DOI: https://doi.org/10.53350/pjmhs0202317122

SYSTEMATIC REVIEW

Exploring the Landscape of Type 2 Diabetes Mellitus Research: A Comprehensive Review of 670 Scopus-Enrolled Journal Articles (2003-2022) by Pakistani authors

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ABSTRACT

Background: Academics develop ideas, technologies, and creative techniques to promote economic, social, and cultural development through interdisciplinary collaborations and cutting-edge research; Scholarly research shapes educational curriculum.
Aim: To associate the authors' connection with various institutes and count the availability of institutes in the study; the research intends to provide insights into the contribution of Pakistani scholars and institutions in this specific area of DM type 2 study.
Methods: A retrospective method was utilized for this meta-analysis. "Diabetes mellitus type 2" is written down in the Scopus database's menu bar with "Pakistan' in the following search query as affiliation.
Results: Comma separated value (CSV) file was downloaded with 861 documents on the term diabetes mellitus type 2. Seven hundred nineteen articles, 85 review articles, 39 letters, 8 editorials, 3 book chapters, 3 conference papers, 3 notes, and 1 erratum were downloaded. Seven hundred nineteen articles were further analyzed, and 670 were selected for meta-analysis for this study. A total of 2794 authors from 1457 institutes participated in writing 670 articles. 55 authors write 588 articles, 117 authors write 45 articles, 238 authors write 17 articles, and 2384 authors write 20 articles. The extensive participation of authors from a diverse range of institutes (1457 in total) underscores the collaborative nature of diabetes mellitus type 2 researches in Pakistan.
Practical Implication: This study can help us learn more about the research done by Pakistani authors and institutions on type 2 diabetes. It also shows us where more research and collaboration are potentially needed to improve Pakistan's scientific efforts in this field
Conclusion: The results indicate a strong and cooperative research environment for type 2 diabetes in Pakistani institutions. While the involvement of numerous writers demonstrates the comprehensive and multidisciplinary nature of the research, the concentration of papers among particular authors may indicate specialty or leadership in the topic. The distribution of documents among the various author groups points to broad contributions from a bigger pool of researchers and focused efforts from a smaller group of authors.
Keywords: Type 2 Diabetes mellitus, landscape, comprehensive review

INTRODUCTION

Academia advances knowledge, fosters innovation, and promotes intellectual progress in educational institutions, which helps institutional development; Academic research produces new knowledge and expands understanding in numerous fields. Knowledge development boosts institutions' academic reputations, Innovation, and solving challenging social problems[1]. Academics develop ideas, technologies, and creative techniques to promote economic, social, and cultural development through interdisciplinary collaborations and cutting-edge research; Scholarly research shapes educational curriculum[2]. Academics use their expertise to create teaching materials, course content, and methods that reflect the current research in their professions; mentor and support young scholars by giving research opportunities and guidance; stimulate and educate young minds to become autonomous researchers and think leaders who can contribute to institutional development by cultivating intellectual curiosity and critical thinking; and collaborate with other institutions, industry, and organizations[3].

Collaborations foster multidisciplinary research, knowledge sharing, and cooperative initiatives and funding. Partnerships boost research capacity, encourage idea exchange, and create a lively intellectual community, driving institutional development. Academics write grants and research applications for government, nonprofit, and private sector funding[4]. These funds enable institutions to expand their research capabilities and attract talented researchers. Academics often influence public policy debates and decision-making due to their research and expertise. Their advice can alter institutional, regional, and national policies, plans, and initiatives, affecting higher education institutions and frameworks[5].

Further, reading and writing improve societies and businesses. The sharing of research findings between institutions helps both nations and non-profits. The results of academic studies are frequently presented at conferences and published in academic journals. Knowledge sharing promotes organizational and national development by enabling individuals to make decisions based on facts and best practices[6]. New concepts emerge from published research. Changes enhance quickness, rivalry, and technology. Publishing research findings benefits economies, industries, and innovation hubs alike. Legislators rely on research to make sense of complicated problems, assess the effectiveness of existing policies, and develop evidence-based norms. With data, universities may mold businesses and nations. Through learning, human capital increases. How to study well is a skill they impart to students, experts, and researchers[7]. By educating workers and encouraging research-based processes, companies and nations may benefit from increased intelligence from scientific inquiry. Researchers expand research to new countries, organizations, and academic centers. Institute Share research internationally facilitates education, cooperation, and problem-solving worldwide. Collaborations allow businesses and nations to pool resources, increase their knowledge, and spark new ideas[8]. The research raises the profile of a country in the eyes of the general public and the academic community. Intelligent people, teamwork, and funding all gravitate toward research.

Received on 04-08-2023
Accepted on 28-12-2023

Funding, partnerships, and sponsorships for R&D may be made available to robust research publication centers. Innovative goods, services, and companies result in jobs and economic growth. The health of society and the environment can be affected by published research[9].

Diabetes mellitus type 2, known as type 2 diabetes, is a metabolic problem that lasts for a long time and is characterized by high blood sugar (hyperglycemia). It is the most widespread form of diabetes, and most people get it as adults, but it can happen at any age. In type 2 diabetes, the body either stops responding to insulin or doesn't make enough of it to keep blood sugar under control. Insulin is a hormone made by the pancreas that helps control how and when cells in the body take glucose (sugar) from the bloodstream and use it[10]. Type 2 diabetes can be caused by genetics and lifestyle choices, such as being overweight, not exercising, and eating poorly. These things can cause insulin resistance when the body's cells stop responding to insulin. Type 2 diabetes is caused by being overweight, inactive, and poorly eating. Cells can become resistant to insulin because of these things. Over time, the pancreas might not be able to make enough insulin to get past this resistance, which would cause blood sugar to rise[11]. Type 2 diabetes can be missed for years if the first signs are mild or don't appear. But typical symptoms include thirst, going to the bathroom often, losing weight for no apparent reason, feeling tired, having blurry vision, slow wound healing, and getting sick often[12]. Untreated type 2 diabetes can lead to heart disease, kidney damage, nerve damage (neuropathy), eye problems (retinopathy), foot problems, and a higher risk of infection. Problems can be put off or avoided if they are found and treated quickly[13].

There is no cure for type 2 diabetes. Researchers, healthcare providers, and organizations all over the world have improved type 2 diabetes management and outcomes. Important contributions: Researchers all over the world are looking into the causes, mechanisms, and potential treatments for type 2 diabetes. There is research on genetics, insulin resistance, beta cell function, obesity, and lifestyle therapy. Pharmaceutical medicines, risk factor understanding, and diabetes management technology and methodologies have all evolved as a result of these investigations[14]. Many types 2 diabetes treatments have been developed by pharmaceutical corporations and researchers. Examples include oral insulin sensitivity, production, and hepatic glucose reduction medications. Injectable medications such as GLP-1 receptor agonists and SGLT2 inhibitors can help with blood sugar control and may benefit the heart and kidneys[15].

Type 2 diabetes treatment includes diet, exercise, and weight management. The international community has encouraged lifestyle changes and programs to assist diabetics in adopting sustainable lifestyle choices. These treatments lower blood sugar levels, reduce issues, and boost health[16].

Care for type 2 diabetes involves what you eat, how much you move, and how much you weigh. Changes in living and programs to help people with diabetes make healthier choices have been pushed by the global community. These treatments lower blood sugar, make problems less likely and improve health[17]. People with type 2 diabetes worldwide have been taught about their disease, how to take care of it themselves, and how to follow their treatment plans. Diabetes education classes teach people how to manage their diabetes, make intelligent choices, and live a healthy life. Awareness campaigns help find and stop people from getting type 2 diabetes[18].

International groups, study institutions, and advocacy group’s work together to make it easier to care for people with type 2 diabetes. These partnerships make it easier to study, share information, and develop a standard way to treat diabetes[19]. They raise knowledge about diabetes care inequalities, health care access, and the world. Governments and public health groups fight type 2 diabetes. They carry out strategies for preventing, finding, and caring for diseases. These include programs to improve health, check for diabetes, make health care more affordable, and regulate the food and drink business to help people make better choices[20]. The efforts of the whole world have significantly changed the lives of people with type 2 diabetes. Research, new treatments, changes in lifestyle, education, and public health actions are all important ways to reduce the effects of type 2 diabetes and improve the lives of people who have it around the world[21].

Aim: This investigation aims to associate the authors' connection with various institutes and count the availability of institutes in the study; the research intends to provide insights into the contribution of Pakistani scholars and institutions in this specific area of diabetes mellitus type 2 study.

Significance of this study: This study has significance because it looks into the number of authors from Pakistan who works in diabetes mellitus type 2 researches. By looking at how many times the articles in the meta-analysis were cited, the study can tell how important and relevant the research done by Pakistani writers on diabetes mellitus type 2 was seen to be. This study can help us learn more about the research done by Pakistani authors and institutions on type 2 diabetes. It also shows us where more research and collaboration are potentially needed to improve Pakistan's scientific efforts in this field.

METHODS

A retrospective method was utilized for this meta-analysis. "Diabetes mellitus type 2" is written down in the Scopus database's menu bar with "Pakistan' in the following search query as affiliation. Comma separated value (CSV) file was downloaded with 861 documents. Seven hundred nineteen articles, 85 review articles, 39 letters, 8 editorials, 3 book chapters, 3 conference papers, 3 notes, and 1 erratum were downloaded. Seven hundred nineteen articles were further analyzed, and 671 were selected for meta-analysis for this study[25-26].

Objectives: Following objectives were set:

1. To quantify the pattern of authors.
2. To enumerate the distribution of research published in different journals.
3. To analyze the distribution of research contributions across different institutions within Pakistan.
4. To assess the number of citations received by the articles in this meta-analysis.

RESULTS

The results indicate the number of authors publishing articles across different research papers. Specifically, it states that:

1. In 588 articles, 55 authors contributed.

Discussion: It is observed that a relatively small number of authors (55) contributed to a large proportion of the articles (588) in the dataset; this indicates a high level of productivity and involvement from these authors; individuals have been actively engaged in research on diabetes Mellitus type 2 and have made significant contributions to the body of knowledge in this field; the output of research articles showcases their dedication and expertise in studying this disease.

2. In 45 articles, 117 authors contributed.

Based on the information, 45 of the 670 articles in a dataset with 2794 authors, and 670 articles were written by 117 authors.

Discussion: It's important to remember that the number of articles an author has written is not the only way to judge how important their work is. In collaborative study projects, there is often more than one author. Each author brings expertise, data, or specialized knowledge to the project. When an author is involved, it shows specialization and focused research in the field. When more authors are involved, the research environment is diverse and collaborative.

Table 1: Authors participation in 670 manuscripts published in the journals enrolled in Scopus Database from 2003 to 2022

S. No	Authors participation	Articles	Authors participation	Articles	Authors participation	Articles	Authors participation	Articles	Total authors	Total authors
1	One author	5	11 authors	18	20 authors	1	40 authors	1	72	25
2	2 authors	61	12 authors	7	21 authors	5	41 authors	1	76	74
3	3 authors	93	13 authors	5	22 authors	1	47 authors	1	85	100
4	4 authors	107	14 authors	5	23 authors	1	48 authors	1	89	114
5	5 authors	82	15 authors	3	25 authors	2	57 authors	2	102	89
6	6 authors	102	16 authors	1	26 authors	1	61 authors	1	109	105
7	7 authors	55	17 authors	5	32 authors	1	63 authors	1	119	62
8	8 authors	34	19 authors	1	34 authors	3	67 authors	1	128	39
9	9 authors	26			35 authors	2	70 authors	1	114	29
10	10 authors	23					90 authors	1	100	24
11							130 authors	1	130	1
12							155 authors	1	155	1
13							164 authors	1	164	1
14							178 authors	1	178	1
15							204 authors	1	204	1
16							215 authors	1	215	1
17							226 authors	1	226	1
18							227 authors	1	227	1
19							301 authors	1	301	1
20	55 authors	588	117 authors	45	238 authors	17	2384 authors	20	2794	670

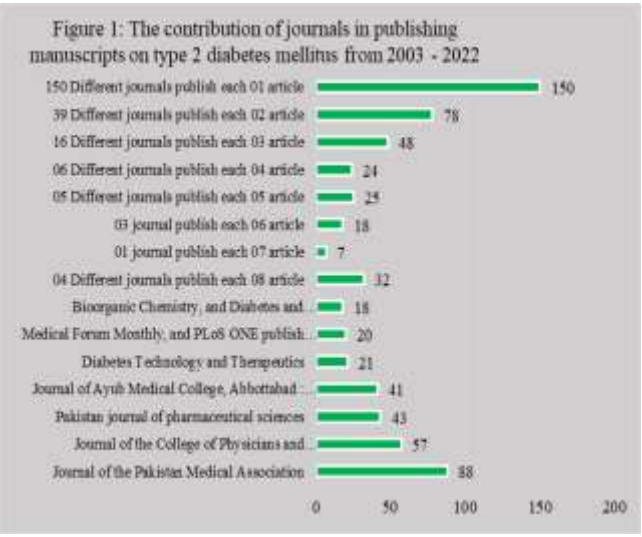
3. In 17 articles, 238 authors contributed.

According to the data, 238 authors contributed to 17 articles out of 2794 authors and 670 articles.

Discussion: This indicates that these particular authors have significantly contributed to a subset of research articles on diabetes Mellitus type 2. These authors may have focused on specific areas or research questions related to this disease. Their involvement in a limited number of articles might indicate a higher level of specialization or expertise in their respective fields of study. This result suggests that the authors of these publications may have pursued more extensive and in-depth research projects. Their focus on fewer articles may indicate a higher level of complexity or detail in their research methodology, data analysis, or experimental design.

4. In 20 out of 2794 authors, 2384 authors contributed to 670 articles.

This information presents an interesting pattern where the number of authors per article varies significantly. Let's discuss the implications of these findings:



Discussion: The first observation is a wide range of authors per article. The highest number, 2794 authors, wrote 20 articles; this indicates the possibility of multi-center or multi-national studies involving extensive collaboration and data sharing. Such studies often require significant coordination, resources, and expertise from various institutions and researchers across different regions. The involvement of numerous authors underscores the importance of teamwork and collective efforts in conducting large-scale studies related to diabetes Mellitus type 2.

The figure one reveals the journal's role in publishing is crucial in disseminating knowledge and advancements related to this disease. Let's explore how their contributions are fascinating and facilitate research on type 2 diabetes mellitus.

Diabetes Technology and Therapeutics (21 articles): This journal focuses specifically on diabetes technology, including the development and evaluation of new tools, devices, and therapies for managing diabetes. It provides a platform for researchers to publish their findings on innovative approaches to improve the management and treatment of type 2 diabetes mellitus.

Bioorganic Chemistry (9 articles) and Diabetes and Metabolic Syndrome: Clinical Research and Reviews (9 articles): Both these journals contribute to the understanding of the underlying biochemical and organic chemistry aspects of diabetes and clinical research related to diabetes and metabolic syndrome. They provide a comprehensive view of the disease, including its molecular mechanisms, biomarkers, and potential therapeutic targets.

Medical Forum Monthly and PLoS ONE (10 articles each): These journals publish a diverse range of research articles across various medical disciplines, including diabetes. Although they cover a broad spectrum of topics, their contributions in publishing ten articles related to diabetes Mellitus type 2 demonstrate the significance and recognition of the disease within the medical community.

Multiple journals in the list publish a significant number of articles (ranging from 2 to 8) on diabetes Mellitus type 2. These journals demonstrate the growing interest and importance of this topic within the scientific community. Their collective efforts contribute to understanding, researching, and managing type 2 diabetes mellitus.

Multiple journals publishing one article each (151 journals): While each journal in this category publishes only one article on diabetes Mellitus type 2, their collective contribution is substantial due to the large number of journals involved. These publications widen the research reach by encompassing diverse perspectives and increasing the dissemination of knowledge on type 2 diabetes mellitus.

Discussion: The fascinating aspect of these journals is their dedicated focus on diabetes Mellitus type 2, covering various aspects, including technology, clinical research, organic chemistry, and more. They facilitate research on this disease by providing platforms for researchers to share their findings, promoting collaboration and knowledge exchange among the scientific community. Collectively, these journals contribute significantly to

advancing our understanding and management of type 2 diabetes mellitus, ultimately benefiting patients and healthcare providers worldwide.

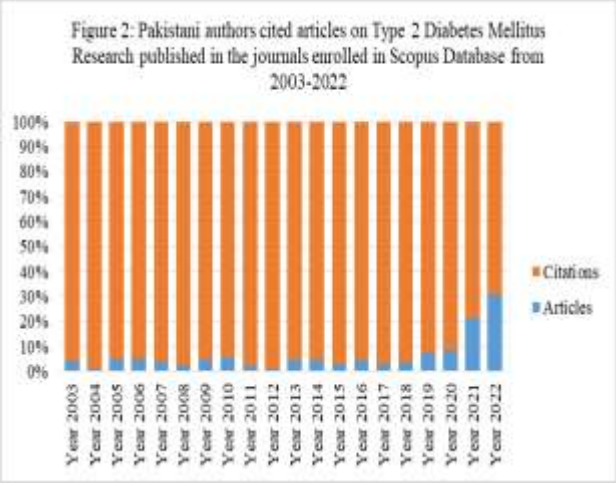
Table 2: Authors affiliated with Institutes working in the Pakistan.

	No.	%
Baqai Medical University, Karachi, Pakistan	91	6.2
University of Karachi Sindh Pakistan, Pakistan	80	5.4
Aga Khan University Hospital, Karachi, Pakistan	78	5.3
Dow University of Health Sciences, Karachi, Pakistan	63	4.3
Government College University, Faisalabad, Pakistan	43	3
Ziauddin Medical University, Karachi, Pakistan	38	2.6
COMSATS, Institute of Information Technology (All Locations), Pakistan	29	2
University of Health Sciences, Lahore, Pakistan	29	2
University of the Punjab, Lahore, Pakistan	26	1.7
Ayub Teaching Hospital, Abbottabad, Pakistan	23	1.5
Islamia University of Bahawalpur, Pakistan	22	1.5
University of Agriculture, Faisalabad, Pakistan	22	1.5
National University of Sciences and Technology (NUST), Islamabad, Pakistan	21	1.4
Quaid e Azam University, Islamabad, Pakistan	21	1.4
Liaquat National Hospital (LNH), Karachi, Pakistan	19	1.3
Liaqut University of Medical and Health Sciences, Jamshoro, Pakistan	19	1.3
Combined Military Hospital, (All Locations), Pakistan	18	1.2
University of Veterinary and Animal Science, Lahore, Pakistan	18	1.2
Government College University, Lahore, Pakistan	17	1.1
King Edward Medical University, Punjab, Lahore, Pakistan	17	1.1
ShifaTameer-e-Millat University, Islamabad, Pakistan	17	1.1
University of Lahore, Lahore, Pakistan	17	1.1
Army Medical College/NUST, Rawalpindi, Pakistan	16	1.1
Jinnah Sindh Medical University, Karachi, Pakistan	15	1.0
Sheikh Zayed Medical College/Hospital, Rahim Yar Khan, Punjab, Pakistan	15	1.0
National University of Medical Sciences, Rawalpindi, Pakistan	14	0.9
Bahauddin Zakariya University, Multan, Pakistan	13	0.8
Hayatabad Medical Centre, Peshawar, Pakistan	13	0.8
Shalamar Medical and Dental College, Pakistan	13	0.8
Khyber Medical University, Hayatabad, Peshawar, Pakistan	12	0.8
Lahore College for Women University, Lahore, Punjab, Pakistan	12	0.8
University of Sargodha, Pakistan	12	0.8
ISRA University, All Campuses, Pakistan	11	0.7
Riphah International University, Islamabad, Pakistan	11	0.7
Services Institute of Medical Sciences and Services Hospital, Lahore, Pakistan	11	0.7
Abdul Wali Khan University, Mardan, Pakistan	10	0.6
Pakistan Institute of Medical Sciences, Islamabad, Pakistan	10	0.6
Authors belonging to 4 Different Institutes participated in each 09 articles	36	2.4
Authors belonging to 4 Different Institutes participated in each 08 articles	32	2.2
Authors belonging to 5 Different Institutes participated in each 07 articles	35	2.4
Authors belonging to 9 Different Institutes participated in each 06 articles	54	3.7
Authors belonging to 13 Different Institutes participated in each 05 articles	65	4.4
Authors belonging to 13 Different Institutes participated in each 04 articles	52	3.5
Authors belonging to 22 Different Institutes participated in each 03 articles	66	4.5
Authors belonging to 42 Different Institutes participated in each 02 articles	84	5.7
Authors belonging to 117 Different Institutes participated in each 01 article	117	8
Total Institutes	1457	

Table 2 reveals the contribution of academic institutes situated in Pakistan. The data highlights Pakistan's thriving academic and medical research community, where institutions actively engage in collaborative efforts, fostering a culture of knowledge-sharing and innovation. In the realm of medical and academic research, several institutions in Pakistan have made significant contributions, as reflected in the data from the Scopus Database. Among the notable institutions, Baqai Medical University in Karachi leads the way with a remarkable count of 91 articles, followed closely by the University of Karachi and Aga Khan University Hospital. The academic prowess extends to institutions such as Dow University of Health Sciences, Ziauddin Medical University, and COMSATS Institute of Information Technology, with a substantial number of articles published. The University of Health Sciences in Lahore and the University of the Punjab also hold prominent positions in the research landscape.

Table 3: Pakistani authors cited articles on Type 2 Diabetes Mellitus Research published in the journals enrolled in Scopus Database from 2003-2022

Years	Articles	Citations	Citations per article
Year 2003	10	236	23.6
Year 2004	8	691	86.3
Year 2005	8	157	19.6
Year 2006	10	197	19.7
Year 2007	14	347	24.7
Year 2008	22	882	40
Year 2009	19	405	21.3
Year 2010	23	389	17
Year 2011	23	1230	53.4
Year 2012	24	2208	92
Year 2013	25	508	20.3
Year 2014	30	616	20.5
Year 2015	33	1113	33.7
Year 2016	46	950	20.6
Year 2017	55	1930	35
Year 2018	52	1302	25
Year 2019	52	659	12.6
Year 2020	66	723	11
Year 2021	84	307	3.6
Year 2022	66	150	2.2
Total	670	15000	22.3
Minimum	8	150	2.2
Maximum	84	2208	92
Average	33.5	750	29.1



The data further reveals the diverse collaborative efforts among researchers and institutes. A noteworthy trend is the increasing collaboration, with a substantial number of authors from different institutions participating in joint research endeavors. This collaborative spirit is evident in the statistics, with authors from a vast array of institutes coming together to produce a total of 670

articles. A deeper dive into the collaborative patterns showcases the breadth and depth of the research network. A significant number of authors, belonging to varying institutions, have collaborated on multiple articles, emphasizing the collective and interdisciplinary nature of academic exploration. The impressive scope of participation, involving 2794 authors from 1457 institutes, underscores the rich tapestry of research activities in Pakistan. This collaborative synergy not only enhances the quality of research but also contributes to the advancement of knowledge and innovation in the medical and academic domains.

DISCUSSION

Figure 2, and table 3 reveals that the data shows an increasing trend in the number of articles published by Pakistani authors over the years, with some fluctuations. The number of articles published ranged from 8 in 2004 and 2005 to a peak of 84 in 2021. It indicates a growing interest in research activity among Pakistani authors. The number of citations received by the articles also demonstrates the impact and recognition of the research[20]. The citation count varies each year but generally shows an increasing trend. The citations ranged from 157 in 2005 to 2208 in 2012. Higher citation counts suggest that the research findings were influential and referenced by other researchers in the field. Calculating the average number of citations per article can provide insights into the impact and quality of the research. By dividing the total number of citations by the number of articles published each year, we can determine this metric for each year[22].

For example, in 2012, the average number of citations per article would be 2208/24 = 92. This metric can help assess the significance and impact of the published research. Analyzing the data over the years can reveal trends and patterns. A general upward trend in the number of articles and citations indicates a growing research output and impact. However, there are some fluctuations and variations in citation counts from year to year, which may be influenced by factors such as the quality of research, publication venues, and research collaborations[23]. The data suggest a positive trend in Type 2 Diabetes Mellitus research by Pakistani authors. In the meantime, a meta-analysis called "The DIAbetes Genetics Replication and Meta-analysis (DIAGRAM) Consortium" has been done with the help of Pakistani writers. Large-scale association research informs us about how type 2 diabetes is caused and how it works. Nat Genet 44, 981–990 (2012)," which was cited 1450 times[24].

CONCLUSION

The meta-analysis of 670 selected articles reveals a dynamic and collaborative landscape in the study of diabetes mellitus type 2 in Pakistan. A total of 861 documents were downloaded, comprising 719 articles, 85 review articles, 39 letters, eight editorials, three book chapters, three conference papers, three notes, and one erratum. The primary focus of the study was on the 719 articles related to diabetes mellitus type 2. The diverse authorship and focused contributions suggest a combination of specialized expertise and broader engagement in addressing this critical health issue. Out of the 719 articles, 670 were selected for meta-analysis in this study. This indicates a careful screening process to ensure the relevance of the chosen articles to the research objectives. A total of 2794 authors from 1457 institutes participated in writing the selected 670 articles. Notably, 55 authors were responsible for writing 588 articles, indicating a concentrated contribution from a relatively small group of authors. Additionally, 117 authors contributed to 45 articles, 238 authors to 17 articles, and a larger group of 2384 authors to 20 articles.

The extensive participation of authors from a diverse range of institutes (1457 in total) underscores the collaborative nature of diabetes mellitus type 2 research in Pakistan. The distribution of articles among different author groups suggests a mix of concentrated efforts from a smaller set of authors and broader contributions from a larger pool of researchers. The findings suggest a robust and collaborative research environment related to diabetes mellitus type 2 in Pakistani institutes. The concentration of articles among specific authors may indicate specialization or leadership in the field, while the involvement of many authors reflects the research's inclusive and multidisciplinary nature.

Authorship and contribution declaration: Each author of this article fulfilled following Criteria of Authorship:

1. Conception and design of or acquisition of data or analysis and interpretation of data.
2. Drafting the manuscript or revising it critically for important intellectual content.
3. Final approval of the version for publication.

All authors agree to be responsible for all aspects of their research work.

Conflict of interest: None
Funding: None

REFERENCES

1. Wang S, Yong H, He X-D. Multi-omics: Opportunities for research on mechanism of type 2 diabetes mellitus. World J Diabetes. 2021;12(7):1070–80.
2. Wei J ping, Wang Q hong, Zheng H juan, Wei F. Research Progress on Non-Drug Treatment for Blood Glucose Control of Type 2 Diabetes Mellitus. Chin J Integr Med. 2018;24(10):723–7.
3. Dove Press published. PPA-159707-patient-engagement-in-type-2-diabetes-mellitus-research--wha. 2018;595–606.
4. Menezes R, Matafome P, Freitas M, García-Conesa MT. Updated Information of the Effects of (Poly)phenols against Type-2 Diabetes Mellitus in Humans: Reinforcing the Recommendations for Future Research. Nutrients. 2022;14(17).
5. Mc, Craik C, Adam Moser and Darrin M. York KR. 基因的改变NIH Public Access. Bone. 2008;23(1):1–7.
6. Wang D, Zhang Y, Shen C. Research update on the association between SFRP5, an anti-inflammatory adipokine, with obesity, type 2 diabetes mellitus and coronary heart disease. J Cell Mol Med. 2020;24(5):2730–5.
7. Bielska A, Niemira M, Kretowski A. Recent highlights of research on mirnas as early potential biomarkers for cardiovascular complications of type 2 diabetes mellitus. Int J Mol Sci. 2021;22(6):1–25.
8. Gętek-Paszek M, Całyniuk B, Ganczarek-Gamrot A, Janion K, Muc-Wierzgoń M, Nowakowska-Zajdel E. Recommendations of the polish society of diabetology and the lifestyle of patients with type 2 diabetes mellitus: An own research. Healthc. 2020;8(4):1–10.
9. Ma Q, Li Y, Li P, Wang M, Wang J, Tang Z, et al. Research progress in the relationship between type 2 diabetes mellitus and intestinal flora. Biomed Pharmacother [Internet]. 2019;117(June):109138. Available from: https://doi.org/10.1016/j.biopha.2019.109138
10. Reddy BM, Pranavchand R, Latheef SAA. Overview of genomics and post-genomics research on type 2 diabetes mellitus: Future perspectives and a framework for further studies. J Biosci. 2019;44(1).
11. Lahoz R, Fagan A, McSharry M, Proudfoot C, Corda S, Studer R. Recurrent heart failure hospitalizations increase the risk of mortality in heart failure patients with atrial fibrillation and type 2 diabetes mellitus in the United Kingdom: a retrospective analysis of Clinical Practice Research Datalink database. BMC Cardiovasc Disord [Internet]. 2022;22(1):1–11. Available from: https://doi.org/10.1186/s12872-022-02665-y
12. Cos FX, Gómez-Huelgas R, Gomez-Peralta F. Are There Different Viewpoints About the Management of Type 2 Diabetes Mellitus and Comorbidities? A Multidisciplinary Spanish Qualitative Research. Diabetes Ther. 2022;13(1):189–203.
13. Arora P, Look KA, Kreling DH. Does evidence matter? Comparative effectiveness research and prescribing of Type 2 diabetes mellitus drugs. J Comp Eff Res. 2019;8(16):1393–403.
14. Hardy K, Clouston K, Zmudzinski M, Fowler-Woods M, Shingoose G, Fowler-Woods A, et al. Decolonising qualitative research to explore the experiences of Manitoba's urban Indigenous population living with type 2 diabetes mellitus, obesity and bariatric surgery. BMJ Open. 2020;10(10).
15. Lee B-W, Lee Y, Park C-Y, Rhee E-J, Lee W-Y, Kim N-H, et al. Non-Alcoholic Fatty Liver Disease in Patients with Type 2 Diabetes Mellitus(대한당뇨병학회 지침 및 백서). Diabetes Metab J. 2020;44:382–401.
16. Cho SMJ, Lee H, Shim JS, Kim HC. Association of snoring with prediabetes and type 2 diabetes mellitus: The cardiovascular and

metabolic diseases etiology research center cohort. Diabetes Metab J. 2020;44:687–98.
17. Wang Z, Fang S, Ding S, Tan Q, Zhang X. Research Progress on Relationship Between Iron Overload and Lower Limb Arterial Disease in Type 2 Diabetes Mellitus. Diabetes, Metab Syndr Obes. 2022;15(July):2259–64.
18. Chen JH, Yu ZH, Liu QLF, Meng QG, Chen X. Research Progress of Duodenal-Jejunal Bypass Liner in the Treatment of Obesity and Type 2 Diabetes Mellitus. Diabetes, Metab Syndr Obes. 2022;15(October):3319–27.
19. Subramanian A, Gokhale K, Sainsbury C, Nirantharakumar K, Toulis KA. Sodium-glucose cotransporter-2 inhibitors and the risk of gout in patients with type 2 diabetes mellitus: A propensity-score-matched, new-user design study with an active comparator using the IQVIA Medical Research Data UK database. Diabetes, Obes Metab. 2023;25(1):156–65.
20. Salehpour A, Rezaei M, Khoradmehr A, Tahamtani Y, Tamadon A. Which Hyperglycemic Model of Zebrafish (Danio rerio) Suites My Type 2 Diabetes Mellitus Research? A Scoring System for Available Methods. Front Cell Dev Biol. 2021;9(March).
21. You SF, Zheng JY, Chen YP, Huang H Bin. Research progress on the mechanism of beta-cell apoptosis in type 2 diabetes mellitus. Front Endocrinol (Lausanne). 2022;13(August):1–15.
22. Rajar AB, Soomro AM, Azam A, Das W, Puri P, Baladi ZH. A Comprehensive Review of Professional Attitude: An Analysis of Scopus-Enrolled Journals from 2003 to 2022. Pakistan J Med Heal Sci. 2023;17(4):598–601.
23. Baladi ZH, Farid G, Gulzar A, Hussain M, Iftikhar S, Naz M. Examining Authorship Dynamics, Publication Patterns, and Affiliations in the Pakistan Journal of Medical and Health Sciences (PJMHS) from 2009-2019. Pakistan J Med Heal Sci. 2023;17(5):277–80.
24. Baladi ZH. Digital Commons @ University of Nebraska - Lincoln Make an institutional repository with zero budget and easy steps on Google Scholar : An innovative approach for library Make an institutional repository with zero budget and easy steps on Google Scholar : An innovative approach for library. 2023.
25. Farid G, Warraich NF, Iftikhar S. Digital information security management policy in academic libraries: A systematic review (2010–2022). Journal of Information Science. 2023:01655515231160026.
26. Khalid A, Malik GF, Mahmood K. Sustainable development challenges in libraries: A systematic literature review (2000–2020). The Journal of Academic Librarianship. 2021 May 1;47(3):102347

This article may be cited as: Puri P, Azam A, Memon AR, Puri D, Zakiuddin S, Baladi ZH: Exploring the Landscape of Type 2 Diabetes Mellitus Research: A Comprehensive Review of 670 Scopus-Enrolled Journal Articles (2003-2022) by Pakistani authors. Pak J Med Health Sci, 2023, 17(12):2-7.