

Mapping the literature on women's unpaid work : A bibliometric analysis using VOSviewer

Sukhpreet Kaur Jaggi
Deepa Jitendra Gupta

The role of women has transformed from primary caregivers to primary earners in the society. The growth of studies on women's issues has been continuous research since decades. The research interest in unpaid work has seen increased collaboration, profound familiarity with influential authors, and access to relevant literature, especially for new researchers focusing on this issue. The present paper has performed a bibliometric analysis and maps the research landscape based on the published literature on women's unpaid work, using R-biblioshiny program and VOS viewer software. It analyses, citation patterns authorship and affiliation and other parameters. The study is based on 1281 articles on women's unpaid work drawn from the Scopus database, published between 2001 and 2024. The study on women's unpaid labour shows a rising trajectory with an increased volume of productive growth. More citations are from "Feminist Economics" journal, and identified 10 authors, the most co-cited cluster of researchers in the said field. The authors' affiliations include prestigious institutions such as the University of Oxford, Flinders University, Stockholm University, and Australian National University. The study finds international collaboration more among authors from the USA, India, Australia, the U.K., Spain, Germany and Canada. The study has identified important keywords in the area, that includes "time poverty," "parenthood," "informal care," "time allocation," and "work-life balance."

Keywords: Gender issues, Time poverty, Unpaid work, Women studies.

Sukhpreet Kaur Jaggi*
Deepa Jitendra Gupta †
Symbiosis School of
Economics (SSE)
Symbiosis International
(Deemed University) (SIU)
SB Road
Pune
Maharashtra
India

E-mail

* sukhpreetkaur.jaggi@gmail.com

† deepa.gupta@sse.ac.in

* (Corresponding Author)

Introduction

Addati et.al., [1] and Chauhan [2], define unpaid work, as the "non-remunerated work carried out to sustain the

well-being and maintenance of other individuals in a household or in the community. It includes both direct and indirect care (i.e., routine housework)". Three-quarters of all unpaid work worldwide is performed by women, who devote daily 11 billion hours [3]. The roots of significant research in this field can be traced back to 1972 with a 'critical examination of women's work within the household' laid the foundation for the Campaign for Wages for Housework. This pioneering work was championed by; Mariarosa Dalla Costa, Selma James, Leopoldina Fortunati, and others [4]. Oakley [5] (feminist critique of Marx) pointed out women's unrecognized housework, brought a major separation of work done at home and outside of the household in U.K., a significant progress is made since redefining unpaid work. To support for researchers in this field, is to provide them with comprehensive literature of prominent authors and access to relevant documents and journals to facilitate collaborative and thorough study. This study aims to delve into the ever-evolving landscape of research on women's unpaid work in the twenty-first century. The bibliometric analysis illuminates the collaborative efforts of authors, countries, and institutions to shed light on the areas that warrant further attention and focus from stakeholders.

The challenge that the present study faces is the need for a comprehensive knowledge on women's unpaid labour. Researchers typically seek a thorough understanding of the existing body of work when exploring various perspectives on unpaid labour. This inference is valuable for researchers as it can assist them in establishing collaborations with key figures in the field and identifying potential areas for valuable research. It is crucial to gain a comprehensive understanding of information related to unpaid labour, including the advancement of scientific research on the subject, collaborative authorship, co-citation patterns, prevalent keywords, highly cited papers and journals.

Literature Review

There have been a few systematic reviews on unpaid work in the past literature, summarized here to help to fill the gaps in the study. A systematic review of the gendered relationship between unpaid labour and mental health, as women devote more hours to unpaid labour worldwide, than men would experience poorer mental health due to disparities in the distribution of unpaid labour [6]. Another systematic study on unpaid work stated that women in South Asia disproportionately share the burden of unpaid care work responsibilities [7]. An integrative review of unpaid studies gave conceptual clarity on unpaid work practices [8]. Bibliometric studies are done on women's employment [9] and women's financial well-being [10], but none of the analyses stated a comprehensive evolution of the work on women's unpaid work. The contribution of bibliometric analysis and systematic analysis differs, as bibliometric analysis provides insight into relationships between publications, authors, organizations, and nations within a specific field of study.

It is essential to consolidate the fragmented literature on the topic in order to effectively integrate the available studies and understand the changes in women's unpaid work in this

century. This study has made a significant contribution by presenting data from the articles published between 2001 and 2024 through bibliometric analysis.

Objectives and Research Questions

With the extensive research on unpaid labour, it is essential to highlight the progress in the field's scientific knowledge through author co-citation patterns, popular keywords, most referred articles and journals, most productive institutions, and other pertinent developments. These insights could prove valuable to future scholars interested in exploring the topic's significance and seeking opportunities for collaboration. It will provide a comprehensive overview of the entire body of work on the subject and guide on potential contributions to the field of study. Hence, the study addresses the following research questions:

1. How has the research landscape on women's unpaid work evolved over the present century, assessed by publication patterns, author prominence and affiliation?
2. What are the co-citation patterns to identify potential collaborators among researchers working on emerging research frontiers within women's unpaid work?
3. How the countries are connected in this research paradigm regarding collaboration and future work activities worldwide?
4. What is the keyword usage and patterns to predict future research trends and emerging areas of focus in unpaid work?

Research Methodology

The study has used bibliometric approach to make an in-depth analysis on women's unpaid work. It analyses existing studies to gain critical insights, estimating the current growth of knowledge on the topic, and creating a map of author co-citations and country collaborations for future exploration. The study has employed biblioshiny (a shiny interface for bibliometrics in R software), and the VOSviewer software. The status of the subject field can be evaluated using a range of indicators, such as the most read and cited papers, journals, authors, institutions, and countries [11]. Broadly, this research method allows for the macroscopic and microscopic study of a large volume of published data [12]. Prior studies have successfully used this method to analyze other research areas and domains such as; computer science, economics and management.

The Source Database and Inclusion Criteria

The Scopus database is used to collect papers on unpaid women labour. The search string included a Boolean combination of keywords: (("unpaid*") AND ("wom?n*")) OR (("non-paid*") AND ("wom?n*"), where "?" is a wildcard character that replaces **zero or one character such as woman or women** and "*" replace multiple characters such women's, unpaid labour or unpaid work. The search was conducted in a one-time period on July 3rd,

2024, in order to eliminate any bias resulting from the continuous updating of the research database.

The four inclusive criteria for the papers considered are: (i) studies that primarily focus on women’s unpaid work; (ii) only articles, excluding conference papers and book chapters; (iii) Articles only in English (iv) Period of coverage 2001 to 2024 and (v) subject categories included are Social Science, Economics, Arts & Humanities and Psychology. This resulted in 1281 papers which were used for further analysis.

Limitations

The study has used Scopus database and limited to the search string and particular keywords used to optimize the literature, which may have also limited the dataset since there may have been writers who investigated unpaid labour in their research but did not include it in the listings of the title, abstract, or keywords. Finally, because the dataset was limited to journal papers, it may not adequately represent the entire body of knowledge as of other publications. The gathering of data from additional publications, including conference papers and working papers, may be expanded in future studies, which might be more comprehensive.

Data Analysis and Results

Data Set Schedule

The Table 1 presents the broad view of pattern of data distribution on women’s unpaid work. The study encompasses a total of 1281 articles and 599 journals. Further, 2970 unique keywords and Scopus-generated keywords are 1674, known as keyword plus (I.D.), generated by a machine learning algorithm.

Table 1
A Schedule of Data Set

Description	Results
MAIN INFORMATION ABOUT DATA	
Timespan	2001:2024
Sources (Journals)	599
Documents (Articles)	1281
DOCUMENT CONTENTS	
Keywords Plus (ID)	1674
Author’s Keywords (DE)	2970
AUTHORS	
Authors	2494
Authors of single-authored docs	486

Contd...

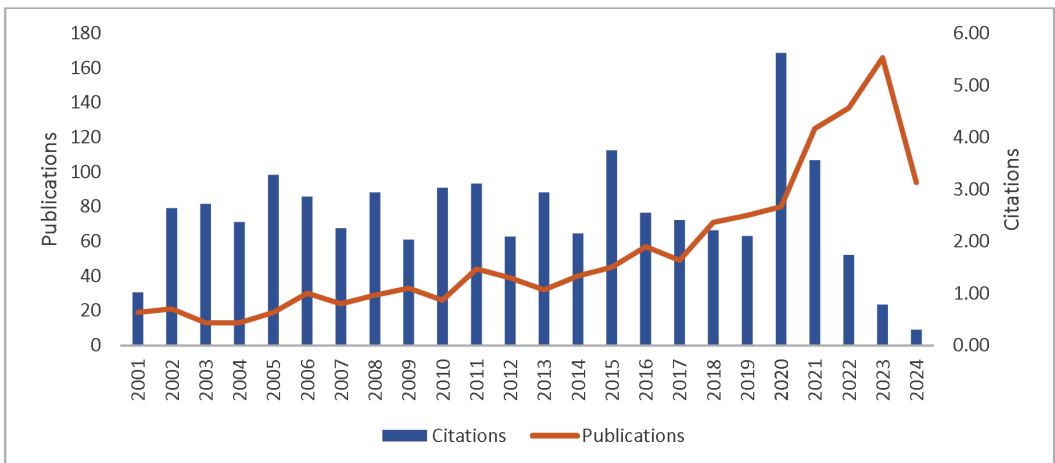
AUTHORS COLLABORATION	
Single-authored docs	522
Co-Authors per Doc	2.22
Subject Categories (Frequency)	
Social Science	1125
Economics	302
Arts and Humanities	280
Psychology	120

Source: Compiled by authors'

The analysis of authorship patterns shows a total of 2494 authors out of which 486 were authored individually, accounting for more than half of the total publications. The data indicates that research on unpaid work is predominantly a collaborative effort, with an average of 2.22 authors per document. Unpaid work is significant within social sciences, as evidenced by its inclusion in subjects such as Sociology, Economics, Arts and Humanities, and Psychology, with frequencies of 1125, 302, 280, and 120, respectively.

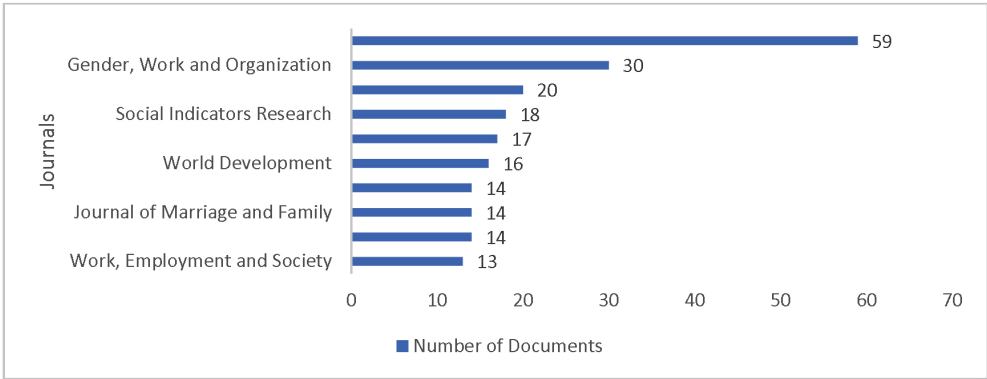
Trends of Publications and Citations

The Figure 1 represents the trends of publications and citations of the work done on women's unpaid work. The year-wise average number of citations per publication is shown with bar-chart, and the average scientific production (which is a compound annual growth rate) of articles is represented in the form line diagram. The 2020 publications received an average of 5.62 citations, marking the highest citation rate. This implies that the papers



Source: Authors' own

Figure 1
Trends Of Publications and Citations on Women's Unpaid Work



Source: Computed by authors from the database

Figure 2
Most Cited Journals

published in 2020 were the most cited ones may be due to the Corona-19 pandemic allowing researchers to look in depth of unpaid work worldwide. Further, in 2023, there was a remarkable surge in content creation on this topic, with an extent of 166 articles published in that year. This shows an upward trend in research and highlights the relevance of the study. The data for 2024 is covered only up to the period of July 3rd, 2024.

Top-Performing Journals

The Figure 2 shows the ten most referred journals on women’s unpaid work. The criteria used are the total number of documents published by each journal in the given field of study. Hence, most papers on women’s unpaid work are published by ‘*Feminist Economics*’ with 59 documents. The other sources are; Gender, Work and Organization with 30 papers, Gender and Development with 20, Social Indicators Research with 18 numbers, Indian Journal of Labour Economics with 17 documents, and so on. The works on women’s unpaid work are found to be published in these top 10 journals more than any others in the given period of study. It is advised to refer these top 10 journals as core with highest production in the field of study. It is also observed that *Feminist Economics* has the impact factor of 28, while the Journal of International Development has the lowest score of 1.

In addition, the study also examined the relationship between the H-Index and the relevant journals in the dataset. The analysis the type of journals receiving high reception, evidences that journals focusing on gender studies as a core discipline tend to achieve better scores.

Author Co-Citation and Affiliation Analysis

The Table 2 presents the top ten authors with their total citations and the number of documents published in the area of unpaid work and the H-Index. The authors are arranged in the order highest H-Index, number of papers publishes and citations received.

Table 2
Top High-Impact Authors' Citation and Production

Author	H-Index	Citation	No. of articles published
Craig L.	10	1276	12
Dong X-Y.	6	338	6
Baxter J.	5	268	6
Churchill B.	4	529	4
Gershuny J.	4	438	4
Mandel H.	4	384	4
Razavi S.	4	217	4
Memiş E.	4	109	5
Floro Ms.	4	87	7
Lewis J.	3	524	3

Source: Authors' own

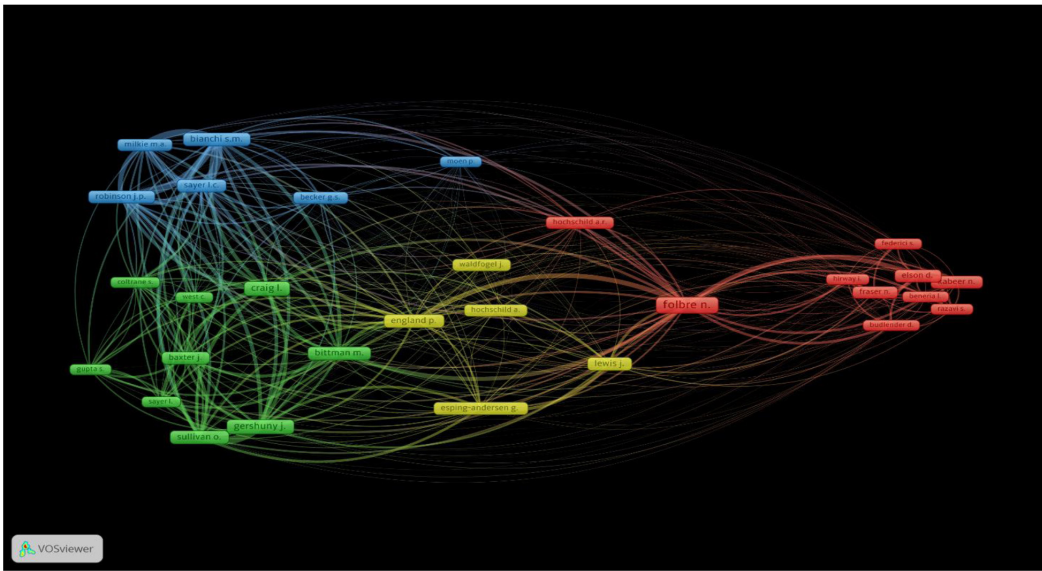
The Table-2 shows that "Craig" with an H-Index 10 ranks first with 1276 citations and 12 papers published on women's unpaid work-related areas. The author has been writing on the topic since 2006, and most papers between 2010 and 2021. It shows that the author has regularly been working on this issue and frequently publishing on this theme.

Some of the other frequent authors in the field are author "Dong" with six publications and H-Index 6 and followed by "Baxter" who has publications in the year between 2002-2024. One of the high-impact authors who recently started working on this issue is "Churchill" (2020-2022). It shows that some have worked on the theme for a long time, and some are new authors in the area of study.

It indicates that top authors exhibit a strong positive correlation with the number of citations they receive. The data reveal that 25% of the authors contribute a mere 6.6% of the research output, indicating top authors focus on high quality work rather than producing high volumes as can be seen from table 2, the top authors have impactful contributions (high H-Index)

The Figure 3 shows the network visualization for the co-citation of authors in which two documents are jointly cited by other documents. The VOSviewer is used to perform a co-citation analysis of cited authors, setting the minimum number of citations for each author at 100 (The study aims to bring out the most important authors, thus a threshold of 100 was considered). Out of a total of 51421 authors, only 30 met this threshold. Of these 30 authors, it calculated the total strength of the co-citation links with other authors and then identified the authors with the highest total link strength. As per [13], co-citation analysis generates clusters to uncover interdisciplinary research trends within institutions.

Author co-citation is a strategy for examining the relationship between authors based on how frequently their works are mentioned jointly by other scholars. It assesses the



Source: Computed by authors'

Figure 3
Network Visualization of Author Co-citation

intellectual proximity of authors by looking at the common references in their cited works. Network visualization forms 4 clusters with citations as weights.

The association strength approach is used to standardize the relationships between objects. The weight of the citation determines the size of the author's circle and the author's label. The author's label and frame of reference get larger, and the higher the citation weight. An author's colour is seen as cluster to which they belong. Links are shown as lines between authors. The proximity of two citations often signifies stronger relationship between them, and lines connecting authors in citation network indicate the strongest co-citation relationships.

Cluster one in red shows ten prominent authors linked to each other through co-citation. It includes authors: "Beneria", "Budlender", "Elson", "Federici", "Folbre", "Fraser", "Hirway", "Hochschild", "Kabeer", "Razavi". The intellectual relationship among cluster one is very strong as they appear in close proximity, meaning a higher frequency of co-citation of the authors together. Cluster two in green shows nine second most influential cluster of authors: "Baxter", "Bittman", "Coltrane", "Craig", "Gershuny", "Gupta", "Sayer", "Sullivan" and "West". The second cluster forms the second-best authors co-cited by authors. Similarly, cluster three in blue shows six authors "Becker", "Bianchi", "Milkie", "Moen", "Robinson", "Sayer" and cluster four in yellow shows five authors linked together "England", "Esping-Andersen", "Hochschild", "Lewis", "Waldfogel". The co-citation network identifies clusters of authors with similar interests. Identifying

influential authors through co-citation frequency will help scholars discover collaborations in the same field of interest.

The Table 3 presents data on important papers authored by researchers who have garnered the highest number of citations. The documents mentioned have the most significant influence on the topic under consideration. The most cited document, titled

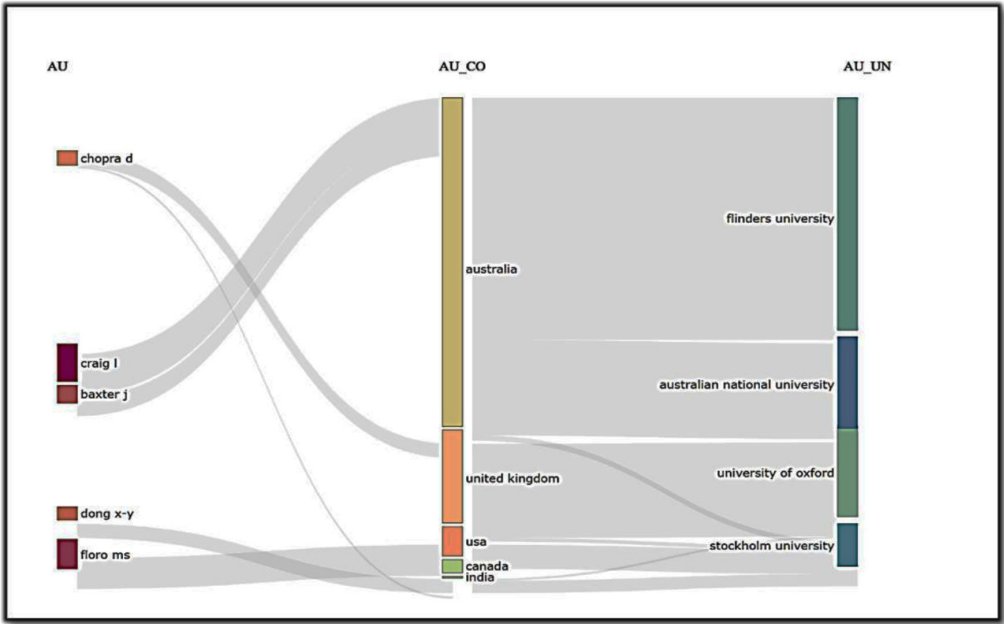
Table 3
Top Cited-Documents of Authors on Women's Unpaid Work

Authors	Paper Title and Source	Total Citations	Institutions
Power [14]	The COVID-19 pandemic has increased the care burden of women and families (Sustainability: Science, Practice & Policy)	727	Independent Researcher and Consultant
Craig and Churchill [15]	Dual-earner parent couples' work and care during COVID-19 (Gender, Work & Organization)	339	University of Melbourne
Kan, Sullivan and Gershuny [16]	Gender Convergence in Domestic Work: Discerning the Effects of Interactional and Institutional Barriers from Large-scale Data (Sociology)	331	University of Oxford; University College London
Craig and Mullan [17]	Parenthood, Gender and Work-Family Time in the United States, Australia, Italy, France, and Denmark (J. of Marriage and Family)	331	University of Melbourne; Aston University
Chant [18]	The 'Feminization of Poverty' and the 'Feminisation' of Anti-Poverty Programmes: Room for Revision? (The J. of Development Studies)	320	London School of Economics
Yavorsky, Dush, and Schoppe-Sullivan [19]	The Production of Inequality: The Gender Division of Labor Across the Transition to Parenthood (J. of Marriage and Family)	318	University of North Carolina; Charlotte; Minnesota; The Ohio State University
Mandel and Semyonov [20]	Family Policies, Wage Structures, and Gender Gaps: Sources of Earnings Inequality in 20 Countries (American Sociological Review)	309	Tel-Aviv University
Folbre [21]	Measuring Care: Gender, Empowerment, and the Care Economy (J. of Human Development)	300	University of Massachusetts Amherst
Hirst [22]	Carer distress: A prospective, population-based study. (Social Science and Medicine)	280	University of York
Budig, Misra, and Boeckmann [23]	The Motherhood Penalty in Cross-National Perspective: The Importance of Work-Family Policies and Cultural Attitudes (Social Politics: International Studies in Gender, State & Society)	274	University of Massachusetts Amherst

Source: Compiled by authors'

“The COVID-19 pandemic has increased the care burden of women and families”, is on the top with 727 citations, written by Kate Power [14]. This study was highly influential as it talks about the impact of the pandemic on the care burden of women. Also, the author has given policy implications for managing the problem of the care economy. Similarly, the data in Table-3 justifies the theme of this study- women’s unpaid work. The most cited papers in this field of study can be fairly inferred by readers, and this will help them better understand the subject.

It is seen that some of the top authors (L. Craig, B. Churchill, Nancy Folbre, Gershuny, Hadas Mandel) have the most cited documents, it is also worth mentioning that the affiliation of these authors also represents the top universities as shown in Figure 4, which represents three field plots representing top authors, countries and affiliations. The plot shows the connection between these three areas with the grey colour. The left side, called the intellectual roots, is the top productive authors related to unpaid work. The central part shows the top countries that are linked with the topmost countries. The related affiliation connected to the top authors is on the right, which is called research content. The size of each rectangle in the figure represents the number of papers linked with that component. The bigger the box more the weight. So, the authors “Craig” and “Floro” are the most frequent authors who publish work on the area under study. The most productive university is Finders University.



Source: Computed by authors’

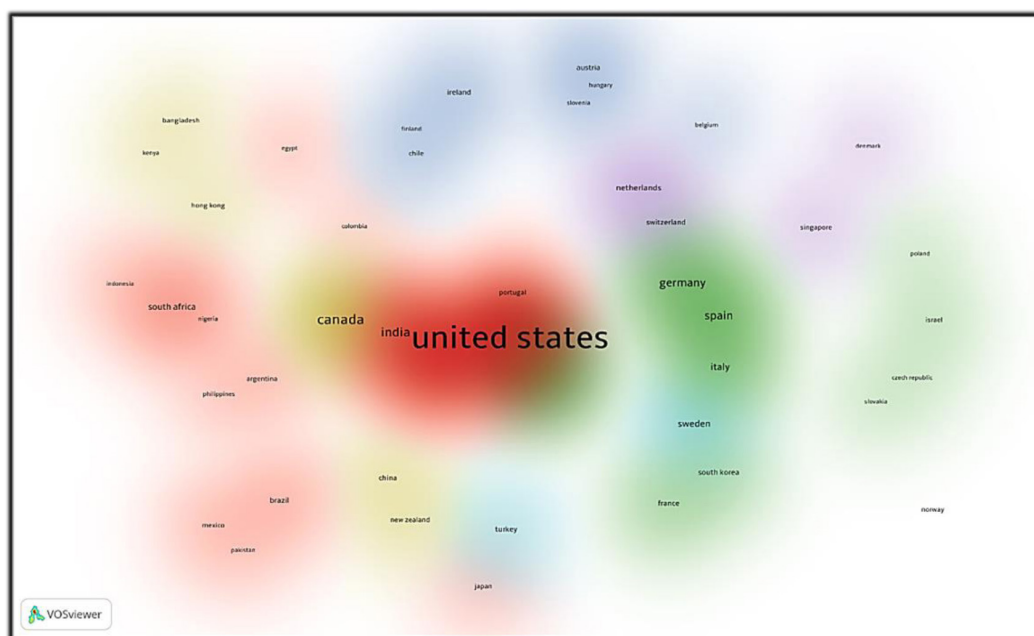
Figure 4
Three-Fields Plot: Author-Country-Affiliation Relationship Analysis

In the field of unpaid work, the University of Oxford has 24 articles, Flinders University has 18 articles, Stockholm University has 16 articles, and Australian National University has 15 articles. It seems that the universities that consistently produce high-quality work are also the most productive.

Cluster Density Visualization of Bibliometric Coupling of Countries

Bibliographic coupling happens when a piece of writing from two different nations references another piece of writing [24]. We may evaluate the degree of similarity between these articles by looking at how frequently these nations have shared bibliographies. Figure 5 represents the cluster density visualization of the bibliometric coupling of countries. In the depiction, the colour of a point is formed by blending the colours of numerous clusters [25]. The number of items belonging to the cluster in the vicinity of the point determines the weight assigned to the cluster's colour. The minimum number of documents of an author is 5, and the minimum citation is 5. Only 45 countries met the threshold out of 100, and cluster density visualization forms 7 clusters. The network used is association strength with documents as weights.

This clustering helps to identify which countries tend to focus on similar research ideas and also track collaboration patterns among the countries. The bibliometric coupling analysis discovered that among the seven clusters, the first cluster in red has "USA",



Source: Authors' own

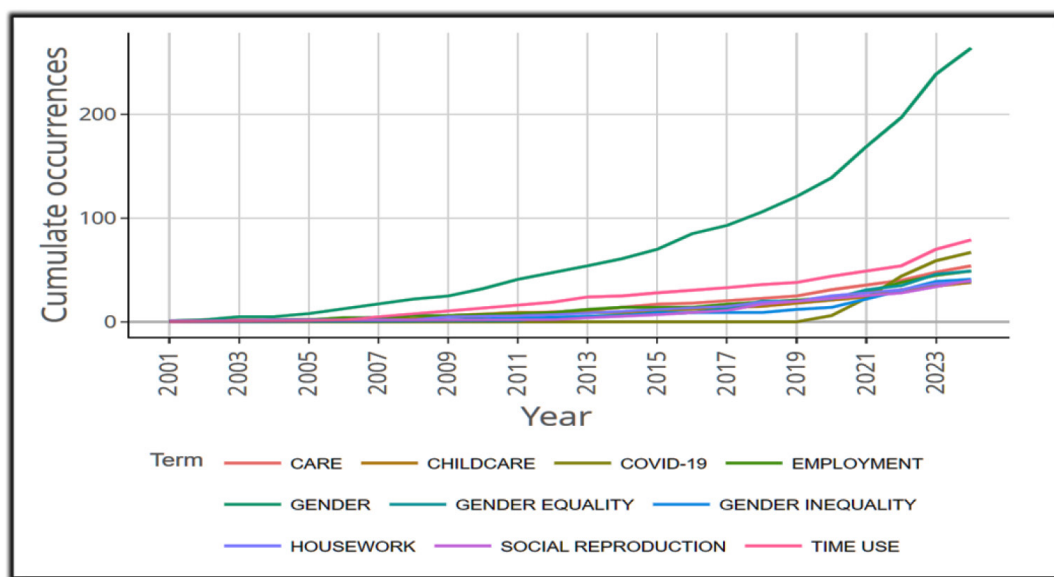
Figure 5
Cluster density visualization of Bibliometric coupling of countries

0 9 1

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000 1001 1002 1003 1004 1005 1006 1007 1008 1009 1010 1011 1012 1013 1014 1015 1016 1017 1018 1019 1020 1021 1022 1023 1024 1025 1026 1027 1028 1029 1030 1031 1032 1033 1034 1035 1036 1037 1038 1039 1040 1



1, 9, 9



Source: Authors' own

Figure 6 (b)

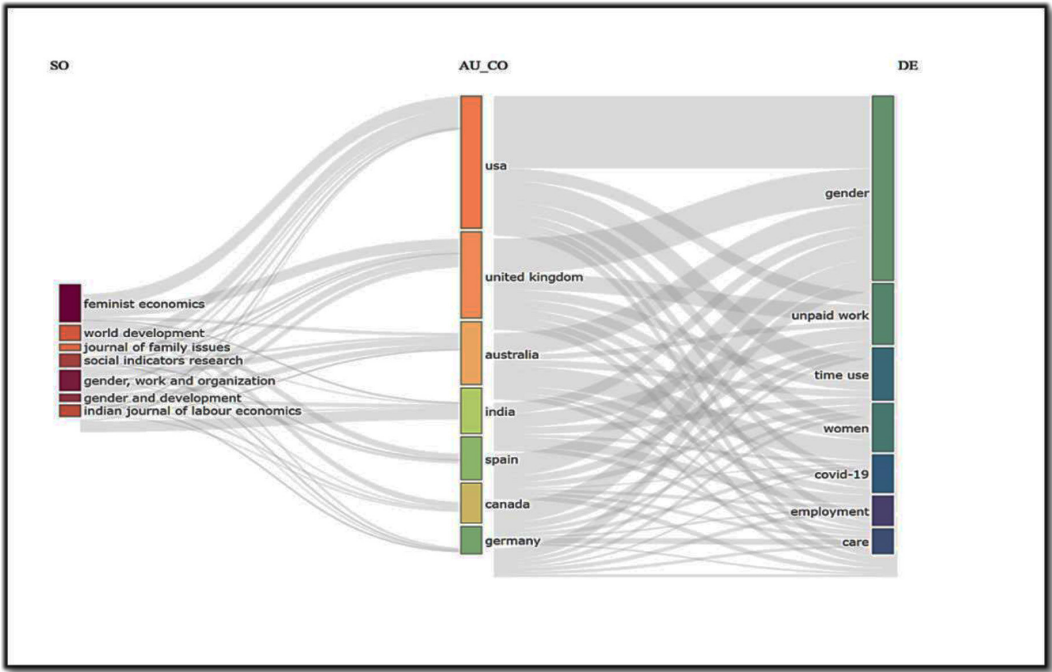
Keywords frequency growth and trend over the years

are time poverty, parenthood, informal care, time allocation, migration, work-life balance and more. The keywords used in the research focus on unpaid work, highlighting areas that have been studied extensively and those that have received less attention.

The Figure 6 (b) shows the ten most frequent keywords over time. It shows the number of keywords that occur per year. "Gender" is the most frequently used keyword in the 21st century from 2001 to the current time period, 2024. The "time-use" keyword trend began in 2005 and is still growing today. Time utilization questionnaires can be quite useful when researching unpaid work. Time-use surveys can be used to find out how much time people spend on their everyday activities.

Words like employment, care, social reproduction, housework and childcare have been used since 2002, which gives an idea of its relevancy since the start of this century, while keywords like gender equality and inequality were introduced after 2008. It appears that these terms are becoming more common as authors move their focus from domestic work as a task solely undertaken by women to gender equality. In comparison, the "COVID-19" keyword emerged only after the onset of the pandemic in 2020.

The figure 7 illustrates the relationship among the three areas related to women's unpaid work; the top journals, countries, and keywords. The plot shows the connection between these three areas in grey colour. On the left side are the top journals, the central part shows the top countries that are linked with the top journals. The related keywords are on the right.



Source: Authors' own

Figure 7

Three-Fields Plot: Journal-Country-Keywords Relationship Analysis

These journals publish work on unpaid work-related themes and are mostly from countries like the USA, UK, Canada, Australia, Spain, Germany and India. Hence, the top seven countries where most work related to the theme is published and the most frequent keyword, gender is shown in the cloud. The other popular keywords are employment, COVID-19, time-use and care as presented in Figure 6(a) and 6(b)). This represents that these are the keywords mostly used by the authors while working on unpaid work for women.

Findings and Discussion

The findings answer the four research questions of this study:

- i) The publications on women's unpaid labour in the twenty-first century indicate a rising trajectory with an increased volume of papers. This increase demonstrates that the average production is rising, highlighting the various aspects that researchers are considering for unpaid labour performed by women worldwide.

- ii) "Feminist Economics" journal has published most papers on the theme with 59 in number. The findings help the readers and libraries in the selection of core journals.
- iii) The study findings on authors shows just 6.6% of the work is produced by 25% of the authors, indicating that the authors' contributions to the theme are not very frequent.
- iv) Ten prominent authors are identified through co-citation.
- v) All the authors have done highly notable work on unpaid work. These patterns of co-citations can be used by the readers for potential collaborations. This improves the quality of articles by pooling the diversity of ideas together.
- vi) Based on the bibliometric coupling of countries, the first largest cluster among the seven clusters is the USA, India, and Portugal, at their core. Argentina, Egypt, India, Brazil, Colombia, Indonesia, Japan, Nigeria, Pakistan, the United Kingdom, Mexico, the Philippines, and South Africa are the nations that are strongly linked to these nations.
- vii) This will give an idea to find which nations prioritize related research topics and which also shows trends in international cooperation. It can assess production by contrasting the nation's role in the cluster with other nations. Collaborating nations may be tackling certain issues that could point to possible areas of mutual assistance.
- viii) It appears that the keywords have evolved over the years as authors move their focus from domestic work as a task solely undertaken by women to gender equality for unpaid duties.
- ix) It has been observed that the keywords "gender" and "time-use" are the most crucial areas where researchers are exploring new dimensions of unpaid work and can take note that the least explored keywords such as "time poverty", "parenthood", "informal care", "time allocation", "migration", "work-life balance", and more can be explored further.

Conclusion and Future Scope

The study highlights that the various aspects of time pressure. Future research should thoroughly investigate the multifaceted nature of time burden, including its psychological, organizational, and operational impacts. Additionally, it is essential to explore and evaluate a range of targeted strategies aimed at mitigating time pressure to enhance overall productivity and employee well-being. Culturally, improvement in the status of women performing unpaid labour is often considered less valuable than men because it is typically interspersed with other activities or taking care of their children [26, 27]. Our study indicates that more studies on the time-use survey can help reveal the time spent pattern among women to find probable solutions.

Nonetheless, this study informs about the patterns of productive institutions, authors, journals, and countries, which can be useful when researching the theme of the study. Future researchers must uncover time poverty factors caused by the overload of unpaid work, which can be used to improve gender equality. Our study sheds light on the co-cited authors and clusters of countries working together. One must extract detailed information about the author's work from the presented clusters, which will provide insight into similar areas of study. Scientists must use this information, which will help in building new and better solutions through collaboration networks. Overall, this study offers helpful references for scholars and practitioners who wish to explore this field further.

References

- [1] L Addati, U Cattaneo, V Esquivel, I Valarino, *Care Work and Care Jobs for the Future of Decent Work*. Geneva, Switzerland: ILO, pp. 40 (2018).
- [2] P. Chauhan, "Gendering COVID-19: Impact of the pandemic on women's burden of unpaid work in India," *Gender Issues*, vol. 38, pp. 395–419 (2020).
- [3] A. Langer, A. Meleis, F. Knaul, R. Atun, R. Aran M, Arreola-Ornelas H, Bhutta ZA, Binagwaho A, Bonita R, Caglia JM, Claeson M, Davies J, Donnay FA, Gausman JM, Glickman C, Kearns AD, Kendall T, Lozano R, Seboni N, Sen G, Sindhu S, Temin M, Frenk J. Women and Health: the key for sustainable development. *Lancet*. 2015 Sep 19; 386(9999):1165-210. doi: 10.1016/S0140-6736(15)60497-4. Epub 2015 Jun 4. PMID: 26051370.
- [4] G. Tasnim, "Making women's unpaid care work visible in India: Importance and challenges," *Journal of International Women's Studies*, vol. 21, no. 2, pp. 28-35 (2020).
- [5] A. Oakley, *Woman's Work: The Housewife*. New York, NY, USA: Pantheon Books (1974).
- [6] J. Ervin, Y. Taouk, L. F. Alfonzo, B. Hewitt, and T. King, "Gender differences in the association between unpaid labour and mental health in employed adults: A systematic review," *The Lancet Public Health*, vol. 7, no. 9, pp. e775–e786 (2022).
- [7] S. Tripathi, S. Azhar, and F. Zhai, "Unpaid care work among women in South Asia: A systematic review," *Asian Social Work and Policy Review*, vol. 16, no. 3, pp. 275–289 (2022).
- [8] D. Grant-Smith and P. McDonald, "Ubiquitous yet ambiguous: An integrative review of unpaid work," *International Journal of Management Reviews*, vol. 20, no. 2, pp. 559–578 (2018).
- [9] S. Çakir and P. D. Güre, "Women's employment: A bibliometric approach," *Ekonomik Yaklaşım*, vol. 35, no. 130 (2024).
- [10] V. N. Gonçalves, M. C. Ponchio, and R. G. Basílio, "Women's financial well-being: A systematic literature review and directions for future research," *International Journal of Consumer Studies*, vol. 45, no. 4, pp. 824–843 (2021).
- [11] P. Schaer, "Applied informetrics for digital libraries: An overview of foundations, problems and current approaches," *Historical Social Research/Historische Sozialforschung*, pp. 267-281 (2013).

-
- [12] P. Kokol and H. B. Vošner, "Historical, descriptive and exploratory analysis of application of bibliometrics in nursing research," *Nursing Outlook*, vol. 67, no. 6, pp. 680–695 (2019).
- [13] G. Surwase, A. Sagar, B. S. Kademani, and K. Bhanumurthy, "Co-citation analysis: An overview," in *Proc. Beyond Librarianship Creativity, Innovation and Discovery*, pp. 179–185 (Sept. 2011).
- [14] K. Power, "The COVID-19 pandemic has increased the care burden of women and families," *Sustainability: Science, Practice and Policy*, vol. 16, no. 1, pp. 67–73 (2020).
- [15] L. Craig and B. Churchill, "Dual-earner parent couples' work and care during COVID-19," *Gender, Work & Organization*, vol. 28, pp. 66–79 (2021).
- [16] M. Y. Kan, O. Sullivan, and J. Gershuny, "Gender convergence in domestic work: Discerning the effects of interactional and institutional barriers from large-scale data," *Sociology*, vol. 45, no. 2, pp. 234–251 (2011).
- [17] L. Craig and K. Mullan, "Parenthood, gender and work-family time in the United States, Australia, Italy, France, and Denmark," *Journal of Marriage and Family*, vol. 72, no. 5, pp. 1344–1361 (2010).
- [18] S. Chant, "The 'feminization of poverty' and the 'feminisation' of anti-poverty programmes: Room for revision?," *The Journal of Development Studies*, vol. 44, no. 2, pp. 165–197 (2008).
- [19] J. E. Yavorsky, C. M. Kamp Dush, and S. J. Schoppe-Sullivan, "The production of inequality: The gender division of labor across the transition to parenthood," *Journal of Marriage and Family*, vol. 77, no. 3, pp. 662–679 (2015).
- [20] H. Mandel and M. Semyonov, "Family policies, wage structures, and gender gaps: Sources of earnings inequality in 20 countries," *American Sociological Review*, vol. 70, no. 6, pp. 949–967 (2005).
- [21] N. Folbre, "Measuring care: Gender, empowerment, and the care economy," *Journal of Human Development*, vol. 7, no. 2, pp. 183–199 (2006).
- [22] M. Hirst, "Carer distress: A prospective, population-based study," *Social Science & Medicine*, vol. 61, no. 3, pp. 697–708 (2005).
- [23] M. J. Budig, J. Misra, and I. Boeckmann, "The motherhood penalty in cross-national perspective: The importance of work-family policies and cultural attitudes," *Social Politics*, vol. 19, no. 2, pp. 163–193 (2012).
- [24] Z. Gu, F. Meng, and M. Farrukh, "Mapping the research on knowledge transfer: A scientometrics approach," *IEEE Access*, vol. 9, pp. 34647–34659 (2021).
- [25] N. J. Van Eck and L. Waltman, "Software survey: VOSviewer, a computer program for bibliometric mapping," *Scientometrics*, vol. 84, no. 2, pp. 523–538 (2010).
- [26] M. J. Mattingly and S. M. Blanchi, "Gender differences in the quantity and quality of free time: The U.S. experience," *Social Forces*, vol. 81, no. 3, pp. 999–1030 (2003).
- [27] L. Irani and V. Vemireddy, "Getting the measurement right! Quantifying time poverty and multitasking from childcare among mothers with children across different age groups in rural north India," *Asian Population Studies*, vol. 17, no. 1, pp. 94–116 (2020).
-