

## Emerging Patterns in Work Stress Among Female Employees: A Bibliometric Analysis

Dr. Faizul Nisha<sup>1\*</sup>, Alka Bansal<sup>2</sup>

### ABSTRACT

Over the past ten years, there has been an increase in scholarly interest on the topic related to women's work stress. The research trends on job stress in women from 2015 to 2024 are bibliometrically analysed in this study, with particular reference to publication growth, highly cited documents, most productive authors, nations, institutions, and source titles. Analysis is done to determine the direction of research in this field using data from Scopus. The results show a notable increase in research production, with important themes such as anxiety disorder, physiological stress, mental health, and work-life balance. The study has examined 5397 research documents in total were extracted from the Scopus database using a methodical approach flow. The analysis demonstrated that research on women employees' work-related stress is on the rise. As far as the maximum number of publications on women employees' work stress are concerned, The United States brought out the highest number of publications are considered to be the most productive nation, followed by the United Kingdom and Canada. In terms of publications and total citations, Kivimäki, M. and Rugulies, R. are the most creative authors. The increasing number of author keywords in the literature indicates that there may be gaps in the research that need to be filled in the future. These keywords include stress, gender, mental health, occupational health, and working conditions. The results of the study have also opened a new avenue for the future researchers and industry practitioners to take up further research on work stress related issues to understand the cause and consequences of it.

**Keywords:** *Work stress, Women, Female employees, Bibliometric, Occupation stress, Anxiety*

In the current professional environment, work stress among female employees has emerged as a significant issue of concern. As more women enter the profession in a variety of fields, they encounter particular challenges that affect their mental, emotional, and physical health. The psychological and physiological reaction to pressures at work that surpass a person's ability to cope is known as work stress. All workers are impacted by stress, but women frequently face particular difficulties because of cultural norms, prejudices at work, and juggling work and home obligations.

<sup>1</sup>Defence Scientific Information & Documentation Centre, Metcalfe House, Delhi

<sup>2</sup>Defence Scientific Information & Documentation Centre, Metcalfe House, Delhi

\*Corresponding Author

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The difficulty of striking a balance between personal and professional obligations is one of the main causes of work-related stress among women. Many working women experience burnout and exhaustion as a result of being expected to perform traditional caring duties while achieving professional success. Women find it challenging to successfully manage both domains due to the demands of multitasking and the lack of adequate support networks. Their emotional anguish is further exacerbated by job stresses such as harassment, lack of career growth possibilities, gender discrimination, and compensation disparities<sup>1</sup>.

According to studies, women who experience long-term work-related stress suffer from major issues like anxiety, depression, cardiovascular illness, and a decline in job satisfaction. Stress-inducing conditions are frequently produced by organizational cultures that do not offer equal possibilities for advancement or that do not put gender-sensitive policies into place. Furthermore, women may find it more difficult to handle professional constraints due to the lack of flexible work schedules and inadequate maternity benefits. They may also have to deal with the stress of having to continuously demonstrate their competence in fields that are dominated by males. A lack of networking opportunities and mentorship programs also hinders professional advancement and increases workplace stress<sup>2</sup>.

Organizations have begun to acknowledge in recent years the significance of managing women's work-related stress through support systems and policy reforms. Stress levels can be reduced by employing tactics like leadership development programs, equal pay rules, flexible work schedules, remote work options, and workplace wellness campaigns. Furthermore, creating a welcoming and encouraging work environment can greatly improve female employees' job happiness and productivity.

Work stress among women has been widely studied due to its impact on physical and mental health, job performance, and overall well-being. With the increasing participation of women in the workforce, issues related to workplace discrimination, gender roles, and work-life integration have garnered scholarly attention. This study utilizes bibliometric analysis to examine research trends from 2015 to 2024, identifying key publications, influential authors, and emerging themes.

### LITERATURE REVIEW

Corrente, Park<sup>3</sup>, *et al.* (2024) analysed the occupational and domestic life related pressures and anxiety of office professionals/workers more precisely due to the COVID-19 pandemic by means of the gender-impact assessment of two Canadian-wide surveys named as The Canadian Community Health Survey (2019, 2020, 2021) and the Healthy Professional Worker Survey (2021). Results of the survey established large percentage of job strain among salaried employees as opposed to other workers and this was more evident in case of females. Work overload appeared to be the consistently chosen cause of work stress, followed by digital stress, toxic working environment, and unpredictability. Same pattern was recognized in life stress among skilled workers, especially women. Time pressure invariably attracted attention as the major reason of non-work stress, parenthood, raising the children and physical and mental health conditions. The study by Sultana<sup>4</sup>, *et al.*, aims to examine the research trends on occupational stress of female employees between the period of 1973 to 2022 using bibliometric analysis. A total of 508 research documents have been analysed in the study using Scopus database. The findings from the analysis showed that the research trends on occupational stress of female employees have ups and downs since the beginning. The most prolific country was Finland, followed by USA, Sweden and UK.

## Emerging Patterns in Work Stress Among Female Employees: A Bibliometric Analysis

Regarding the research productivity and overall citation frequency, Kivimäki, Vahtera J and Virtanen found to be the most prominent authors.

The main causes of stress for working women include pressure from insufficient safety and security, work-related worry, and meagre financial rewards. Women employees experience stress and anxiety due to organizational factors, job uncertainty, family responsibilities, and outstanding performance standards<sup>5</sup>.

Pandita, Agarwal, and Singh<sup>6</sup> (2023) attempted to quantify how the epidemic affected Indian women who were experiencing emotional and mental suffering. The study identified three main factors—melancholy, jitteriness, and fearfulness—that emphasized the overall stress levels that working women experienced during the COVID-19 pandemic.

### METHODOLOGY

Based on indicators like research productivity, document type and source, subject area, publication language, country of publication, authorship and citation metrics, etc., the current study employs bibliometric analysis to provide comprehensive information on the current trends of work stress among female employees. Its bibliometric data is accessed through the Scopus database.<sup>7</sup> Keywords such as "occupational stress," "gender and workplace stress," "work-life balance," and "work stress in women" were part of the search approach. MS Excel was used to analyse the data. The research questions that followed were developed:

- What are the existing conditions and patterns of publications about women employees' work-related stress?
- Which studies on work stress have received the most citations?
- In terms of authors, nations, institutions, and source titles, who are the most productive contributors to research on work-related stress?

### RESULTS AND DISCUSSIONS

The 5397 documents were analysed, and majority of the findings were presented as frequency and percentage.

#### *Research Productivity*

The annual publication patterns from 2015 to 2024 are displayed in Table 1, together with information on total publications, number of cited publications, total citations, citations per document, and citations per cited documents. The year 2024 had the maximum publications on the topic "Work stress in women," covering 721 articles overall, according to bibliometric data collected from Scopus. However, out of 733 citations in 2024, only 269 articles received citations. In addition, only 428 publications were released in 2018, yet they garnered the highest number of citations i.e. 14189. Twenty-three of the 428 articles have not received any citations in 2018. Additionally, 705 papers that were published in 2021 had the second-highest number of citations (12577).

**Table 1. Annual Publication Trends**

Year	TP	%	NCP	TC	TC/TP	TC/NCP
2015	334	6.18	320	11014	32.97	34.41
2016	371	6.87	341	10780	29.05	34.61
2017	370	6.85	352	9956	26.90	28.28
2018	428	7.93	405	14189	33.15	35.03

## Emerging Patterns in Work Stress Among Female Employees: A Bibliometric Analysis

Year	TP	%	NCP	TC	TC/TP	TC/NCP
2019	488	9.04	424	8391	17.19	19.79
2020	552	10.22	515	11867	21.49	23.04
2021	705	13.06	656	12577	17.83	19.17
2022	711	13.17	632	5277	7.42	8.34
2023	717	13.28	524	2736	3.81	5.22
2024	721	13.35	269	733	1.01	2.72
Total	5397	100	4438	87520	16.21	19.72

*TP = Total number of publications, NCP = Number of cited publications, TC = Total citations, TC/TP = Average citations per publication, TC/NCP = Average citations per cited publication*

### **Types of Documents**

Document and source categories have been categorized by data analysis. Articles, conference papers, review articles, book chapters, novels, and so on are examples of many document types. The categories of documents published throughout the study period (2015–2024) are shown in Table 2. Five different document types—articles, conference papers, review papers, book chapters, and books—have been produced on subjects pertaining to "Work Stress of Women." Articles make up the majority of published materials (4655, or 86.25%), followed by review papers (6.76%) and book chapters (3.94%). The remaining categories of publications include books and conference papers, which make about 3.03 %.

**Table 2. Types of Documents**

Type of Documents	Total Publications	Percentage
Article	4655	86.25
Review papers	365	6.76
Book Chapter	213	3.94
Conference Paper	124	2.29
Book	40	0.74
Total	5397	100

### **Subject Area**

Present study also reviews the published paper on related topic based on the subject area. According to Table 3, the majority of research on work stress in women is conducted in the medical field (3357 publications, or 39.69% of total publications), followed by the social sciences (12.23%) and psychology (9.6%), while the publication percentage is only 38.48% in the fields of biochemistry, genetics and molecular biology, nursing, etc.

**Table 3. Top Subject Areas**

Subject Area	Total Publications	Percentage
Medicine	3357	39.69
Social Sciences	1035	12.23
Psychology	816	9.6
Biochemistry, Genetics and Molecular Biology	425	5.02
Nursing	365	4.3
Environmental Science	343	4.05
Neuroscience	261	3.08
Arts and Humanities	253	2.99
Business, Management and Accounting	236	2.79
Engineering	209	2.47

## Emerging Patterns in Work Stress Among Female Employees: A Bibliometric Analysis

Subject Area	Total Publications	Percentage
Health Professions	171	2.02
Multidisciplinary	150	1.77
Pharmacology, Toxicology and Pharmaceutics	137	1.61
Computer Science	136	1.60
Agricultural and Biological Sciences	131	1.54
Economics, Econometrics and Finance	87	1.02
Immunology and Microbiology	69	0.81
Chemical Engineering	47	0.55
Chemistry	37	0.43
Decision Sciences	34	0.40
Physics and Astronomy	33	0.39
Materials Science	29	0.34
Mathematics	27	0.31
Energy	23	0.27
Earth and Planetary Sciences	20	0.23
Veterinary	15	0.17
Dentistry	12	0.14
	8458	100

### ***Most Cited Papers***

The most cited papers throughout the duration of the study are shown in Table 4. The article's popularity is determined by its top citation. The most cited article on the pertinent context is Estimating psychological networks and their accuracy: A tutorial paper written by Epskamp S. *et al.* (2018), acquired 2647 citations. The second most referenced article, written by Zuberbier T. *et al.* (2018), obtained 1138 citations, and the third most cited article, titled 'The COVID-19 pandemic has increased the care burden of women and families' written by Power K. (2020), received 794 citations.

***Table 4. Highly Cited Papers***

Authors	Title	Cited by
Epskamp S.; <i>et al.</i> (2018)	Estimating psychological networks and their accuracy: A tutorial paper	2647
Zuberbier T. <i>et al.</i> (2018)	The EAACI/GA <sup>2</sup> LEN/EDF/WAO guideline for the definition, classification, diagnosis and management of urticaria	1138
Power K. (2020)	The COVID-19 pandemic has increased the care burden of women and families	794
Huang L.; <i>et al.</i> (2021)	1-year outcomes in hospital survivors with COVID-19: a longitudinal cohort study	777
Pieh C.; <i>et al.</i> (2020)	The effect of age, gender, income, work, and physical activity on mental health during coronavirus disease (COVID-19) lockdown in Austria	712
Theorell T.; <i>et al.</i> (2015)	A systematic review including meta-analysis of work environment and depressive symptoms	712
Luceño-Moreno L.; <i>et al.</i> (2020)	Symptoms of posttraumatic stress, anxiety, depression, levels of resilience and burnout in spanish health personnel during the COVID-19 pandemic	423
Carleton R.N.;	Mental Disorder Symptoms among Public Safety Personnel	388

## Emerging Patterns in Work Stress Among Female Employees: A Bibliometric Analysis

Authors	Title	Cited by
<i>et al.</i> (2018)	in Canada	
Silvestris E.; <i>et al.</i> (2018)	Obesity as disruptor of the female fertility	362
Kivimäki M.; Kawachi I. (2015)	Work Stress as a Risk Factor for Cardiovascular Disease	342
Prasad K.; <i>et al.</i> (2021)	Prevalence and correlates of stress and burnout among U.S. healthcare workers during the COVID-19 pandemic: A national cross-sectional survey study	340
Elmore L.C.; <i>et al.</i> (2016)	National Survey of Burnout among US General Surgery Residents	328
Oakman J.; <i>et al.</i> (2020)	A rapid review of mental and physical health effects of working at home: how do we optimise health?	324
Pucci G.; <i>et al.</i> (2017)	Sex- and gender-related prevalence, cardiovascular risk and therapeutic approach in metabolic syndrome: A review of the literature	304
Brotto L.; <i>et al.</i> (2016)	Psychological and Interpersonal Dimensions of Sexual Function and Dysfunction	295
Nisenblat V.; <i>et al.</i> (2016)	Blood biomarkers for the non-invasive diagnosis of endometriosis	279
Mersky J.P.; <i>et al.</i> (2017)	Rethinking the Measurement of Adversity: Moving Toward Second-Generation Research on Adverse Childhood Experiences	267
Yi J.C.; Syrjala K.L.	Anxiety and Depression in Cancer Survivors	242
O'Neil A.; <i>et al.</i> (2018)	Gender/sex as a social determinant of cardiovascular risk	228
Kroth P.J.; <i>et al.</i> (2019)	Association of Electronic Health Record Design and Use Factors with Clinician Stress and Burnout	226

### ***Publications by Country***

The 20 most productive nations that have made outstanding contributions to the publishing of work-related stress in women with at least 10 published works are exhibited in Table 5. The majority of the contributions to the publications on the connected topic produced by the researchers of 144 different countries (73 articles from undefined countries were omitted).

With a total of 1692 publications, the United States acquired the first position. The UK, Canada, Australia, India, Spain, Sweden, Germany, Italy and Brazil are the other nine nations that published prominent research publications on work-related stress in women. With 292 articles in this field, India stands at fifth place. A total of 144 nations made 7373 contributions on the chosen research area.

## Emerging Patterns in Work Stress Among Female Employees: A Bibliometric Analysis

**Table 5. Most Productive top 20 countries**

S. No.	Country	No. of paper
1.	United States	1692
2.	United Kingdom	446
3.	Canada	381
4.	Australia	313
5.	India	292
6.	Spain	285
7.	Sweden	264
8.	Germany	251
9.	Italy	221
10.	Brazil	181
11.	France	179
12.	China	173
13.	Japan	135
14.	Poland	132
15.	Netherlands	130
16.	South Korea	121
17.	Denmark	104
18.	Finland	103
19.	Norway	98
20.	Switzerland	94

### **Most Productive Authors**

The most prolific authors with at least 15 publications on the related topic are displayed in Table 6. The information was displayed together with the overall number of citations, referenced papers, and publications. The data indicates that, with 24 research papers published, Kivimäki, M. is the most prolific author in the area of work stress. Rugulies, R., occupied second rank with 21 articles, and Virtanen, M., placed third with 20 publications.

**Table 6. Most Productive Authors**

Author Name	No. of Publications	%	NCP	TC
Kivimäki, M.	24	0.44	24	1565
Rugulies, R.	21	0.38	20	1084
Virtanen, M.	20	0.37	20	1062
Brisson, C.	20	0.37	18	204
Niedhammer, I.	18	0.33	18	271
Madsen, I.E.H.	17	0.31	16	1142
Gilbert-Ouimet, M.	17	0.31	14	153
Chastang, J.F.	15	0.27	15	232
Siegrist, J.	15	0.27	14	853
Vahtera, J.	15	0.27	15	1029

*NTP = Total number of publications, NCP = Number of cited publications, TC = Total citations*

### **Most Productive Source Title**

Table 7 displays the source-wise publishing analysis. Based on at least 25 articles, the table displays the most active source title. With 204 publications on the subject of the study, the International Journal of Environmental Research and Public Health, published by MDPI, Switzerland, reported to have the highest number of publications, according to the data. The

## Emerging Patterns in Work Stress Among Female Employees: A Bibliometric Analysis

Public Library of Science's PLOS One, possess 112 published papers, and the BMJ Group's BMJ Open, owns 682 publications, goes next in the list. It should be mentioned that PLOS One accrued the highest citations.

**Table 7. Most Productive Source Title**

Source Title	No. of Publications	%	NCP	TC
International Journal of Environmental Research and Public Health	204	3.77	199	3674
Plos One	112	2.07	96	2321
BMJ Open	68	1.25	61	1033
BMC Public Health	61	1.13	52	2144
International Archives of Occupational and Environmental Health	53	0.98	53	1048
Frontiers in Psychology	48	0.88	43	1057
Work	36	0.66	25	294
Journal of Affective Disorders	35	0.64	33	1010
Frontiers in Psychiatry	34	0.62	29	199
BMC Pregnancy and Childbirth	31	0.57	29	520
Social Science and Medicine	31	0.57	28	753
Frontiers in Public Health	29	0.53	19	337
Journal of Clinical Medicine	27	0.50	23	305
Journal of Interpersonal Violence	26	0.48	22	214
Journal of Occupational and Environmental Medicine	26	0.48	23	213

*NTP = Total number of publications, NCP = Number of cited publications, TC = Total citations*

### Most Productive Institutions

The most productive institutions and the total number of publications published by them are presented in Table 8. With total number of 94 publications, the Karolinska Institute in Sweden is the most productive institution when it comes to publishing about the stress that women employees face at work. Harvard Medical School in the United States got second position with 85 publications, and the University of Toronto in Canada came in third place with 78 publications.

**Table 8. Most Productive Institutions**

Institution	No. of Publications	Percentage
Karolinska Institutet	94	1.74
Harvard Medical School	85	1.57
University of Toronto	78	1.44
University of California, San Francisco	66	1.22
Stockholms Universiteit	64	1.18
University College London	62	1.14
Københavns Universitet	56	1.03
Inserm	55	1.01
Harvard T.H. Chan School of Public Health	53	0.98
University of Melbourne	51	0.94

*Type of Access*

The accessibility of the published material on the subject of female workers' work-related stress was also examined, and the results can be viewed in Table 9. Notably, 3203 of the 5397 publications are in open access, while the rest 2194 are in closed access. From a total of 3203 publications, 1797 provide their readers Gold access, while 2502 offer them Green access.

*Table 9. Type of Access*

<b>Open Access to Research</b>	
<b>All Open Access</b>	3203
Gold	1797
Hybrid Gold	495
Bronze	360
Green	2502
<b>Non-Open Access</b>	2194

**DISCUSSIONS AND CONCLUSIONS**

For a careful comprehension of the literature on global trends, the bibliometric analysis can be used to determine how stressed out the female employees are at work. According to this decadal study conducted on the subject from 2015 to 2024, there is a growing tendency of research publications in this field, with 5397 publications reaching their peak in 2024 and the highest number of publications (721) indexed in the Scopus database. Over the course of the decade, there has been an increase of publications on this subject, rising from 334 in 2015 to 721 in 2024. The literature's geographic distribution shows that, when compared to other representative nations like the UK, Canada, and so forth, the United States has the most publications.

Asia's most prolific nations, including China, Japan, South Korea, and India, are leaving their mark on this field of study. Therefore, the current study takes into account the need for additional research on the same topic from other Asian nations. It's noteworthy that a great deal of studies have been done and published regarding how COVID-19 affects female employees.

The majority of research on working stress is carried out in the medical science field (39.69%), which is another fascinating finding of the current study. Psychology (9.6%) and social science (12.23%) are further fields to contribute to.

According to the results on author keywords, burnout, psychological stress, bullying, job satisfaction, gender, depression, working conditions, and mental health are among the increasing number of author keywords in the field of work stress. Therefore, there may be a research deficit in these areas that gap has to be filled in the future. As previously mentioned, the findings of this study are helpful to academics, researchers, and policymakers that deal with women's work-related stress. When addressing occupational stress, a number of viewpoints might be significant for both researchers and industry practitioners.

According to the bibliometric analysis, the medical, social, psychological, management, and health sciences have all made substantial contributions to the growing body of research on women's work-related stress. Future research ought to take a more intersectional stance and

## Emerging Patterns in Work Stress Among Female Employees: A Bibliometric Analysis

use technology to create novel approaches to stress management. Closing these disparities will strengthen the policies and initiatives meant to improve women's well-being in the workplace around the world.

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### Conflict of Interest

The author(s) declared no conflict of interest.

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