Research productivity and scientific impact of gender-based violence in sub-Saharan Africa

Taiwo Aderonke Idowu[1], Dennis N Ocholla[2] and Omwoyo B Onyancha[3]
idowuta@funaab.edu.ng ORCID: 0000-0002-6624-0061
ochollad@unizulu.ac.za ORCID: 0000-0003-3860-1736
onyanob@unisa.ac.za ORCID: 0000-0002-9232-4939

Received: 16 February 2023
Accepted: 15 November 2023

Gender-based violence (GBV) is a common occurrence and contributes to human rights abuses of both men and women globally. It therefore requires investigation from different perspectives to shed light on its depth and breadth. While research in the domain is increasing, the status, nature and extent of this research are not readily known, particularly in sub-Saharan Africa (SSA), which has been identified as the region worst hit by this atrocity. This study appraises research publications on GBV in SSA from 1996 to 2020 with a view to determining the performance of researchers, institutions, and countries in terms of GBV research productivity and scientific impact in the domain. This is largely a quantitative study that applies content analysis through bibliometric means to analyse GBV publications indexed in Scopus database from 1996 to 2020. Using the publication count technique, the study focuses largely on publication of the research by author, institutional, and source as well a citation analysis to determine citation counts and research impact. The data were processed and analysed with Microsoft Excel, and VOSviewer. Findings reveal a growing research pattern in the domain, with higher research performance in terms of usage and visibility coming from the leading research countries and institutions in SSA. The same countries and institutions produce higher citations and research impact. While there have been concerns of growing GBV in the developing countries, productivity of the countries to add to global gender-based research is equally minimal, suggesting low investment in and priority of GBV research.

Keywords: research impact, research productivity, research visibility, GBV, sub-Saharan Africa

1 Introduction

Health and well-being is a critical factor that enables one to aspire to actualise one's goal, and as such it is essential in unleashing one's potential. On the contrary, gender-based violence (GBV) is a universally recognised, awful violation of human rights, which can slow or compromise the actualisation of great potential. Every form of GBV results in visible and invisible short or long-term consequences for one's well-being (Peta 2017). As a matter of fact, GBV exacerbates a substantial amount of public health-related ills such as excess morbidity and mortality and, more recently, the burden of COVID-19 pandemic on women (Chanda 2020). Research has affirmed that more than one in three women have experienced violence globally (World Health Organization (WHO) 2013; 2021). In other words, 700 million women across the world, which approximately can be likened to the total population of sub-Saharan Africa (SSA), have lived through some form of GBV (USAID 2021). In particular, physical violence, intimate partner violence, and sexual violence remain pervasively unabated in the lives of adolescent girls and women worldwide.

The WHO estimates that 32% of women aged 15 years and older have experienced physical and/or sexual intimate partner violence (IPV) in their lifetimes, a statistic that is higher than the world average of 26% (WHO 2021). According to the United Nations SDG regional and sub-region classifications, the estimated global average of lifetime prevalence of intimate partner violence is 27%; whereas twenty-four out of the forty-seven countries (51%) in SSA have higher lifetime prevalence of physical and/or sexual intimate partner violence among ever-married/partnered women aged 15–49 years (WHO 2021). For example, the IPV prevalence ranges from 16% in Comoros to 24% in South Africa, 24% in Nigeria, 35% in Zimbabwe, 38% in Kenya, 39% in Cameroun, 41% in Zambia and 47% in the Democratic Republic of Congo (WHO, 2021). This implies that the occurrence of GBV in SSA exceeded the world average by over 20%. It is estimated that out of 137 women being killed daily by a family member around the world, 52 (37.96%) of those killings occur in Africa. Similarly, child-marriage, which is another form of GBV, is predominantly high in Africa. It is not only estimated that 17% of the world's women who married as children were from Africa, if unabated, about 950 million underage girls would be married by 2030, and virtually half of the world's child brides will be found in Africa by 2050 (UNICEF 2016).

It is not surprising, therefore, to note that many mainstream institutions such as the WHO, and UNICEF have put in place programmes as well as called upon different stakeholders to initiate programmes to curb GBV, among other vices. The growing number and severity of the GBV cases have become the focus of the scientific community, who have made

1. Taiwo Aderonke Idowu is Librarian II at Nimbe Adedipe Library, Federal University of Agriculture, Nigeria and doctoral candidate at the University of Zululand, South Africa
2. Dennis N Ocholla is Retired Professor and Research Fellow in the Department of Information Studies at the University of Zululand, South Africa
3. Omwoyo B Onyancha is Research Professor in the Department of Information Science at the University of South Africa

contributions to the fight against GBV through research, hence the current study to investigate the trends and patterns of GBV research in SSA The study adopted publications count as a method of assessing research productivity, which refers to the number of documents published in a selection of sources in a given time period, that is, the document output of researchers, institutions, or countries (Mueller, 2016). Research output consists primarily of two quantitative parameters: the number of research publications (N) – otherwise known as publication count, and the number of citations (C) that accrued to those publications over a period of time (Docampo & Bessoule 2019). Although publication count is commonly applied in assessing research output, and used as a proxy of research productivity, it should be used with caution, due to its associated limitations (Onyancha 2014), which largely revolve around the coverage of publications in mainstream citation indexes. In addition, the count of citations, which proxy research impact, utility and/or quality, is limited in many ways (Siripitakchai & Miyazaki 2015). Nevertheless, the two methods of assessing research productivity and impact have been widely used throughout the world.

2 Problem statement

One of the goals of scientific research is to improve the quality of life and solve social problems. Africa produces approximately 2% of the global number of publications, with some of them addressing the prevalence of GBV in SSA (e.g., Muluneh, Stulz, Francis & Agho 2021; Undie 2013). The nature, pattern, and trends of research on GBV is, however, unknown, and consequently, we aver that there is a need for rigorous examination of the GBV research to inform and augment decision-making and policy formulation processes that are geared towards addressing violence against women and girls (Ellsberg, Arango, Morton, Gennari, Kiplesund, Contreras & Watts 2015).

The findings reported in some of the publications generally suggest a high burden of GBV on the one hand, and a dearth of research intensities, especially evaluative research, on the other (Nasha & Chandan 2021). A good understanding of GBV research in SSA could inform governments, donors, advocates, and policymakers about what research, and in which fields, institutions have undertaken the research, among other patterns of GBV research. The information will assist, for example, to formulate appropriate research funding models and help to build GBV research capacity and/or secure investment. Further, the findings would assist international stakeholders such as the WHO in understanding the GBV research capacity in SSA, which could be employed in regional and/or global projects.

This study examines GBV peer-reviewed publications at different levels (researchers, institutions, or countries) to measure GBV research productivity and scientific impact. Specifically, the study sought to:

- Determine the growth and the trend of GBV literature in SSA.
- Find out the nature of GBV research productivity in terms of author, institutional and country contributions, and affiliations.
- Establish the citation impact of GBV scientific performance.

3 Research methodology

The study adopted bibliometrics as a quantitative research design and employed the content analysis technique to assess peer-reviewed journal articles on GBV published between 1996 and 2020 as indexed in the Scopus database. Journal articles were selected as they are the main channels of scientific communication in the natural sciences, biomedicines, and parts of the social sciences. Besides, they are easier to appraise than books or other kinds of online and “open access” publications (Docampo & Bessoule 2019). The extant literature on bibliographic databases recognises the Web of Science (WoS), Scopus, and Google Scholar as the most popular multidisciplinary databases (Waltman 2016).

This study’s use of the Scopus database was premised on its wider inclusion of scientific journals, books, and conference proceedings, thereby rendering its reputation as the largest abstract and citation database of peer-reviewed literature. Nonetheless, the researchers admit that there are peer-reviewed studies on SSA that may not be covered by Scopus. While it is true that Google Scholar offers a broader coverage of subject areas and geographical regions, the reliability of its metrics is still contentious due to processing and filtering, which usually affects the quality of the data, and so cannot be used as a sole source for research performance evaluation (Pölönen & Hammarfelt 2019). Besides, Google Scholar does not have large-scale access to data sources. Studies using Google Scholar basically focus on small numbers of documents. The study was limited to a twenty-year period because this was the period in which efforts were made to reduce the high levels of gender inequality that characterised SSA (Hakura, Hussain, Newiak, Thakoor & Yang 2016).

A six-step- search approach was used to extract data from the database:

- Step 1: A list of 58 keywords obtained from GBV literature was compiled and used to conduct a search within the title, abstracts and keywords fields.
- Step 2: The names of countries in SSA were used to search within titles, abstracts, and keywords fields for records that mentioned the countries’ names as subjects of research.
- Step 3: The names of countries in SSA were used to search within the Country Affiliation field to obtain GBV publications by SSA.
- Step 4: The Boolean operator “OR” was used to combine Search #2 with #3 to obtain all documents published on and by any Sub-Saharan Africa countries.
- Step 5: The search in Step #1 was combined with the search in Step #4 through the use of Boolean operator “AND” to obtain all articles published on and by SSA countries on GBV between 1996 to 2020. The limiters were set using document types (articles only) and time period (1996-2020).

- Step 6: The export option provided by Scopus was used to extract, download, and save the bibliographic, abstract, keyword and citation data for each article, in the file format CSV, which is compatible with Excel workbooks, for analysis.

Table 1: List of terms used to identify GBV papers from Scopus Database

abused women	female genital mutilation	rape
acquaintance rape	femicide	rape culture
adolescent dating violence	familicide	sex trafficking
battered woman	forced marriages	sexual abuse
battered women	forced sex	sexual and gender-based violence
campus sexual assault	gender	sexual assault
child marriage	gender discrimination	sexual gender-based violence
child sexual abuse	gender inequalities	sexual harassment
childhood sexual abuse	gender inequality	sexual violence
conflict-related sexual violence	gender violence	sexual violence against men
dating violence	gender-based violence	sexual violence against women
domestic violence	gender-based violence against women	sexual violence and abuse
domestic violence and abuse	honour killings	sexualized violence
domestic violence and cultural contexts	honor killings	spousal violence
dowry deaths	honour-related violence	spouse abuse
dowry murder	honor-related violence	violence against women
female circumcision	intimate partner abuse	violence against women and girls
female genital cutting	intimate partner homicide	violence during pregnancy
	intimate partner violence	male violence
	intimate partner violence and abuse	partner violence

The search was conducted between 7 and 31 May 2021, and only journal articles published between 1996 and 2020 which featured any or some of the keywords used in the search process were taken into account. To this end, a sum of 6101 journal articles on GBV were retrieved. Notepad was used to edit, correct wrongly spelt names, standardised affiliations, and delete duplications. While VOSviewer was used to set the threshold for publications and citations counts at the stage of data analysis, Microsoft Excel on the other hand was used to compute the frequencies in various contexts.

4 Findings of the study

This section outlines the findings of the study according to the study's objectives, namely, to establish:

- The growth and trend of publication of GBV research in SSA
- The pattern and nature of GBV research productivity in terms of author, institutional and country contributions, and affiliation
- The citation impact of GBV research

The total number of articles considered during the twenty-five-year (1996-2020) study period was 6101. Figure 1 illustrates the yearly increase in publication output from 1996 to 2020, as well as what is expected at the end of the forecast period in 2035. Figure 1 and Table 2 should be read together as they demonstrate the pattern of research productivity, with Table 2 offering the Annual Growth Rate, as well. The growth of GBV publications from 1996 displays an increase of publications until 1998, a situation that may be attributable to the Beijing global propagation for gender equality and women empowerment. Recall that the Fourth World Conference on Women was held in Beijing, China in 1995 and part of the agenda was the appraisal of the situation of women around the globe, as well as to measure the efforts of states in supporting women's empowerment. Several researchers from different fields might have seized on this agenda, and in so doing, contributed to the growth of the published literature on GBV.

http://sajlis.journals.ac.za doi: 10.7553/89-1-2206

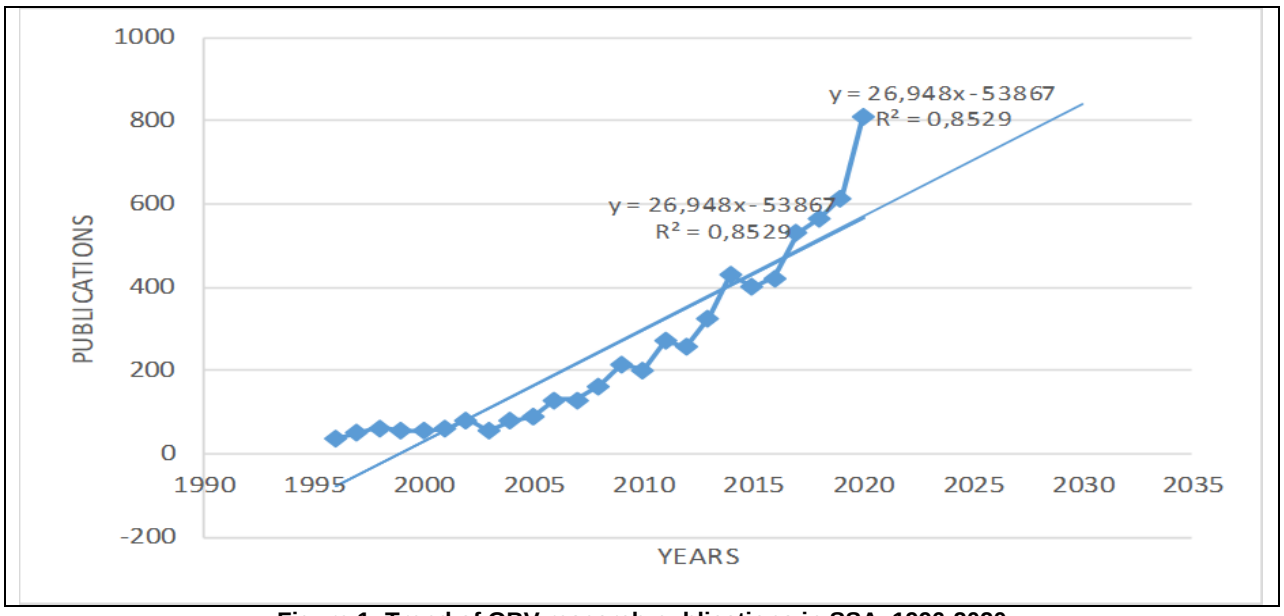

Figure 1: Trend of GBV research publications in SSA, 1996-2020

The GBV research output saw gradual increases between 2001 (8.93%) and 2009 (45.5%), then a dip in 2010 (-6.5%), before it peaked in 2011, with the increase continuing until 2015. Overall, at the end of 2020, there was an increase in the number of articles published each year, from 36 articles in 1996 to 809, an increase of 2147% in GBV publications. That notwithstanding, annual growth of GBV research publications was unstable (see Table1). Thus, it can be said that knowledge production in the field of GBV research has remained erratic over the 25 years covered by the study. There have been mixed growth patterns in GBV publication output in SSA, a pattern that may be attributed to the global response to GBV as driven by the UN, WHO, and lately SDG goal 5 (gender equality), which was exclusively targeted towards eliminating gender inequality.

Table 2: Forecast of the growth of GBV publication in SSA

Year	Number of Publications	Annual Growth Rate	Year	Number of Publications	Annual Growth Rate
1996	36	0	2009	215	31.10
1997	51	41.67	2010	201	-6.51
1998	63	23.53	2011	271	34.82
1999	56	-11.11	2012	258	-6.51
2000	56	0	2013	327	26.74
2001	61	8.93	2014	431	31.80
2002	81	32.79	2015	401	-6.96
2003	55	32.10	2016	423	5.49
2004	79	43.64	2017	532	25.77
2005	90	13.9	2018	565	6.20
2006	131	45.5	2019	614	8.67
2007	131	0	2020	809	31.76
2008	164	25.19			

In order to assess the growth patterns of the literature on GBV, the number of articles was fitted into the Auto Regressive Integrated Moving Average (ARIMA), a linear model widely used in various types of time series data analysis forecasting with high predictive accuracy so as to provide good and useful forecasts that could guide policies on GBV. The rate of linear growth is 85% (R^2 = 0.85), which suggests that the growth of literature is very close to linearity. Growth of literature has been classified as (1) linear, denoting a steady growth; (2) exponential or other non-linear rapid growth; or (3) logistic, indicating an initial rapid growth, followed by decreasing additions (Wolfram, 2015). Linear growth occurs when, in a field, the number of documents increases by the same quantity every year.

Using forecasting techniques as shown in Table 2 and Figure 1, the trend of growth of GBV publications based on the past research output for the next ten years, 2021 to 2030, reveals that the number of papers will grow at a lineal rate from about 707 in 2021 to approximately 1117 papers by 2030. Thus the 'future' productivity forecast results imply that in the coming years, 46 new publications will be added annually to the body of GBV literature until 2030. This pattern will be

realised if the current and past conditions remain the same. However, the situation may differ due to factors such as increased funding, growth of the number of journals publishing GBV research, and the growth of the number of researchers and institutions focusing on GBV issues.

Table 3: Forecast of the growth of GBV publication, 2021-2030

Year	Publications forecast	LCI	UCI
2021	707,21	400,83	1013,59
2022	752,78	374,92	1130,64
2023	798,35	343,75	1252,94
2024	843,91	307,73	1380,1
2025	889,48	267,15	1511,81
2026	935,04	222,27	1647,82
2027	980,61	173,3	1787,92
2028	1026,18	120,42	1931,93
2029	1071,74	63,79	2079,7
2030	1117,31	3,54	2231,08

4.1 GBV Researchers' productivity

Extant literature in informetrics supports ranking of authors vide their research performance proxies in the number of research publications and number of citations (Merigó & Yang 2017; Gavira-Marin 2019). This study combined both measurements to determine GBV researchers' performance in terms of productivity and citation impact (Gaviria-Marin, Merigó & Baier-Fuentes 2019). To achieve this, the productivity threshold was set at 25 papers over the period under study. The names of 46 authors who had published at least 25 papers on GBV related issues are shown in Table 4. These authors constituted 0.30% of the GBV researchers and they produced 1809 (29.65%) of all GBV-related papers from 1996 to 2020. The productivity of these researchers in this speciality ranged from 25 to 154 papers per author. The most prolific researcher by publication count was Jewkes, R., whose research output yielded a total of 154 (8.5%) papers. There was a huge gap between her and others in terms of research publications, as she produced about three times more than the two researchers that followed her with a joint publication count of 134. However, it is important to note that it is possible that many of the researchers may be working in different fields and so all their studies may not align with this research focused on GBV.

Table 4: Forty-six most productive authors (N=6101), 1996-2020

Sn	Author	Publications	%	Sn	Author	Publications	%
1	Jewkes, R.	154	2,52	24	Kouanda, S.	30	0,49
2	Andersson, N.	68	1,11	25	Pengpid, S.	30	0,49
3	Stein, D. J.	66	1,08	26	Decker, M.	29	0,48
4	Peltzer, K.	63	1,03	27	Hatcher, A.	29	0,48
5	Gibbs, A.	61	1	28	Mukwege, D.	29	0,48
6	Abrahams, N.	60	0,98	29	Yaya, S.	29	0,48
7	Cockcroft, A.	56	0,92	30	Fawole, O.	28	0,46
8	Watts, C.	56	0,92	31	Seeley, J.	28	0,46
9	Baral, S.	53	0,87	32	Wechsberg, W	28	0,46
10	Seedat, S.	51	0,84	33	Baranczuk, Z.	27	0,44
11	Temmerman, M.	50	0,82	34	Blough, S.	27	0,44
12	Dunkle, K.	48	0,79	35	Estill, J.	27	0,44
13	Stark, l.	47	0,77	36	Keiser, O.	27	0,44
14	Heise, L.	44	0,72	37	Maathuis, M.	27	0,44
15	Sikweyiya, Y.	38	0,62	38	Meier, S.	27	0,44
16	Glass, N.	36	0,59	39	Merzouki, A.	27	0,44
17	Tomlinson, M.	35	0,57	40	Obondo, A.	27	0,44
18	Maman, S.	33	0,54	41	Othieno, C.	27	0,44
19	Scott, J.	33	0,54	42	Sikkema, K.	27	0,44
20	Bhana, D.	32	0,52	43	Devries, K.	26	0,43
21	Falb, K.	32	0,52	44	Shamu, S.	26	0,43
22	Stern, E.	31	0,51	45	Mathews, C.	25	0,41
23	Diouf, D.	30	0,49	46	Willan, S.	25	0,41

4.2 GBV Researchers' scientific impact

There are different variations of what constitutes scientific or research impact, hence scholars remain divided on the exact meaning of impact. Arsalan and Mubi (2019) argued that it covers areas of impacts on economy, society, and environment. However, the context of scientific impact as used in this study is the "degree to which research findings are seen, noticed, read, used, built upon, cited and applied by other scholars" (Bashorun 2015:53). Citation impact is analysed by counting the number of citations that a publication has received from other documents in recognition of its usefulness (Waltman and Noyons 2018). It implies the number of citations a publication receives from members of the scientific community, and it is often a function of the journal in which articles are published (Maddi, Larivière & Gingras 2019). It is worth noting that the visibility of publications impinges on citations and as such the recognition that accrues to a researcher is based on the visibility of publications and usage by other scientists in the same or related scientific fields (Waltman & Van Eck 2013; Waltman 2016). Table 5 reveals the most cited authors on GBV publications as indexed in Scopus and unsurprisingly, we spotted a good number of the most productive authors in this table which means that they have strong research impacts counted by the average number of citations of each scientist's articles. The most GBV productive researcher, Jewkes R., also got the highest (9924) number of citations, while the second leading author, Dunkle, has his GBV publications cited 4755 times. Furthermore, the inclusion of researchers with as few as five documents with high citations depicts the substantial impact of such researchers' contributions and influence in the field without necessarily being the most prolific author (Abrizah, Erfanmanesh, Rohani, Thelwall, Levitt & Didegah 2014).

Ordinarily, a plausible notion of scientific impact would be that the most productive authors would be the most cited scientists. However, this is not so in the current study as 36 (72%) authors in Table 5 did not feature in Table 4. Nonetheless, these researchers' publications are equally useful and influential within their scientific community through the usage of their publications, where usage is viewed as the act of a user's attempt to download, click, view or save, or cite, full text versions of a publication in a bibliographic reference manager (e.g., the EndNote), or in other downloadable formats (Markusova, Bogorov & Libkind 2018). Citation metrics are indicators of potential interests and motivations for scholars that their publications are drawing the attention of others. Although citations are core to scholarly communication and birth knowledge creation, usage, on the other hand, conveys a form of knowledge to readers who read but never cite (Chi, Gorraiz & Glänzel 2018). Beyond this, the excesses of citation-based metrics have argued that citing a paper is a decision based on personal choices. Researchers are at liberty to choose references they deem appropriate for their subjects from diverse publications on a particular topic. There are no hard and fast rules that compel an author to prefer one reference to another, except for the author's individual opinion that could stimulate several subjective issues like availability of reference to cite; Journal

Impact Factor, prestige of the author, gender, and country. From the foregoing, and in the context of this study, the synergy between productivity and citations appears to be low-keyed, as only 14 (30%) of the most productive researchers were found among the highly cited authors.

Our analysis, therefore, has shown that, irrespective of the significant sum of documents between the most productive researchers and the others with less documents, publications and citations counts of scientific output are both valid tools for the assessment of GBV research output and impact. The most productive researchers by total publications may not be as scientifically influential as researchers with few publications that yield high citation (Docampo & Bessoule 2019). This study supports other scholars who have affirmed that both the publications and citations are proxies for assessing researchers' performance (Gush, Jaffe, Larsen & Laws 2018; Sife, & Lwoga 2014; Hirsch 2005), and, therefore, have proposed the use of both indicators, through the H-Index, to assess researchers.

Table 5: Most cited authors in GBV, 1996-2020

	Author	Documents	Citations		Author	Documents	Citations
1	Jewkes R.	152	9924	26	Duvvury N.	6	998
2	Dunkle K.	51	4755	27	Abramsky T.	18	973
3	Watts C.	47	3630	28	Mbwambo J.	22	972
4	Garcia-Moreno C.	15	3257	29	Penn-Kekana l.	7	918
5	Abrahams N.	51	2801	30	Maman S.	32	900
6	Nduna M.	21	2726	31	Puren A.	5	881
7	Heise L.	28	2663	32	Shai N.	12	860
8	Ellsberg M.	8	2351	33	Cluver L.D.	22	839
9	Stein D. J.	61	2126	34	Gray R.	14	837
10	Levin J.	10	1979	35	Nalugoda F.	18	822
11	Devries K.	32	1895	36	Betancourt, T. S	11	816
12	Morison L.	14	1840	37	Kiss L.	8	764
13	Kim J.	14	1758	38	Lawoko S.	17	742
14	Gray G.	13	1643	39	Berhane Y.	15	720
15	Phetla G.	9	1533	40	Annan J.	17	719
16	Harlow S.D.	5	1498	41	Hatcher A.	31	718
17	Seedat S.	46	1464	42	Chersich M.	20	699
18	Hargreaves J. R.	10	1440	43	Wawer M.	13	682
19	Busza J.	10	1439	44	Gibbs A.	54	666
20	Jama N.	5	1382	45	Peltzer K.	53	656
21	Sikweyiya Y.	30	1110	46	Myer L.	18	654
22	Temmerman M.	29	1103	47	Macphail C.	15	649
23	Stöckl H.	18	1074	48	Morrell R.	9	649
24	Serwadda D.	18	1042	49	Michau L.	17	640
25	Pronyk P. M.	5	1003	50	Williams D. R.	11	639

The findings in Table 6 show that the share of publications from South Africa's institutions dominate the list of the most productive institutions that has produced more research publications in the field of GBV than other institutions in SSA. These institutions, led by the University of Cape Town, University of Witwatersrand and the Medical Research Council and other universities across the country collectively produced a higher (647) number of papers, which accounted for 10.6% of the total publications. Findings indicate that the University of Cape Town has published 144 GBV journal articles but has fewer citations in comparison with South Africa's Medical Research Council, which has published 120 journal articles and has cumulatively received a total of 7139, a figure that was more than twice that of the University of Cape Town's 3227 citations.

Table 6: GBV Research Output by Institutions in SSA, 1996 to 2020

	Institutions	Documents (N=6101)		Citations
		N	%	n
1	University of Cape Town, South Africa	144	2,4	3227
2	University of the Witwatersrand, South Africa	120	2	3146
3	Medical Research Council, South Africa	120	2	7139
4	Johns Hopkins Bloomberg School of Public Health, USA	84	1,4	1878
5	University of Washington, USA	76	1,2	1196
6	London School of Hygiene and Tropical Medicine, United Kingdom	70	1,1	4554
7	University of KwaZulu-Natal, South Africa	63	1	817
8	Harvard University, USA	63	1	1737
9	Muhimbili University of Health and Allied Sciences, Tanzania	31	0,5	411
10	Human Sciences Research Council, South Africa	31	0,5	420
11	University of the Free State, South Africa	30	0,5	685
12	Makerere University, Kampala, Uganda	29	0,5	486
13	Stellenbosch University, South Africa	29	0,5	232
14	University of Pretoria, South Africa	28	0,5	294
15	University of the Western Cape, South Africa	27	0,4	746
16	University of Nairobi, Kenya	21	0,3	150
17	University of South Africa, South Africa	20	0,3	62
18	University of Ibadan, Nigeria	20	0,3	130
19	University of Ghana, Accra, Ghana	19	0,3	239
20	University of Limpopo, South Africa	19	0,3	103
21	Raising Voices, Kampala, Uganda	17	0,3	403
22	Rhodes University, South Africa	16	0,3	104
23	Obafemi Awolowo University, Nigeria	16	0,3	209
24	Kilimanjaro Christian Medical University College, Tanzania	16	0,3	96

The dominance of South African institutions in research in SSA is not unique to GBV research. Previous studies have shown that researchers from South Africa have the highest number of research publication outputs in the sub-region (Inglesi-Lotz & Pouris 2018; Uthman et al. 2015; Adams, Gurney, Hook & Leidesdorff 2014). In addition, Table 5 shows that amongst the organisations that were topmost contributors of GBV literature in SSA in the period under study (1996-2020) were two institutions from Uganda, which collectively yielded 46 (0.75%) publications, and two universities from Tanzania and Nigeria that yielded 47(0.77%) and 36 (0.59%) respectively. While underlying information on publications vis-à-vis citations should be noted, it is pertinent to mention that institutions are intellectually heterogeneous, that is, each has its area of specialisation which may not necessarily be in the field of gender-based violence.

To determine the most productive nations, complete counting of the total output for each country was used and it yielded 8494 publications. The VOSviewer threshold was set at 25 publications; 35(72.9%) out of the 48 countries considered in this study met the threshold with a total of 8356 (98.4%) publications. Findings indicated that all the regions were represented. The largest chunk of the publications (27.8%) came from South Africa and by extension, 38% from the Southern region; the highest number of the productive countries was found in the Western region. Over 80% of nations from the region (Nigeria, Ghana, Senegal, Burkina Faso, Cote D'Ivoire, Gambia, and Togo. It has no meaning in research, avoid using it.) met the threshold with a total of 1901 (22.7%) publications, while the productive nations from the Eastern region included Kenya, Uganda, Ethiopia, Tanzania, and Rwanda. Congo, DR Congo, and Cameroon were the three nations from the Central Africa region.

Table 7: Most productive nation in GBV research in SSA (N=8494), 1996-2020

	Country	No of publications	%		Country	No of publications	%
1	South Africa	2358	28,2	19	Sierra Leone	110	1,3
2	Nigeria	816	9,8	20	Burkina Faso	109	1,3
3	Kenya	630	7,5	21	Mozambique	87	1,0
4	Uganda	506	6,1	22	Liberia	87	1,0
5	Ethiopia	433	5,2	23	Mali	69	0,8
6	Tanzania	317	3,8	24	Eswatini	66	0,8
7	Ghana	307	3,7	25	Namibia	66	0,8
8	Congo	293	3,5	26	Cote D'Ivoire	65	0,8
9	Zimbabwe	271	3,2	27	Gambia	57	0,7
10	Rwanda	224	2,7	28	Eritrea	50	0,6
11	Sudan	207	2,5	29	Guinea	45	0,5
12	Malawi	173	2,1	30	Niger	44	0,5
13	DR Congo	162	1,9	31	Togo	43	0,5
14	Zambia	138	1,7	32	South Sudan	42	0,5
15	Somalia	131	1,6	33	Lesotho	39	0,5
16	Botswana	120	1,4	34	Benin	38	0,5
17	Cameroon	112	1,3	35	Burundi	30	0,4
18	Senegal	111	1,3				

Among the indicators considered in evaluating the performance of GBV research specialty in the SSA countries was the number of citations for each paper (CPP), used as a clue of relative quality of the research publications (Inglesi-Lotz & Pouris 2013). In order to get a region-by-region analysis on GBV research, the VOSviewer was set at a threshold of 1 document, 1 citation. It should be noted that the number of papers is more than the actual number (6101) because complete counting of the total output for each country was used without sorting, so it is possible that publications could have been counted more than once; nonetheless; this has no material impact on the values of CPP.

Table 8 shows the citation analysis of SSA countries in GBV research, and column 3 shows the number of publications. Column 4 shows the percentage (%), and column 5 shows the number of publications that obtained at least one citation. Column 6 depicts the number of citations, while 7 shows the percentage of the citations relative to the total number of the citations. Column 8 shows citations per publication.

Table 8: GBV citations of SSA Nations (N=8494; regional citation = 78446), 1996-2020

	Country	Publications		Citable publications		Citations		CPP
		n	%	n	%	n	%	
1	South Africa	2358	27,8	2090	88,6	36533	46,6	15,5
2	Nigeria	816	9,6	624	76,5	7105	9,1	8,7
3	Kenya	630	7,4	381	60,5	5572	7,1	8,8
4	Uganda	506	6,0	303	59,9	5766	7,4	11,4
5	Ethiopia	433	5,1	271	62,6	3653	4,7	8,4
6	Tanzania	317	3,7	186	58,7	3201	4,1	10,1
7	Ghana	307	3,6	183	59,6	2146	2,7	7,0
8	Zimbabwe	271	3,2	146	53,9	1986	2,5	7,3
9	Malawi	173	2,0	81	46,8	1260	1,6	7,3
10	Zambia	138	1,6	70	50,7	1399	1,8	10,1
11	Cameroon	112	1,3	67	59,8	771	1,0	6,9
12	Rwanda	224	2,6	67	29,9	1104	1,4	4,9
13	Congo	293	3,5	59	20,1	973	1,2	3,3
14	Sudan	207	2,4	54	26,1	758	1,0	3,7
15	Senegal	111	1,3	51	45,9	555	0,7	5,0
16	Burkina Faso	109	1,3	48	44,0	649	0,8	6,0
17	Mozambique	87	1,0	45	51,7	412	0,5	4,7
18	Cote d'Ivoire	65	0,8	37	56,9	561	0,7	8,6
19	Botswana	120	1,4	33	27,5	730	0,9	6,1
20	DR Congo	162	1,9	28	17,3	462	0,6	2,9
21	Gambia	57	0,7	28	49,1	583	0,7	10,2
22	Eswatini	66	0,8	23	34,8	621	0,8	9,4
23	Togo	43	0,5	22	51,2	240	0,3	5,6
24	Benin	38	0,5	19	50,0	131	0,2	3,5
25	Namibia	66	0,8	19	28,8	187	0,2	2,8
26	Liberia	87	1,0	14	16,1	307	0,4	3,5
27	Lesotho	39	0,5	13	33,3	216	0,3	5,5
28	Mali	69	0,8	13	18,8	69	0,1	1,0
29	Guinea	45	0,5	10	22,2	80	0,1	1,8
30	Sierra Leone	110	1,3	10	9,1	126	0,2	1,2
31	Somalia	131	1,5	9	6,9	80	0,1	0,6
32	Niger	44	0,5	9	20,5	40	0,1	0,9
33	Burundi	30	0,4	7	23,3	109	0,1	3,6
34	Mauritius	11	0,1	6	54,5	34	0,0	3,1
35	Angola	13	0,2	5	38,5	13	0,0	1,0

On the one hand, it was observed that citations displayed similar patterns like in Table 7, in which the most productive countries were also the most cited countries in Table 8. But on the other hand, there was distinct variation with the use of % of citable publications. South Africa, Nigeria and Ethiopia had 88.6%, 76.5% and 62.6% of their publications cited respectively. Thus, Ethiopia edged out Kenya and Uganda, who had a higher number of publications and citations. Somalia, a country in East Africa, had the least citable publications on GBV, with 6.9% of her publications cited. The performance of each nation was based on the usefulness of their publications according to the scientific citation impact garnered by their local institutions.

The highest citations per publication came from South Africa (15.49), Uganda (11.40), Gambia (10.23), Zambia (10.14), Tanzania (10.10) and eSwatini. This was different from Table 7. (9.41), in contrast to Nigeria and Kenya, who were the second and third producers of publications on GBV in SSA. Côte d'Ivoire with less than 100 publications had a remarkable CPP of 8.63 – an indication that the relative quality of the GBV research performance of these countries in terms of the

number of publications and citations to the rest of the region is significant (Inglesi-Lotz & Pouris 2013). In sum, 15 (31%) countries of the SSA had at least 50% of their publications on GBV cited, while 12 (25%) received no citations whatsoever.

As noted by Rahman (2019), an uncited publication in a particular database could receive citations from other databases and search engines. Likewise, senior scientists would tend to have more time to publish and have more readers cite their works. Hence, this finding supports the argument that multiple measures should be used when evaluating productivity and impact of research because there are no all-purpose indicators for measuring research performance (Hicks, Wouters, Waltman, de Rijck & Rafols 2015).

Table 9: Performance of GBV research constituents, 1996-2020

Sub-regions	Central Africa Region			East Africa Region			Southern Africa Region			West Africa Region		
	Publications	Cited		Publications	Cited		Publications	Cited		Publications	cited	
		n	%		n	%		n	%		n	%
Documents	432	373	86.3	2204	1934	87.7	2914	2475	84.9	1617	1335	82.6
Sources	250	216	86.4	789	677	85.8	939	829	88.3	732	607	82.9
Authors	1294	1164	89.9	6305	5756	91.3	6509	5817	89.4	4578	3936	86.0
Institutions	1187	1072	90.3	5695	5214	91.6	6422	5826	90.7	3673	3208	87.3
Countries	77	74	96.1	142	136	95.8	160	152	95.0	133	128	96.2

Table 9 describes the performance of GBV research constituents by the respective sub-regions between 1996 to 2020 and the corresponding numbers of citations that accrued to the journals, authors, institutions, and countries. Findings reveal that research performance both in quantity and quality is improving, as GBV articles published in or about any nation across the four sub-regions of SSA received good citations. This is understandable because most of the journals were foreign based. Although Southern Africa produced the highest number of documents on GBV, the share of her cited publications was lower than that of East Africa. In other words, East Africa sub-regions which had the second research output had the highest number of cited publications (87.7%), followed by the Central Africa sub-region, which had the least number of publications on GBV although more than 85% of the publications was cited.

Southern Africa had the largest, both in terms of the number (965) and the cited (854, 88.5%), while Central Africa sub-region again followed with 86.4% cited sources. Moreover, Southern Africa had the largest number of researchers of all the remaining sub-regions, but East Africa had the highest number of cited authors of over 91%, while 89.9% of GBV researchers from Central African sub-region were cited. Southern Africa had the highest number of researchers in the GBV domain; but, the share of her citable researchers was lower than East Africa, whose 91.3% researchers and 91.6% institutions received citations respectively.

Table 10 specifies the most productive non-African countries that have contributed to GBV literature about SSA. The pattern of global contribution to GBV research in Sub-Saharan Africa differs a great deal. The United States of America tops the list as the most productive country, with 23 % research output, which garnered nearly a quarter of the entire citations (23.9%). Three other countries from that region (Canada, Brazil, and Mexico) also featured, bringing North America's total share of the publications to 2358 (27.7%) with 52955 citations (28.63%). It is worthy to note that Brazil and Mexico had higher CPP than the USA. The United Kingdom from the Europe region follows as the second most productive, with 9.7% publications, which yielded 10.6% citations. Researchers have attributed the large presence and involvement of the European countries in the knowledge production of many of the SSA nations to their colonial relationship with these Europeans countries (Adams, Gurney, Hook & Leydesdorff 2014; Chuang K-Y, Chuang Y-C, Ho M & Ho Y-S 2011). Switzerland had the highest yield of returns on GBV research output in the form of citations per publication, though the volume of her publications and citations was lower than both the USA's and UK's. Series of research such as WHO (2013, 1999) by the WHO in Geneva Switzerland on the prevalence of GBV might have contributed to the nation's outstanding performance in CPP.

India, China, Israel, Thailand, and Malaysia were five Asian countries that featured in the GBV research knowledge production in SSA. Except for Malaysia, the remaining four countries had higher CPP than UK and USA. Initially, no nation from the North Africa region met the 25 publications threshold. However, the further reduction of the threshold to a minimum of 1 publication, 1 citation revealed that Egypt and Tunisia contributed 4 and 11 publications respectively on GBV in or about Sub-Saharan Africa. The documents yielded 416 and 50 citations respectively.

Table 10: non-SSA countries in GBV research (N=8494; global citation = 184969), 1996-2020

Rank	Country	Publications		Citations		CPP
		n	%	n	%	
1	United States of America	1943	23	44274	23,9	22,8
2	United Kingdom	825	9,7	19608	10,6	23,8
3	Canada	354	4,2	5971	3,23	16,9
4	Australia	202	2,4	3887	2,1	19,2
5	Sweden	194	2,3	4384	2,37	22,6
6	Netherlands	155	1,8	2855	1,54	18,4
7	Germany	137	1,6	3245	1,75	23,7
8	Belgium	127	1,5	3364	1,82	26,5
9	Switzerland	120	1,4	5452	2,95	45,4
10	Norway	108	1,3	2026	1,1	18,8
11	France	96	1,1	1402	0,76	14,6
12	Italy	82	1	1494	0,81	18,2
13	India	64	0,8	1686	0,91	26,3
14	Spain	61	0,7	1212	0,66	19,9
15	China	47	0,6	1941	1,05	41,3
16	Denmark	47	0,6	782	0,42	16,6
17	Thailand	44	0,5	1019	0,55	23,2
18	Israel	36	0,4	917	0,5	25,5
19	Brazil	32	0,4	1443	0,78	45,1
20	Mexico	29	0,3	1267	0,68	43,7
21	Ireland	27	0,3	619	0,33	22,9
22	Malaysia	27	0,3	198	0,11	7,3

5 Conclusion and recommendations

The objective of this study was to present an overview of GBV research in SSA through performance analysis using publication and citation counts. The findings of this study clearly showed that there had been growth in the publication trends of GBV literature in SSA. Largely, the outcome is a rather linear increase throughout the 25-year study period, which was seldom intercepted with dwindling growth occurrences once in five years, save for the two-time decline between 2011-2015. However, the successive years (2016-2020) witnessed a consistent increase in the output of GBV knowledge production. But from 2021 upwards, according to the observed trends, a steady number of publications, probably 46 publications, will be added annually to the body of GBV literature, which would translate to an average of about one publication a year per country. This confirms previous findings by Idowu (2020), who showed that between 2009 and 2018, the average publication rate per GBV researcher in South Africa was less than 1 journal article. A glaring indication of low productivity of GBV research in South Africa.

The implication is that the trend will ultimately determine the pace of GBV research output and growth of GBV literature. Thus, the extent to which nations of SSA participate in contributing to rigorous research studies on GBV and publishing same as scientific verdict would enhance life and reduce disability and illness caused by GBV. According to Oyeyemi, Ejakpovi, Oyeyemi and Adeniji (2019), productivity is an indication of a nation's capability to solve its problems. It follows, therefore, that the absence of such capacity in the GBV research field, may slow down efforts to solve the problem and propel nations from SSA to rely on foreign countries for solutions to GBV problems within its boundaries owing to an insufficient number of actors that are involved in GBV research across the region. Meanwhile, the usage of GBV publications measured by citations showed significant differences among researchers, institutions, and nations of the SSA. By and large, research productivity in the field of GBV over the 25 years showed fewer numbers of researchers as core specialists, while citations on the GBV publications from different parts of the region suggested wider usage that demonstrated the attention of the scientific community to the issue of GBV in SSA. Furthermore, this study demonstrates that GBV has not been a main area of research in SSA.

This trend calls for great concern because it has been said that sustainable development cannot occur without gender equity (The Lancet Editorial 2020). Over time, there has been a persistent focus on the need to integrate women into the development process on an equal basis with men. Numerous agitations have pervaded the nations of the world to create space for women to contribute meaningfully to the development and be part of policy-making bodies (Anya 2017). Therefore, the tempo needs to be stepped up if the Gender Equality for All (SDG 5) is to be met in sub-Saharan Africa.

The ranking of GBV research specialty showed a viable research performance in terms of citations and visibility among SSA countries, though productivity was insubstantial. Therefore, SSA nations need to match intention with practice by showing concrete interest, so that the adopted international and regional frameworks on gender equality would be evident in core policy and decisions on public funding for research and development. Investment in the GBV research specialty would be a good indication of government's commitment to maximising long-term benefit of resource development that adds to general wealth of the populace (Adams, Gurney, Hook & Leidesdorff 2014).

6 Limitation of the study

This study agrees with Altbach (2015) that measuring research productivity is problematic as there are other important academic tasks such as community engagement and university-industry linkages that are not easy to define and quantify. Certainly, assessing research productivity may be challenging; more so as data was harvested from one database; other factors such as career life and offline publications were not considered. Therefore, comparing analyses of research productivity in universities and public research institutions call for diligent usage by policy makers for allocation purposes.

7 Implications of the study

The implications of the findings of this study relate to GBV research productivity and impact, which were measured by publications count and citations count, respectively. The study's findings have the capacity to contribute to the quality of human capital and improvement of economic production in the Sub-Saharan region if properly mobilised for public use. The findings reveal a wider citation of GBV publications from the region; however, insensitivity to the declining productivity of GBV research publication might impede both the global and the regional agenda 2030 and 2063 respectively, due to the high rate of GBV and its attendant risk. Policymakers in the respective governments would find the findings informative for their policy making processes such as the creation of awareness of the GBV research, creation of strategies to combat GBV and the allocation of research funds specifically to GBV research in the region and in the respective countries.

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