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Lotka's Law and Authorship patterns in Urinary tract infections and Diabetes: A Scientometric analysis

Mahendra Kumar Patel[1]; Dr. Maya Verma[2]

Research scholar, School of Studies in Library and Information Science. Pt. Ravishankar Shukla University, Raipur, Chhattisgarh[1]; Professor and HOD, School of Studies in Library and Information Science. Pt. Ravishankar Shukla University, Raipur, Chhattisgarh, India[2]

mahendra23kumar@gmail.com; verma_maya64@rediffmail.com

ABSTRACT

An infection that can occur in any part of the urinary system is known as a urinary tract infection (UTI). The urinary system comprises the bladder, urethra, ureters, and kidneys. The majority of infections affect the lower urinary system's bladder and urethra. This study presents a scientometric analysis of authorship patterns in Urinary Tract Infection (UTI) and Diabetes. The study focuses on Lotka's law to understand the productivity and impact of authors in the field. For this study, 1149 documents were retrieved from the Web of Science database from 2009 to 2023. The USA leads in publications on UTIs and diabetes among all countries. Among all authors, Kuku K has been the most productive author. K-S test reveals that the current data set does not support Lotka's law's applicability to research on urinary tract infections and diabetes. The findings of the study suggest that there is a need for more research to be done to improve the understanding of the relationship between UTI and Diabetes.

KEYWORDS: Urinary Tract Infection, Diabetes Mellitus, Lotka's Law, Authorship pattern, Scientometric, Author productivity, Diabetes.

INTRODUCTION

A urinary tract infection (UTI) is an infection in any part of the urinary system. The urinary system includes the kidneys, ureters, bladder, and urethra. Most infections affect the lower urinary tract – the bladder and urethra. Women have a higher risk of developing a urinary tract infection than men. If an infection is limited to the bladder, it can be painful and annoying. However, if a urinary tract infection spreads to the kidneys, it can cause serious health problems. (*Urinary Tract Infection (UTI) - Symptoms and Causes - Mayo Clinic*, n.d.). Type 2 diabetes mellitus is a heterogeneous group of disorders characterized by variable degrees of insulin resistance, impaired insulin secretion, and increased glucose production. Patients with type 2 diabetes mellitus are at increased risk of infections, with the urinary tract being the most frequent infection site. The increased risk of UTI among diabetic patients, coupled with the increase in the incidence of type 2 diabetes mellitus worldwide in recent years, may impose a substantial burden on medical costs. (Nitzan et al., 2015). Due to several circumstances, the likelihood of

UTIs in diabetes individuals has increased many times. Patients with diabetes may be more susceptible to UTIs due to a variety of possible diabetes-specific causes.(Prajapati, 2018)

The incidence of UTI may be reduced by strict glycemic control in diabetes mellitus. Regular screening, identification of the causative agent, and appropriate management based on susceptibility patterns may also reduce related complications and mortality. (Ahmad et al., 2020). The study revealed a slight male predominance (60.8%), even though women are typically more likely than men to experience UTIs because of short urethras, stout body types, and other anatomical factors. The male participants exhibited a higher mean age of 52.18 ± 9.06, which may be related to their common experiences with neurogenic bladder and benign prostatic hyperplasia (BPH). In both groups, gender and age were comparable.(Jagadeesan et al., 2022)

A research technique used in library and information science is called bibliometrics. It is a quantitative analysis of different facets of the literature on a subject . It is meant to reveal patterns in publication, authorship, and secondary journal coverage to provide insight into the dynamics of knowledge expansion in the fields of study. (Yadav & Sahu, 2024). Bibliometric and scientometric techniques have been proven to be powerful tools for evaluating the productivity of universities, research institutes, and individual researchers, and mapping the growth of research fields since the invention of scientometrics and scientometric techniques. A scientometric study examines the quantitative aspects of information in any form, not just records or bibliographies. The field includes all bibliometrics and studies on science indicators, citation analysis, and quantitative research evaluation. However, scientometrics is also researching metrics of the Internet and the web today. (Agrawal & Verma, 2024)

In the area of diabetes and urinary tract infections (UTIs), there has been a significant lack of research. Although diabetes is a major risk factor for developing UTIs, there is a shortage of literature on this topic according to this bibliometric analysis.

REVIEW OF LITERATURE

Sarla Aditi S, Bhoyar Pravin K, et al. (2024) examine the occurrence of Urinary Tract Infections (UTIs) among diabetic patients. The paper highlights this population's increased risk and potential complications associated with UTIs. The results of the study demonstrate that UTIs in diabetic patients can lead to severe complications, such as bacteria and renal abscesses. The authors suggest that future research should focus on developing strategies to enhance the immune response in diabetic patients to prevent and treat UTIs.(Aditi S. Sarda*, 2024)

Papp Sara B and Zimmern Philipp E (2023) conducted a study on the risk of recurrent urinary tract infections (UTIs) in women with type 2 diabetes compared to those without diabetes. The study analyzed 15 studies from 10 countries that looked into the incidence rates, bacterial strains, risk factors, and treatment of UTIs in women with type 2 diabetes. The findings showed that women with diabetes have a significantly higher risk of recurrent UTIs compared to those without diabetes, with recurrence rates ranging from 23.4% to 37%. The study emphasizes the importance of further research to better understand and manage recurrent UTIs in women with type 2 diabetes.(Papp & Zimmern, 2023)

Wang Xinfeu, Wang Ying, Luo Li, et al. (2023) conducted the prevalence and influencing factors of urinary tract infections (UTIs) in patients with diabetic neuropathy were investigated. The study recruited 579 patients with diabetic neuropathy, with the majority being male (68.2%) and having an average age of 57.89 years. The results

indicated that female patients were at a significantly higher risk of developing UTIs in comparison to male patients with diabetic neuropathy. (Wang et al., 2023)

Chita Teodora, Timar Bogdan, Muntan Delia, et al. (2017) aimed to determine the prevalence and causes of urinary tract infections (UTIs) in diabetic patients. They also identified the risk factors associated with their development. The study found that 12.0% of diabetic patients had UTIs, with a higher incidence in females and those with type 2 diabetes. Future research could focus on strategies to improve UTI care and screening in diabetic patients. (Chita et al., 2016)

OBJECTIVE OF THE STUDY

The following objectives of the study are:

- ✓ To determine the year-wise research output on Urinary tract infection and Diabetes.
- ✓ To find out the Document-wise output on Urinary tract infection and Diabetes.
- ✓ To analyze the Country-wise distribution of UTIs and Diabetes.
- ✓ To identify the Most productive authors.
- ✓ To study the Authorship pattern on UTIs and Diabetes.
- ✓ To test Lotka's law of author productivity.
- ✓ To apply Kolmogorov- Smirnov (K-S) goodness-of-fit test for the conformity of Lotka's law.

RESEARCH METHODOLOGY

This study conducted the applications of Lotka's law and the K-S Test. The data was downloaded from the Web of Science database for 15 years from 2009 to 2013. Search terms used to identify the publication included "Urinary Tract Infection" and "Urinary Tract Infection diabetes mellitus." A total of 1149 publications were published during the study period. The article had been downloaded in plain text format. The data was analyzed using Histcite and Bibexcel software. Vos viewer software (version 1.6.20) visualizes the co-citation, co-authorship, and co-occurrence mapping. The bibliographical details are then converted to MS Excel format. A table and graph have been created using MS Excel.

DATA ANALYSIS AND INTERPRETATION

Year-wise distribution of Publication

Table No.- 01 Year-wise distribution

S.No	Publication Year	Records	LCS	GCS	Percentage
1	2009	42	120	1801	3.66
2	2010	42	82	1485	3.66
3	2011	46	137	2191	4.00
4	2012	54	372	4017	4.70
5	2013	74	361	4459	6.44
6	2014	76	487	4136	6.61
7	2015	87	272	3547	7.57
8	2016	71	141	1880	6.18

9	2017	81	148	2451	7.05
10	2018	86	166	2607	7.48
11	2019	100	159	2213	8.70
12	2020	90	47	958	7.83
13	2021	112	29	783	9.75
14	2022	87	6	409	7.57
15	2023	101	0	98	8.79
	TOTAL	**1149**			**100.00**

The data in Table no 1 clearly shows a significant increase in publications over the years. In 2021, 112 (9.75%) articles were published, compared to 101(8.79%) articles in 2023, 87(7.57%) articles in 2022, and only 42(3.66%) in 2009 and 2010. The increase in the number of articles published over the past year indicates sustained interest and engagement from the academic and professional communities.

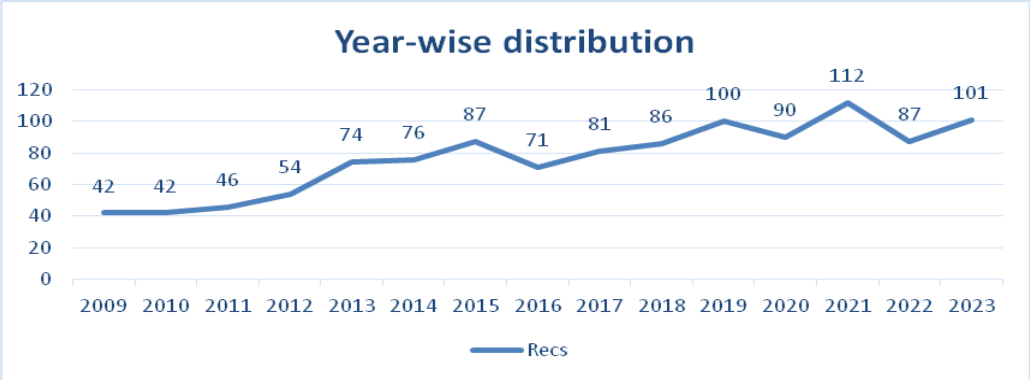

Fig 01: Year-wise distribution of publication

Document-wise distribution on Urinary tract infection and Diabetes

Table No.- 02 Document-wise distribution

Document Type	Records	LCS	GCS
Article	777	2141	25281
Review	168	245	6293
Article; Early Access	120	65	709
Review; Early Access	36	30	449
Editorial Material	15	4	40
Meeting Abstract	14	0	3
Article; Proceedings Paper	13	36	199
Letter	3	1	6
Article; Book Chapter	1	5	52
Article; Retracted Publication	1	0	1
Editorial Material; Early Access	1	0	2
TOTAL	**1149**		

Table 2 shows the distribution of publications related to Urinary Tract Infection and Diabetes. Out of a total of 1,149 publications, 777 were Articles, 168 were Reviews, and 120 were classified as Early Access Articles, which included at least one Editorial Material.

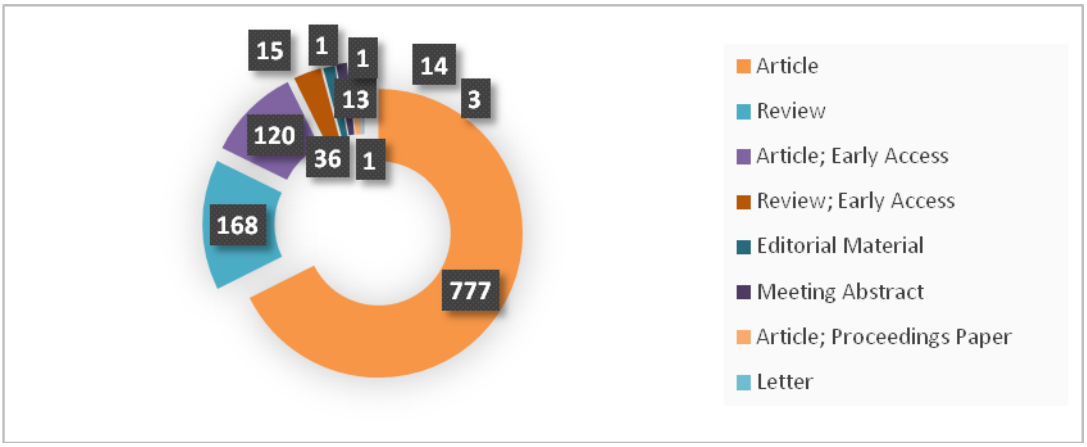

Fig 02: Document-wise distribution of publication

Country-wise distribution of UTIs and Diabetes

Table No.- 03 Country-wise distribution

S.No.	Country	Records	LCS	GCS
1	USA	350	1484	16022
2	Peoples R China	148	238	3288
3	Japan	76	182	1888
4	Germany	72	442	3881
5	UK	70	337	4789
6	Taiwan	69	65	1748
7	Canada	51	461	4469
8	India	46	60	1003
9	South Korea	43	212	1998
10	Spain	40	102	1198
11	Italy	39	120	1614
12	Sweden	39	507	3975
13	Turkey	38	20	449
14	Australia	32	92	1476
15	France	32	112	1758

Table 3 describes the country-wise distribution of publications on UTIs with Diabetes. Research and academic output of the United States are leading the world with an impressive 350 articles published. With 148 publications, China ranks second, highlighting its growing influence in academia and science. There are 76 articles from Japan and 46 from India, highlighting the diversity of scholarly research around the globe.

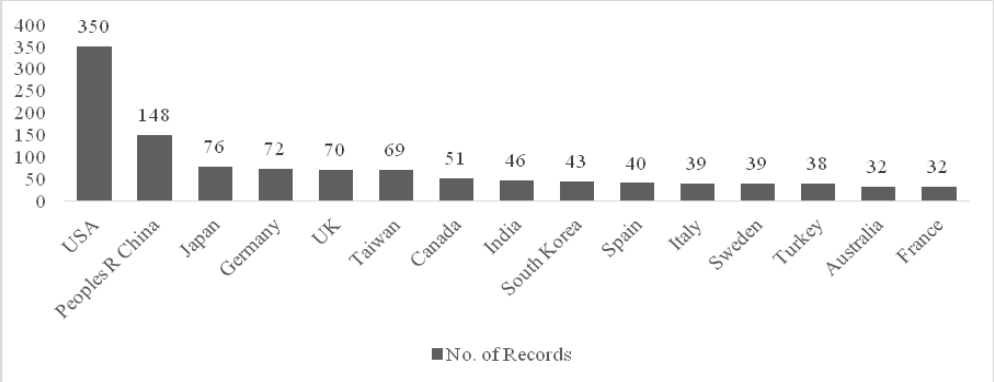

Fig 03: Document-wise distribution of publication

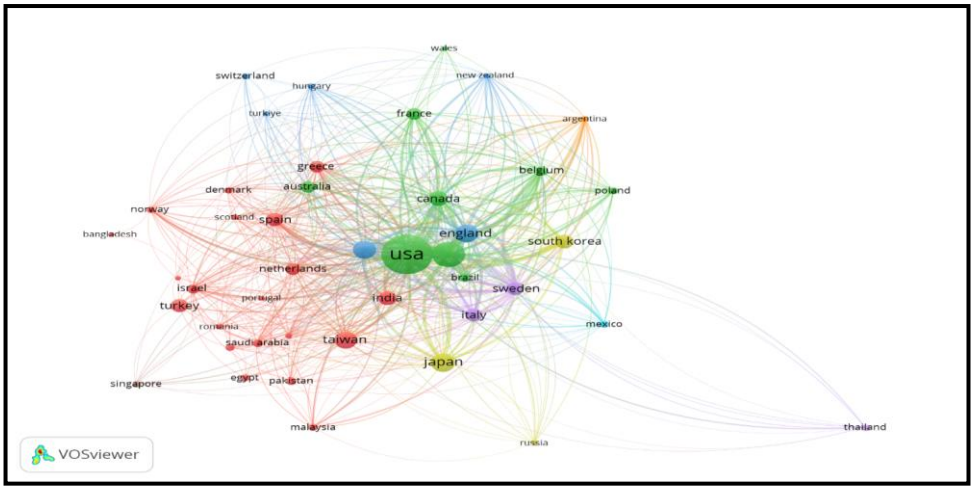

Fig 04: Countries Citation Visualization map of UTIs and Diabetes

Using the VOS viewer software, the present research conducted an in-depth analysis of the contribution of various countries to the field of UTI and diabetes research. Large-sized nodes represent countries with significant impacts in the field, while different colors indicate different clusters. Additionally, the size of the circles indicates the number of citations. The report also includes a country collaborations network with 89 productive countries, eight clusters, and 44 items. The USA has the highest number of documents with 350 and 16469 citations, while its total link strength is 3662. Peoples R China has 148 documents, 3288 citations, and 1504 total link strength with other countries. The items with the same color are related to each other and belong to the same cluster.

Most productive authors

Table No.- 04 Top 15 most productive authors

S. No	Author	Records	LCS	GCS
1	Kaku K	20	85	434
2	Parikh S	16	327	2563
3	Engel SS	12	53	534
4	Langkilde AM	12	228	2027
5	Meininger G	12	207	2150

6	Sugg J	10	262	2080
7	Terra SG	10	48	725
8	Lauring B	9	56	782
9	Usiskin K	9	197	1709
10	Wilding JPH	9	108	797
11	Woerle HJ	9	139	1223
12	Broedl UC	8	111	993
13	Gunji R	8	28	112
14	Huyck S	8	28	526
15	Johnson J	8	43	599

Table 4 illustrates the remarkable productivity of the top 15 authors at UTI in diabetes. Among them, Kaku K stands out with an impressive 20 publications, followed by Parikh S with 16 and Engel SS with 12. It is clear from the number of publications by these authors that they have made significant contributions to the field of diabetes at UTI.

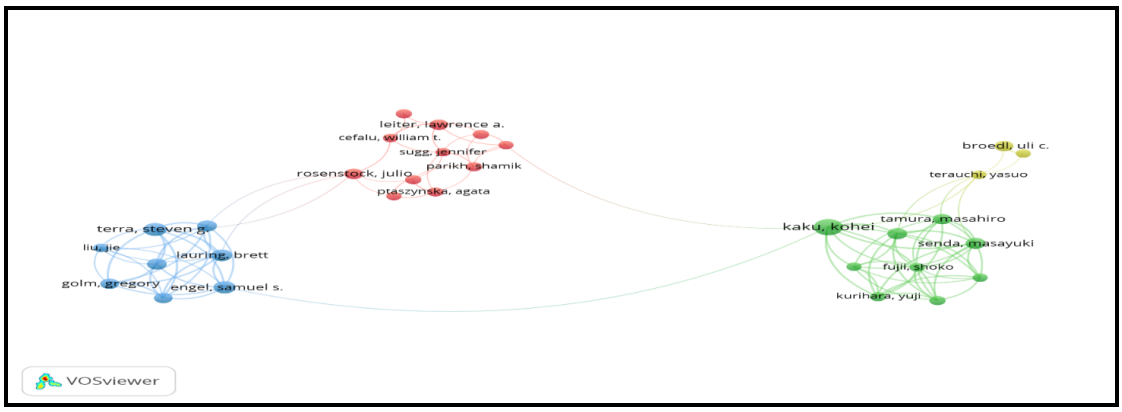

Fig 05: Visualization of Co-authorship map of authors related to UTIs and Diabetes

The present research conducted an in-depth analysis of co-authorship in the field of UTI and diabetes research using the VOS viewer software. A total of 6,180 authors were analyzed, meeting 39 thresholds and resulting in 4 clusters and 31 items. The top two authors were Kaku Kohei with 20 documents, 232 citations, and a total link strength of 55.

Authorship pattern on UTIs and Diabetes

Table No.- 05 Authorship pattern of publications

S. No.	Author	Records	Percentage
1	1	48	4.178
2	2	76	6.614
3	3	105	9.138
4	4	140	12.185
5	5	183	15.927
6	6	178	15.492
7	7	118	10.270

8	8	89	7.746
9	9	68	5.918
10	10	40	3.481
11	More than 10 authors	104	9.051
	Total	**1149**	**100**

Table 5 shows the distribution of authorship for articles related to UTIs and Diabetes. Out of a total of 1149 contributions, 48 (4.178%) were written by a single author, 76 (6.614%) were written by two authors, 105 (9.138%) were written by three authors, and the majority of contributions came from multiple authors with 183 (15.927%) articles. Additionally, more than 10 authors contributed to 104 (9.051%) articles.

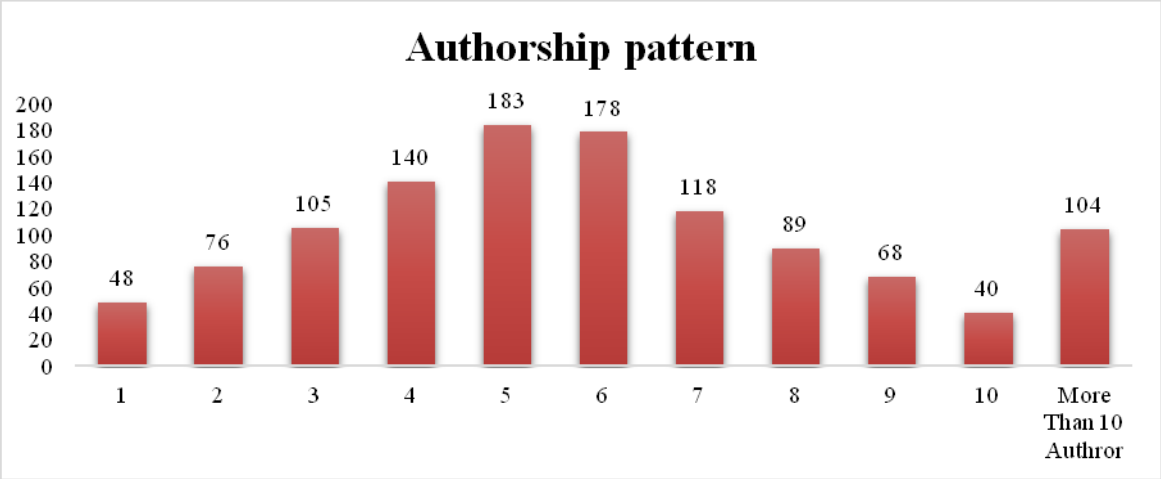

Fig 06: Authorship pattern of publications

Year-wise Authorship pattern

Table No.- 06 Year-wise Authorship pattern

Year / Authors	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Grand Total
1	1	1	3	1	6	3	8	5	1	2	4	1	8	4	0	48
2	1	5	3	1	8	7	9	6	6	3	5	5	4	7	6	76
3	5	8	7	5	9	5	5	4	6	9	12	6	7	10	7	105
4	7	6	7	8	13	12	7	9	9	12	6	7	15	10	12	140
5	9	8	6	9	7	9	10	13	14	15	16	11	18	13	25	183
6	6	5	7	14	7	11	15	10	14	12	16	17	17	13	14	178
7	6	3	7	5	10	6	14	8	8	7	5	10	9	7	13	118
8	2	0	1	8	6	12	8	5	6	7	2	10	7	6	9	89
9	1	3	4	1	4	4	3	3	9	4	6	6	8	3	9	68
10	1	0	0	1	2	2	5	2	2	4	8	6	3	1	3	40
More than 10	3	4	1	1	2	5	3	6	6	11	13	8	18	9	14	104
Grand Total	**42**	**43**	**46**	**54**	**74**	**76**	**87**	**71**	**81**	**86**	**93**	**87**	**114**	**83**	**112**	**1149**

Table 6 shows the distribution of authorship patterns in UTIs and Diabetes over the years. Out of a total of 1149 contributions, the highest number of contributions, which is 114 in total, was made in the year 2021. The second highest number of contributions, which is 112, was made in 2023. The least number of contributions, which is 42, was made in the year 2009 by authors.

Application of Lotka's law of Author productivity

Lotka's law is an empirical law that explains the distribution of authors and papers. It has multiple interpretations. Within the discipline of informetric, the distribution of authors over time or within specific subject areas is referred to as Lotka's law.(Nagaiah et al., 2021). Approximately 60% of all publications in a particular topic are contributed to by a single author. The basic lotka formula states that the number of articles (x) attributed to each author (yx) is inversely proportional to the output (x), which is the number of papers produced by each author.(Patel & Verma, 2024)

Theoretical Framework

Lotka's law can be represent in the following (equation no 1).

$$x^n * y = c \quad \text{---------- } (1)$$

X is the number of articles published (1, 2, 3...)

'Y' is the number of authors with frequency 'x' number of articles

'n' is an exponent that is constant for a given set of data 'c' a constant

When n=2, exponent n is used for the data set it's called 'inverse square law of scientific productivity'. In this case, the value of 'C would be a constant 0.06079'. The value of 'n' differs for different data sets. To calculate the f 'n' value in the study mentioned about, linear least square (LLS) method has been used. This method was defined by pao (1985). This can be calculated as. (Equation no 2)

$$N = N\Sigma xy - \Sigma x\Sigma y / N\Sigma x^2 - (\Sigma x)^2 \quad \text{---------- } (2)$$

Where, 'x' is the number of publications; logarithm value, 'y' is the number of authors; its logarithm of 'y' value, and N' is the number of data pairs available for data analysis. The constant 'C' this can be calculated by the following equation no 3

$$C = 1/\Sigma_{1/x^n} \quad \text{---------- } (3)$$

To examine the observed frequency pattern of the author's productivity suits the expected frequency pattern. 'Pao' advised applying the non-parametric Kolmogorov – Smirnov (K-S) goodness -of- fit test. To check it, the highest deviation between the observed cumulative relative frequency and expected cumulative relation frequencies needs to be considered and then compared it with the critical value (C.V.) which can be calculated by the following equation determined by Nicholls. (Equation no 4).

$$C.V = n\sqrt{\Sigma y} \quad \text{---------- } (4)$$(Nagaiah et al., 2021)

Table No.-07 Calculation of 'n'

S.No	No of Articles (x)	No. of Authors (y)	X (log x)	Y (log y)	X*Y	X^2	X^n	$1/X^n$
1	1	48	0.000	3.87120	0	0	1	1
2	2	76	0.693	4.33073	3.00184	0.48045	2.88786	0.34628

3	3	105	1.099	4.65396	5.11290	1.20695	5.37026	0.18621
4	4	140	1.386	4.94164	6.85057	1.92181	8.33973	0.11991
5	5	183	1.609	5.20949	8.38434	2.59029	11.73341	0.08523
6	6	178	1.792	5.18178	9.28451	3.21040	15.50856	0.06448
7	7	118	1.946	4.77068	9.28332	3.78657	19.63360	0.05093
8	8	89	2.079	4.48864	9.33386	4.32408	24.08395	0.04152
9	9	68	2.197	4.21951	9.27121	4.82780	28.83972	0.03467
10	10	40	2.303	3.68888	8.49396	5.30190	33.88442	0.02951
11	11	31	2.398	3.43399	8.23434	5.74990	39.20404	0.02551
12	12	19	2.485	2.94444	7.31666	6.17476	44.78652	0.02233
13	13	14	2.565	2.63906	6.76905	6.57897	50.62130	0.01975
14	14	10	2.639	2.30259	6.07665	6.96462	56.69906	0.01764
15	15	8	2.708	2.07944	5.63123	7.33354	63.01147	0.01587
16	16	6	2.773	1.79176	4.96781	7.68725	69.55103	0.01438
17	17	6	2.833	1.79176	5.07644	8.02710	76.31095	0.01310
18	18	2	2.890	0.69315	2.00345	8.35425	83.28503	0.01201
19	19	3	2.944	1.09861	3.23480	8.66972	90.46759	0.01105
20	20	1	2.996	0.00000	0.00000	8.97441	97.85339	0.01022
21	22	2	3.091	0.69315	2.14255	9.55454	113.21571	0.00883
22	23	2	3.135	0.69315	2.17336	9.83132	121.18353	0.00825
	TOTAL	**1149**	**48.562**	**65.518**	**122.64284**	**121.55063**	**1057.47112**	**2.13769**

The calculation of n is based on the data in Table 7. Equation 2 is substituted as follows to calculate the value of 'n'

$$n = \frac{N\sum xy - \sum x \sum y}{N\sum x^2 - (\sum x)^2}$$

$$= \frac{22*122.6428 - (48.562)*(65.518)}{22*121.5506 - (48.562)^2}$$

$$= \frac{2698.1416 - 3181.685116}{2674.1132 - 2358.267844}$$

$$= \frac{-483.543516}{315.845356}$$

n = -1.53

Using the value 'n'= -1.53, C can be calculated,

$$\mathbf{C} = \frac{1}{\sum 1/x^n}$$

$$= \frac{1}{2.13769}$$

= 0.46779

$$\mathbf{C.V} = \frac{n}{\sqrt{\sum y}}$$

$$= \frac{-1.53}{\sqrt{\sum 1149}}$$

c.v = -0.0451

From the above calculations the value of n= -1.53, c= 0.46779 and c.v= -0.0451.

Kolmogorov- Smirnov (K-S) goodness-of-fit test

Table No.-08 Kolmogorov- Smirnov (K-S) test

x =No. of publications; y = No. of authors, n = -1.53, c = 0.46779, c.v = -0.0451

No of Articles (x)	No. of Authors (y)	OBSERVED VALUE ∑(y x/∑y x	CUMULATIVE % (Fo)	1/Xn	EXPECTED VALUE C*(1/ xn)	CUMULATIVE % (Fe)	DEVIATION (Fo-Fe)
1	48	0.04178	0.04178	1	0.47	0.47	-0.42822
2	76	0.06614	0.10792	0.34628	0.16275	0.63275	-0.52483
3	105	0.09138	0.19930	0.18621	0.08752	0.72027	-0.52097
4	140	0.12185	0.32115	0.11991	0.05636	0.77663	-0.45548
5	183	0.15927	0.48042	0.08523	0.04006	0.81668	-0.33626
6	178	0.15492	0.63534	0.06448	0.03031	0.84699	-0.21165
7	118	0.10270	0.73803	0.05093	0.02394	0.87093	-0.13289
8	89	0.07746	0.81549	0.04152	0.01952	0.89044	-0.07495
9	68	0.05918	0.87467	0.03467	0.01630	0.90674	-0.03207
10	40	0.03481	0.90949	0.02951	0.01387	0.92061	-0.01112
11	31	0.02698	0.93647	0.02551	0.01199	0.93260	0.00387
12	19	0.01654	0.95300	0.02233	0.01049	0.94309	0.00991
13	14	0.01218	0.96519	0.01975	0.00928	0.95238	0.01281
14	10	0.00870	0.97389	0.01764	0.00829	0.96067	**0.01322**
15	8	0.00696	0.98085	0.01587	0.00746	0.96813	0.01273
16	6	0.00522	0.98607	0.01438	0.00676	0.97488	0.01119
17	6	0.00522	0.99130	0.01310	0.00616	0.98104	0.01025
18	2	0.00174	0.99304	0.01201	0.00564	0.98669	0.00635
19	3	0.00261	0.99565	0.01105	0.00520	0.99188	0.00377
20	1	0.00087	0.99652	0.01022	0.00480	0.99668	-0.00017
22	2	0.00174	0.99826	0.00883	0.00415	1.00084	-0.00258
23	2	0.00174	1	0.00825	0.00388	1.00471	-0.00471
TOTAL	**1149**	**1**		**2.13769**	**1.00471**		**Dmax = 0.01322**

K-S goodness-of-fit tests are used to test Lotka's law's validity by comparing observed and expected author productivity frequencies. It was found that the maximum deviation between the overall distributions was Dmax = 0.01322, which is higher than the observed significant value of C.V. = -0.0451. Therefore, the K-S test reveals that the current data set does not support Lotka's law's applicability to research on urinary tract infections and diabetes.

FINDING

The major findings of studies conducted on the relationship between Urinary tract infections and Diabetes are as follows:

1. A total of 1149 articles have been published in the field of Urinary tract infections (UTI) and Diabetes between 2009 and 2023. The number of publications has increased gradually since the beginning, but has fluctuated over time.
2. In terms of the number of publications, the highest count was recorded in the year 2021 with a total of 112 articles, which represents 9.75% of the total number of articles published. This is followed by 101 (8.79%) articles in the year 2023, 100 (8.70%) articles published in 2019, and 90 (7.83%) articles published in the year 2020. The year with the least number of articles published was 2009, with only 42 (3.66%) articles.
3. The major source of publications is the journal article, with a total of 777 records. This is followed by reviews, with 164 records, and article early access, with 120 records. Review early access comes next with 36 records, and editorial material with 15 records.
4. Among the top 15 countries contributing to urinary tract infections and diabetes, the USA has the highest number of records with 350 records, a local citation score of 1484, a global citation score of 16022, followed by 148 records from China and 46 records from India.
5. Kaku K is the most productive author in this field with 20 publications, holding the top position. Parikh S follows with 16 publications, and Engel SS and Langkilde AM have contributed 12 publications each. Johnson J is in the 15th position with 8 publications.
6. It is observed that the majority of research papers have multiple authors. Specifically, 183 (15.927%) of the papers are contributed by more than five authors, followed by 178 (15.492%) by six authors, 140 (12.185%) by four authors, and 48 (4.178%) by a single author. The least contribution, i.e., 40 (3.481%), comes from ten authors.
7. Based on the application of Lotka's law and the Kolmogorov-Smirnov (K-S) Test, it has been determined that the Dmax value of 0.01322 is greater than the critical value of -0.0451. As a result, it can be concluded that the current dataset does not conform to the Lotka's law of author productivity in urinary tract infection and diabetes.

CONCLUSION

There is a significant correlation between urinary tract infection (UTI) and diabetes. Author productivity studies are one of the most frequently conducted research in the field of scientometrics. According to Lotka's law and the Kolmogorov-Smirnov (K-S) test shows that at a significance level of 0.01, the maximum difference between the observed data and the expected distribution is significant. It can be concluded that the Dmax value 0.01322, which represents the maximum deviation is higher than the critical value -0.0451. This suggests that the growth of literature in this field is not following the expected pattern predicted by Lotka's law, indicating a gradual increase in the publication of research related to UTIs and diabetes. The authorship pattern of papers in this field shows that researchers work together to address issues that people with diabetes and UTIs encounter. In the end, research is enhancing patient outcomes by offering insightful information on the management and prevention of these co-occurring illnesses. To deliver comprehensive and evidence-based care, healthcare practitioners need to stay up to date on the newest discoveries in the literature, which is always changing.

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