3 worklife OR quality of NEAR/3 work life OR quality of NEAR/3 work-life OR “quality of work life”)) AND (TS=(productiv* OR “labor productivity” OR “labor productivity”))

Table 2
Results of searches in Web of Science

Results	Search 1	Search 2	Search 3
Documents	1354	30	122
Open access	410	18	41
Authors	1552	97	139
Authors with the highest production	De Boer, AGEM (9), Tamminga, SJ (7), Estabrooks, CA (6), Frings-dresen, MH (6), Hoben, M. (6).	Manthorpe, J. (2), Mallet, J. (2), Marioarty, J. (2), McFadden, P. (2), Gillen, P. (2).	De Boer AGEM (2), Fitzgerald, G. (2), Clark, M. (2), Almalki, MJ (2), Pereira (2).
Authors with the most citations	De Boer, AGEM (13643), Frings-dresen, MH (11712), Norton, PG (3874), Berta, W (1575).	Manthorpe, J. (6175), Mallet, J. (605), Marioarty, J. (311), McFadden (298).	De Boer AGEM (13855), Fitzgerald, G. (2633), Clark, M. (1099).
Journals	259	15	38
Journals with more publications - quartile	International journal of environmental research and public health – Q2/Q1 (20), Sustainability- Q2/Q3 (11), Relations industrielles – Q4 (9)	International journal of environmental research and public health – Q2/Q1 (4)	Relations industrielles – Q4 (3)
Keywords co-occurrences	Quality of work life (70), Quality of working life (55), Job satisfaction (44), Quality of life (32), Nurses (19)	Covid-19 (10), Quality of Working life (3), Job satisfaction (3), Well-being (3)	Quality of work life (10), Job satisfaction (8), Productivity (5)
Countries	65	22	32
Countries with more publications	United States (59), England (45), Canada (43), Iran (30)	England (3)	Canada (5), England (5)
Most cited countries	England (4165), Italy (3156), United States (1317)	England (37), Netherlands (30), Ireland (25)	Saudi Arabia (167), Australia (152), United States (145)

Table 3
Authors of QWL, COVID-19 and productivity with the highest production between 2012–2022

Authors	Records	Total times cited	Affiliation	Total publications	Average citations
DeBoer, AGEM.	2	13643	University of Amsterdam	413	33.02
Manthorpe, J.	2	5138	King's College London	436	11.78
Fitzgerald, G.	2	2568	Queensland University of Technology (QUT)	86	29.86
Clark, M.	2	1077	Queensland University of Technology (QUT)	39	27.62
Mallett, J.	2	562	Ulster University	40	14.05

Note: Data updated as of June 11, 2022.

Table 4
Most cited publications on QWL, COVID-19 and productivity between 2019–2022

Author	Title	Journal	Citations
[5]	'Intelligent' lockdown, intelligent effects? Results from a survey on gender (in)equality in paid work, the division of childcare and household work, and quality of life among parents in the Netherlands during the COVID-19 lockdown.	PLOS One	30
[29]	The Role of Coping in the Wellbeing and Work-Related Quality of Life of UK Health and Social Care Workers during COVID-19.	International Journal Of Environmental Research And Public Health	25
[13]	Quality of Work Life and Organizational Performance: Workers' Feelings of Contributing, or Not, to the Organization's Productivity.	International Journal Of Environmental Research And Public Health	23
[1]	Telework and Social Services in Spain during the COVID-19 Pandemic.	International Journal Of Environmental Research And Public Health	14
[2]	A qualitative study of experiences of NHS mental healthcare workers during the COVID-19 pandemic.	Bmc Psychiatry	12

Table 5
Magazines on quality of working life, COVID-19 and productivity between 2012–2022

Publication title	Records	Citations	Journal impact	Quartile	Web of Science categories
International Journal of Environmental Research and Public Health	6	66	3,789	Q2/Q1	Environmental sciences/Public, environmental & occupational health
Work A Journal of Prevention Assessment Rehabilitation	2	4	1,801	Q4	Public, environmental & occupational health
Bmc Health Services Research	1	85	3,297	Q3	Health care sciences & services
Human Resources for Health	1	58	3,827	Q2	Health policy & services/Industrial relations & labour
PLOS One	1	30	3,788	Q2	Multidisciplinary sciences

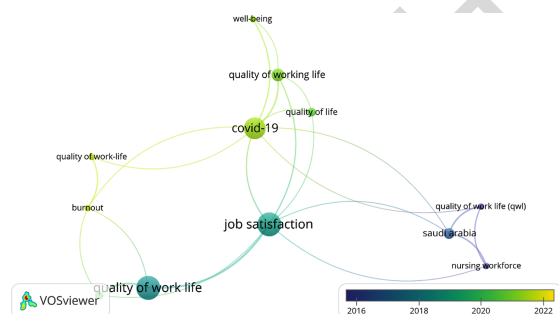


Fig. 1. Co-occurrence of keywords of QWL, COVID-19 and productivity between 2012–2022.

The 49 documents are located in 41 countries, 19 have published more than two documents, Switzerland being the one that has collaborated the most with others (Fig. 2). England has 8 records, followed by Saudi Arabia (5), India (4) and Australia, Iran, the Netherlands and the United States, with 3 each, Saudi Arabia being the most cited with 169 citations, followed by Australia (152), England (70), the Netherlands (33) and Portugal (27).

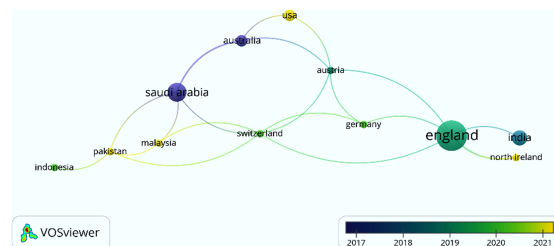


Fig. 2. Network of co-authorship between countries between 2012–2022.

3.2. Systemic analysis

Following the Proknow-C process, the theoretical bases and the variables used in the analysed documents were identified and future research opportunities were determined.

The theoretical bases found in the 49 documents analysed were: The resource model of labour demands, Herzberg's two-factor theory or the motivation-hygiene theory to which the demotivating factor is added, political theory, the theory

Table 6
Main definitions

Author	Quality of work life	Author	Productivity
[31]	Refers to the likes or dislikes of the work environment for people which refers to the quality of the relationship between employees and the total work environment.	[32]	Productivity is a measurement of how productive a process produces an output, productivity is also defined as a ratio between input and output, with a focus on the output produced by a process.
[7]	Denotes employees' experience of their working environment, which involves employees' perception of their physical and psychological well-being obtained from their work.	[32]	Individual productivity can be assessed from what the individual does in his work, in other words, the individual's productivity is how a person performs his work or performance. A productive person will describe the potential, perception, and creativity that always contribute to his ability to benefit himself and his environment.
[14]	The degree to which members of a work organization are able to satisfy important personnel needs through their experience in the organization.	[32]	The ratio between the totality of expenditure at a given time divided by the whole of inputs during that period. Productivity is also described as the price-size ratio for inputs and outcomes, the difference between a set of expenditures and inputs expressed in a single unit.
[33]	The extent to which workers in an SME are able to satisfy important personal needs through their experiences at their workplace.	[15]	Labour productivity is the ratio of output volume to the amount of the spent labour resources and is calculated to determine the efficiency of functioning individual enterprises, regions, industries, and national economy.

of labour value, labour productivity theory, factors of production theory, neoclassical economic theory, self-determination theory, equity theory, human relations approach, sociotechnical approach, rank theory of leadership, Mulej's dialectical systems theory, the four-dimensional model of Nursing Quality of Work Life, the people management control approach, organizational theory and stress theory.

Table 6 presents definitions of the main concepts used in this research, which are associated with the theories of the previous paragraph. In turn, own definitions were made based on the proposals by the authors, in order to specifically understand each research concept and to be able to establish a general concept that allows other researchers to more easily find literature on these topics.

In accordance with the QWL concepts presented in Table 6 and other work [13, 27, 31, 33–38], it is proposed that: The quality of work life is a global fundamental and multidimensional phenomenon where employees are able to satisfy important personal needs through their experiences in the organization while meeting the established objectives, and explores the emotion of the workers in consideration to their work and other aspects of their personal life. It emphasizes the quality of the relationship between the worker and the work environment and it is related to the following indicators: productivity, health, motivation, job satisfaction, safety and well-being.

In the same way, definitions were taken from Table 6, from the bibliographic portfolio and others

given by other authors such as [39–42] to present an own definition that dictates as follows: Productivity is the relationship between the production of a company and the optimization of the limited resources available that are used to reach the level of production of products or the estimated provision of services. Above all, it seeks to improve efficiency and effectiveness through the use of innovation with the aim of generating goods and services to meet the needs of society.

Now, to give greater understanding to the analysis of the documents, a recount of what the authors mention is made about the main concepts and indicators addressed in their articles.

Abdullah et al. [34] found that most of the research on QWL has been carried out in business, management and accounting disciplines, mainly in the United States, India and Asian countries. There must be a collaboration of various factors to have a balance between work and personal life in order to find a more comprehensive quality of life [4].

Pérez-Zapata et al. [43] show an association between QWL, organizational climate, job satisfaction and engagement, because by being satisfied and happy the workers produce more [7–9]. QWL influences positively and significantly on job satisfaction and psychological empowerment [14, 31, 33].

Engagement is associated with a higher QWL due to the self-efficiency expectations [43]. However, the subjective components of QWL influence organizational performance, efficiency and productivity [13,

14]. Objective dimensions have a high level of satisfaction with QWL, while subjective dimension have a low level [44]. Labour productivity is positively related to various factors, however, cynicism at work, low effectiveness, emotional exhaustion and occupational health influence negatively [32, 45].

The components of the organizational climate are associated with a higher QWL and help reduce burnout [43]. Policies on the work environment in universities have an impact on the QWL, job satisfaction and stress of teachers [26, 46]. Teleworking is effective with respect to job satisfaction and productivity, compared to those who continued working in person during confinement [1, 3]. Gender inequality increased during the pandemic in relation to QWL, however, it decreased in terms of household and child care responsibilities [5–7].

Job satisfaction and mindfulness have a stronger positive correlation with QWL of nurses than factors that negatively affect it, while avoidance is considered a risk factor, which is why various strategies are recommended to improve it [9, 29, 30, 37].

Previous studies [27, 28, 35, 47] found that even with the conditions at work, part of the nursing staff considers they have a high quality of life, however, the majority were not satisfied by factors that influence their QWL, so when identifying them they can develop strategies to improve it. During the COVID-19 pandemic, nursing staff had high levels of burnout, which influenced the relationships between resilience and the QWL scale [10], which can be improved using a model of environmental resilience (HSWERM), thus counteracting the burnout rate and improving the QWL of nurses [11].

The QWL of health workers was affected by experiencing negative factors, which decreases with increasing age and seniority, therefore, the more anxiety there is, the lower the QWL [2, 48]. The pandemic had a negative impact on the mental health of nurses, decreasing their QWL, especially that of those with a higher degree [12]. Mental well-being and QWL of social workers were higher during lockdown in 2020 than in 2018, due to reprioritization of work, increased support, and other changes in work practices [49]. Safe and healthy working conditions are a component of the QWL, since the lack of these can cause accidents that lead to days of disability, so it is necessary to invest in modern equipment and technologies to avoid them and thereby increase the productivity of workers [15–17].

For their part, Bosma et al. [36] show that people with health problems tend to decrease work capacity

and QWL, as shown by various studies on diseases such as endometriosis [25, 50, 51], macromastia [52] or inflammatory bowel disease [53], that are associated with the deterioration of professional life and influence negatively QWL when working with health problems. Presenteeism is more costly than absenteeism, which is why George et al. [54] suggest the adoption of transformational and transactional leadership styles due to their significant reduction in presenteeism.

Overtime work, shift work or unfair pay are factors that reduce QWL [38, 51, 55, 56]. The QWL can be improved with education, salaries, promotions, comprehensive and continuous training, and strengthening skills and cognitive abilities with international standards [57, 58]. The trust between employees and managers of transnational organizations allows the exchange of knowledge about the productive capacities of companies and the protection of the workers' interests and labour rights [59] and can include technical aspects and human factors that improve their skills and supply chain processes, thus improving QWL, productivity and relationships [60].

4. Discussion

An emphasis is placed on the articles published in the years 2020–2022, which address various aspects related to the quality of working life in different contexts and professions, highlighting the importance of balancing work and personal life to achieve a more comprehensive and productive QWL and they mention factors that influence QWL, such as the organizational climate, job satisfaction, engagement and occupational health. The COVID-19 pandemic has had a significant impact on the QWL of healthcare workers and strategies to improve it are discussed and health issues that may negatively affect QWL are addressed. They highlight the importance of trust between employees and managers to improve productivity and labour relations, and propose strategies to improve competition and supply chain processes.

The studies discuss QWL in companies and health workers, however, not so much the experiences of teaching staff in the pandemic. It is necessary to study their situation since it was one of the sectors that faced many challenges because the educational institutions, their staff and students were not prepared for online classes, mainly in Latin American countries where there is a very wide gap in terms of access to

technologies. Factors affected teachers, such as long hours, technical problems, attending to parents and students outside working hours and also receiving little recognition for all their work, reflecting in a lower quality of life and lower productivity due to stress and fatigue.

Studies were also found about the personnel who had to change their activities to remote work, as well as about those who continued to work in person, so it is also suggested to carry out comparative studies on activities considered essential and non-essential, since workers had different working conditions, including direct exposure to the disease.

The selection of documents occurs in a specific period, so new publications after that date will not be part of this research. There may be other relevant documents that were omitted because they were not open access or that have been discriminated against in one of the established filters or that there was some other relevant keyword that was not included in the search strategies. Also, the study primarily focuses on literature in English, which may limit the understanding of research trends in other languages or regions.

However, this article provides a comprehensive review of the literature on quality of work life and productivity, with a focus on the COVID-19 pandemic. It is used the Proknow-C methodology to identify theoretical foundations and variables, and presents definitions of key concepts. It also highlights the importance of QWL in organizational management and the need for an interdisciplinary approach, provides a methodological framework for constructing knowledge which can be a valuable source for researchers and professionals interested in QWL and productivity in the context of the pandemic, and also identifies gaps in the literature that can inform future research.

5. Conclusions and future research

The areas that speak the most about quality of work life are those related to environmental, management and health sciences; authors such as De Boer, Manthorpe, Clark and Fitzgerald are among those with the greatest production and collaboration; the articles by Breivik (2006) and Van der Klink (2001), as well as Almalki (2012a, 2012b), Yerkes (2020) and McFadden (2021a; 2021b) are considered central; the words Quality of work life, Quality of working life and Job satisfaction are the most representative,

while Nursing workforce, Burnout and Well-being, represent an opportunity for improvement for future research that allows improving the workers' QWL. The United States, England, Canada and Saudi Arabia are the ones with the highest quality production, and it is clear that there is little collaboration between countries in general, which leaves a door open for researchers from Latin American countries to exploit the gap left by the continents of Europe and Asia on the keywords mentioned.

The International Journal of Environmental Research and Public Health is the most representative in the four searches due to its highest impact factor, belonging to the two most important quartiles and number of publications, thus identifying a space where this research topic is published with greater frequency and visibility. The most common variables could be synthesized, allowing the identification of those that help to measure productivity and QWL in future research. Much research has been done in the areas of public health, environmental sciences, management, and nursing, yet research in interdisciplinary social sciences, economics, sociology and sustainable green technologies has been little.

In addition to those presented in the discussion section, the following directions for future research are suggested, including investigating the impact of QWL on productivity and well-being in different professions and industries, including those who have been affected by the COVID-19 pandemic; exploring the impact of the QWL on sustainability and green technologies, and the role of the QWL in promoting sustainable development; conducting interdisciplinary research on QWL, including e.g. sociology, economics and social sciences, to better understand the factors that influence QWL and productivity; or, investigating the impact of QWL on different aspects of organizational performance such as absenteeism, customer satisfaction or employee turnover.

Ethical approval

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Informed consent

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Conflict of interest

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