# A Bibliometric Analysis of Stress Level Prediction of Working Pregnant Women using VosViewer

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## ABSTRACT

In today's world, stress is one of the most pervasive problems.89 percent of working professionals in India report feeling stressed. 4 in 10 women experience anxiety for various reasons. The purpose of this examination is to determine the scope of Stress Level Prediction of Working Pregnant Women Research through a bibliometric analysis. Data on pregnant women who work were gathered using the Scopus database. Subject headings with keywords and abstracts in female Stress Recognition studies were used as a lens to retrieve search results. The VOSviewer software was used to extract search results. Later, the results of Bibliometric mapping were examined in greater detail. As per our research this is the first study conducted with the help of VosViewer to do the Bibliometric analysis of stress factors of working pregnant women in India.

#### Keywords: Stress, Working Pregnant Women, Anxiety, Bibliometric Analysis

## 1. INTRODUCTION:

Hans Selye coined the term "stress" in 1936, defining it as "the non-specific response of the body to any demand for change. Stress is extremely frequent among working women during pregnancy, and it can contribute to mental illness and some foetal abnormalities. Nowadays, it is common for women to work outside the home. According to an article published by Hindustan Times, a study carried out by the World Bank found that 42% of women are graduates, while 33% of men are. A World Bank study found that there is 27% participation of working women, boosting India's potential GDP. A growing body of research indicates that maternal stress during pregnancy has a strong impact and can influence the development of the unborn. Working women have family and work responsibilities, and they tend to be more stressed than men. Having a job while pregnant can have long-term effects

on a woman's overall health, and pregnancy is a time when psychosocial symptoms and poor oral health are more likely to show up.

They get stressed out if their jobs could harm the pregnancy, or if they'll lose their job or the pregnancy will end their career. Work-related stress and burnout can happen when there is a lot of pressure at work and you don't feel like you have a lot of power. If you're stressed out while you're pregnant, you might not be able to have a healthy pregnancy or give birth to a healthy child. In the classroom, a working woman's desire to work even when she is stressed out usually doesn't work out. There are a lot of things that can make people stressed at work, like having too much work, unrealistic deadlines, difficult co-workers, negative attitudes toward pregnant employees, difficulties getting time off to go to hospital appointments or scans, bullying, refusing to make reasonable job changes, and maternity discrimination. People in the education field should pay attention to this if their job requires them to stand for a long time and work long hours without taking a break. There is also a fear of not having a job and unemployment as strong evidence that stress can harm mental health. Working women are more likely to be angry, anxious, depressed, sad, tired, restless, forgetful, overstressed, and burnt out when they think about these things that make them stressed. Stress makes them feel bad about their job, and they also lose interest and concentration because of bad feelings and bad weather. This can make them more stressed.

In this paper, Bibliometric analysis is used for Bibliometric the research papers. The Scopus data set is used for the Bibliometric analysis. Collected articles and findings from Scopus database on working pregnant women prove the major factors that can lead to stress and anxiety.

#### 2. MATERIALS AND METHODS:

Across the globe stress is the major problem for working pregnant women. A literature about stress prediction for working pregnant women. The SCOPUS database was examined between 2012 and 2021, according to the findings. TITLE-ABS-KEY (working pregnant women) AND TITLE-ABS-KEY (stress) AND tis as a stress (stress) AND title-ABS-KEY (stress) AN

#### 3. RESULTS AND DISCUSSION:

The publication year, author, language used, journal, title, affiliation, keywords, and kind of document, as well as an abstract and total citation count, were all obtained from the collected publications addressing the issue and exported to a CSV file. In November 2021, the data recovery was accomplished. VosViewer was used to investigate bibliographical coupling, co-authorship, co-occurrence, citations, and co-citations (1.6.18). "Links characteristics" and "Complete connection strength property" are two frequent weight properties that are linked.

#### **Bibliometric Investigation of the Keywords:**

The study report's authors provided keywords that appeared multiple times in the SCOPUS database. These keywords were utilised to undertake a thorough examination of the 668 keywords, 526 of which satisfied the criteria. The keywords "pregnant women" (whole link strength 1729) and "anxiety" (total link strength 621) had the strongest links to "mental tension."

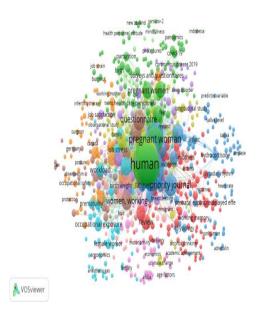


Fig 3.1. The Bibliometric study of Stress Detection keywords in published works is summarised in the table below. All of the keywords appear in the same sentence. The recurrence of the occurrence is indicated by the node dimension. Co-occurrences within that publication are indicated by bending between nodes. The circle's various shapes represent the keyword's importance. The closer four nodes are, the more often four terms co-occur.

Table 1- Describe the top 10 Journal in the field of working pregnant women Stress.

id	source	documents	citations	total link strength
1	american journal of industrial medicine	3	269	2
2	social science and medicine	3	233	0
3	stress	2	168	0
4	paediatric and perinatal epidemiology	3	159	1
5	american journal of public health	2	154	6
6	obstetrics and gynecology	3	142	2
7	psychoneuroendocrinology	3	100	1
8	journal of epidemiology and community health	2	78	2
9	bmc pregnancy and childbirth	3	62	0
10	infant mental health journal	3	62	0

Table 1- Show the list of Top 10 Journals. In American journal of industrial medicineJournal 3 documents has<br/>been published with citation 269 and total linked strength 2

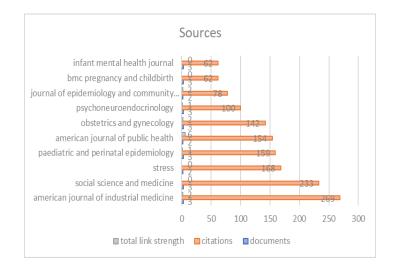


Fig-3.2.-The top ten most active journals in the world

Table 2 – In the field of stress	recognition, these ten	countries have the	best records for innovation.

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id	country	documents	citations	total link strength
1	united states	60	1635	11
2	united kingdom	16	450	2
3	canada	15	444	17
4	germany	11	174	4
5	poland	9	27	11
6	australia	8	290	0
7	france	8	112	4
8	spain	8	82	0
9	netherlands	7	174	10
10	norway	7	168	0

Table 2- Shows the list of top 10 Countries contributing in this domain related with stress prediction for working pregnant women

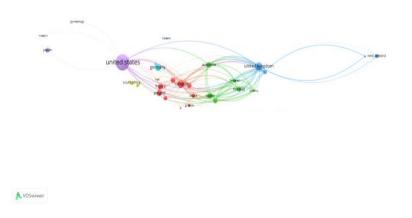


Figure – 3.3.1(A)

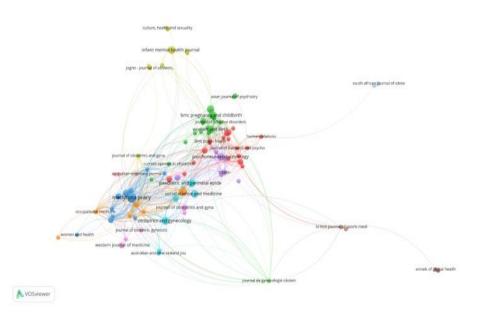


Figure – 3.3.2. (B)

Fig-3 Illustrates the bibliographic connection of - (A) contains country references. The different colours represent the different groups, while the diameter of the circles represents the frequency of referrals. (B) Citations of the sources The circle's diameter denotes the frequency of references, while the various colours represent the various categories.

### **Bibliometric Examination of the Co-Citation**

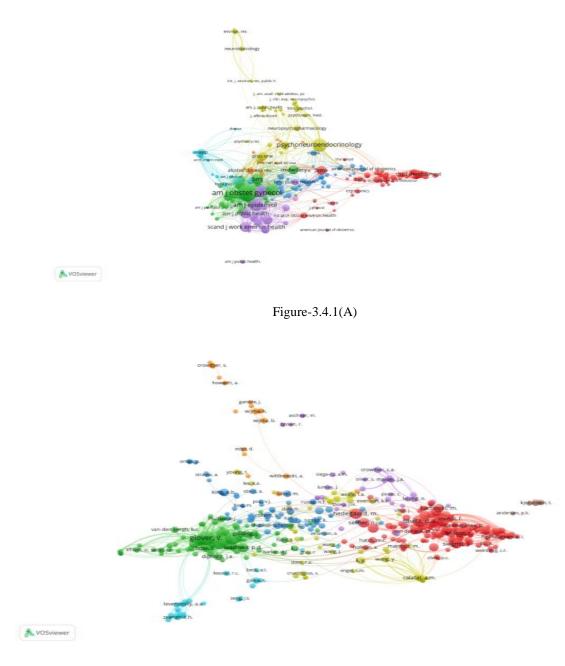


Figure-3.4.1.(B)

As seen in Figure, the records and sources used to construct a bibliography are linked together.4(A), Nine groups were obtained. Figure 4(B) – shows the co-citation of authors Glover, v. has 57 citations with 5116 link strength.

Fig-5 The Bibliometric analysis of the co-citation and bibliographic coupling is shown.

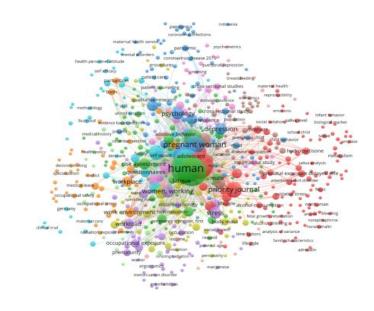


Figure-3.5. Show Co- Occurrence of Indexed Keywords

#### Conclusions

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Between 2012 and 2021, a total of 500 papers were selected from the SCOPUS database on the subject of stress recognition, of which 231 were included in the SCOPUS core database. The majority of subsequent keywords had a strong connection to the research study's keywords "pregnant women" and "stress." Sensors (American Journal) was the most cited journal, with three articles and 269 citations. The United States of America published 60 publications that received 1635 citations, whereas Glover, V. published five articles that received 57 citations. The published material has mostly focused on three topics: stress, recognised stress, pregnant women, and human beings. Stress impacts individuals' daily lives, which is why various researchers have focused their attention on this subject and released several high-quality study publications. It is critical to examine the quality of several high-quality research articles and to extract useful findings. We will provide a model to predict the stress factors of pregnant working women.

#### References

 Kobayashi, F., & Takeuchi, K. (2002). Sangyo eiseigakuzasshi = Journal of occupational health, 44(1), 1– 5. <u>https://doi</u>.org/10.1539/sangyoeisei.kj00002552620European Economic Forecast-m Autumn 2020<u>https://economictimes.indiatimes.com/magazines/panache/89-per-cent-of-indias-population-suffering-from-stress-most-dont-feel-comfortable-talking-to-medical-professionals/articleshow/64926633.cms?from=mdr
</u>

- Stress: Signs, Symptoms, Management & Prevention. (2015, May 2). Cleveland Clinic.https://my.clevelandclinic.org/health/articles/11874-stressJan Andersen, in Research Management, 2018van Eck N.J.,
- Waltman L. (2014)Visualizing Bibliometric Networks. In: Ding Y., Rousseau R., Wolfram D(eds) Measuring Scholarly Impact. Springer, Cham. https://doi.org/10.1007/978-3-319-10377-8\_13
- 4. Selye, H. (1978). The Stress of Life (2nd ed.). McGraw-Hill Education
- BJ Park, EH Jang, SH Kim, MA Chung, International Conference on Bio-inspired Systems and SignalProcessing (BIOSIGNALS-2014), pages 116-121 ISBN: 978-989-758-011-6 Copyright c 2014 SCITEPRESS(Science and Technology Publications, Lda.)Gedam,
- S., & Paul, S. (2020). Automatic Stress Detection Using Wearable Sensors and Machine Learning: A Review. 2020 11th International Conference on Computing, Communication and NetworkingTechnologies (ICCCNT). Published. ttps://doi.org/10.1109/icccnt49239.2020.9225692
- Albertetti, F., Simalastar, A., &Rizzotti-Kaddouri, A. (2021). Stress Detection with Deep LearningApproaches Using Physiological Signals. LectureNotes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering, 95–111. <u>https://doi.org/10.1007/978-3-030-69963-5\_7</u>
- Goleva, R., Garcia, N. R. D. C., &Pires, I. M. (2021). IoT Technologies for HealthCare: 7th EAI InternationalConference, HealthyIoT 2020, VianadoCastelo, Portugal, December 3, 2020, Proceedings (Lecture Telecommunications Engineering Book 360) (1st ed. 2021 ed.). Springer.
- Kusano, H., Horiguchi, Y., Baba, Y., & Kashima, H. (2020). Stress Prediction from Head Motion. 2020IEEE 7th International Conference on Data Science and Advanced Analytics (DSAA). Published.https://doi.org/10.1109/dsaa49011.2020.00063
- Can, Y. S., Arnrich, B., &Ersoy, C. (2019). Stress detection in daily life scenarios using smart phones andwearable sensors: A survey .Journal of Biomedical Informatics, 92, 103139.https://doi.org/10.1016/j.jbi.2019.103139
- 11. Nat. Volatiles &Essent. Oils, 2021; 8(4): 2304-23142314
- 12. Schmidt, P., Reiss, A., Dürichen, R., &Laerhoven, K. V. (2019). Wearable-Based Affect Recognition— AReview. Sensors, 19(19), 4079. <u>https://doi.org/10.3390/s19194079</u>
- Shon, D., Im, K., Park, J. H., Lim, D. S., Jang, B., & Kim, J. M. (2018). Emotional Stress State Detection\\Using Genetic Algorithm-Based Feature Selection on EEG Signals. International Journal of EnvironmentalResearch and Public Health, 15(11), 2461<u>https://doi.org/10.3390/ijerph15112461</u>
- Sevil, M., Rashid, M., Hajizadeh, I., Park, M., Quinn, L., &Cinar, A.(2021). Physical Activity and Psychological Stress Detection and Assessment of Their Effects on Glucose Concentration Predictions inDiabetes Management. IEEE transactions on bio-medical engineering, PP, 10.1109/TBME.2020.3049109.T
- 15. ervonen, J., Puttonen, S., Sillanpää, M. J., Hopsu, L., Homorodi, Z., Keränen, J., Pajukanta, J., Tolonen, A.,Lämsä, A., &Mäntyjärvi, J. (2020).Personalized mental stress detection with self-organizing

map: Fromlaboratory to the field. Computers in Biology and Medicine, 124, 103935.ttps://doi.org/10.1016/j.compbiomed.2020.103935

- Dzieżyc, M., Gjoreski, M., Kazienko, P., Saganowski, S., & Gams, M. (2020). Can We Ditch FeatureEngineering? End-to-End Deep Learning forAffect Recognition from Physiological Sensor Data. Sensors,20(22), 6535. <u>https://doi.org/10.3390/s20226535</u>
- 17. Liao, C.-Y., Chen, R.-C., & Tai, S.-K. (2018). Emotion Stress detection using EEG signal and deep learningtechnologies. 2018 IEEEInternational Conference on Applied System Invention (ICASI)
- Halim, Z., &Rehan, M. (2020). On identification of driving-induced Stress using electroencephalogram signals: A framework based on wearablesafety-critical scheme and machinelearning. Information Fusion, 53, 66–79.
- 19. Zhong H, Wang Y, Zhang ZL, et al. Efficacy and safety of current therapeutic options for COVID-19 -lessons to be learnt from SARS and MERSepidemic: A systematic review and meta-analysis. PharmacolRes 2020;157:104872. [Crossref] [PubMed]
- Yu, Y., Li, Y., Zhang, Z., Gu, Z., Zhong, H., Zha, Q., Yang, L., Zhu, C., & Chen, E. (2020). Abibliometricanalysis using VOSviewer of publications on COVID-19. Annals of Translational Medicine, 8(13), 816.https://doi.org/10.21037/atm-20-4235
- 21. Sharma Sameer, Sonal Sharma Bibliometric Analysis of Stress Recognition Models using VOSviewer. (2021). NATURAL VOLATILES & ESSENTIAL OILS.
- Singh, R., Gehlot, A., Rashid, M., Saxena, R., Akram, S. V, Alshamrani, S. S., & Alghamdi, A. S. (2021). Cloud server and internet of things assisted system for stress monitoring. Electronics (Switzerland), 10(24). https://doi.org/10.3390/electronics10243133

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