

HIV/AIDS Research and the youths: an informetric analysis of the literature

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The purpose of this study is to present an analytical overview of the HIV/AIDS literature relevant to the youths with the view to determining and comparing the nature, trends, and type of the pandemic's research and other characteristics as indexed in the AIDSEARCH database between 1980 and 2002. Although the search was limited to the human population, records that discussed both humans and animals were noted and included in the final analysis of data using the Bibexcel and Microsoft Excel softwares. Data were analyzed by publication type, publication year, date of entry, language, source, publication country, geographic area as a subject, gender, among other variables. We observed that research on young people seem to be increasing, and the publishing and indexing time lag is still problematic. Other variables are provided in the findings and recommendations.

Keywords: HIV, Acquired Immunodeficiency Syndrome, Informetrics, Adolescence

1. Introduction

At the beginning of this century, the world's population stood at 6.2 billion people. It is estimated that about 1.7 billion (27.4%) of this population consists of youths between ages 10 and 24 (Boyd, Ashford, Haub, & Cornelius, 2000). Unfortunately, young people are said to have the highest infection rates of sexually transmitted infections (STIs), including HIV/AIDS (Boyd, Ashford, Haub, & Cornelius, 2000). It is argued that high degree of vulnerability is associated with their incomplete social, emotional and psychological development, which leads them to experiment with risky behaviours (Johns Hopkins University, Center for Communications Programs, 2001). Among other variables, the high incidence rates of HIV among the youth have also been linked to early sexual initiation and low condom use among this age group (World Bank, 2003).

By 2003, 40 million people were living with HIV in the whole world with about 95% of them residing in developing countries while the pandemic claimed approximately 24.8 million lives. According to the United Nations Development Programme – UNDP – (2002) and the Centre for African Family Studies (2001), more than half of those newly infected with HIV are between 15 and 24 years old. The UNDP (2002) estimates that 11.8 million young people are living with HIV/AIDS of whom 7.3 million are young women and 4.5 million are young men. Attention to the youth, during their most sexually active and experimental years, becomes, therefore, critical and top priority.

2. Previous studies

Bibliometric studies are increasingly becoming common in biomedical research assessment. Research on the AIDS pandemic has also received commendable attention from bibliometric researchers since the first known study by Self, Fildardo & Lancaster (1989). Several studies have been conducted especially in and about developed countries (e.g. Self, Fildardo & Lancaster, 1989; Forney, 1990; Sengupta & Kumari, 1991; Bierbaum, Brooks & Brooks, 1992; Pratt, 1992; Small, 1994; Bierbaum & Brooks, 1995; The Scientist, 1996; Osca, 1997; Mackenzie, 2000), thus “helping researchers, policy makers and health staff to support decision making activities in those countries” (Macias-Chapula, Sotolongo-Aguilar, Magde, & Solorio-Lagunas, 1999:564). Seemingly, most studies that have been conducted in the second half of the last decade and the better part of this decade have shifted focus to specific topical and geographic areas of HIV/AIDS research, more specially in developing countries where the impact of the epidemic has been devastating (e.g. Macias-Chapula, Rodeo-Castro, & Narvaez-Berthelemont, 1998; Macias-Chapula, Sotolongo-Aguilar, Magde & Solorio-Lagunas,

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1999; Macias-Chapula, 2000; Macias-Chapula & Mijangos-Nolasco, 2002; Onyancha & Ocholla, 2004a; Onyancha & Ocholla, 2005; Onyancha, 2006). The shift has been occasioned by the need for the provision of the right information that can aid in appropriate decision-making processes in the intervention programs regarding specific classes of people and topical areas of HIV/AIDS research in the developing countries. For instance, in 1996, Gillaspay & Huber (1996) conducted a bibliometric study of the literature of women and the acquired immunodeficiency syndrome (AIDS) in which they examined, among many aspects, the role of informed collection development and information retrieval on the intervention programs.

Concerning the youths – the age group that is said to be most vulnerable – most of these studies, while analysing the subject content of the AIDS literature, have shown that “Adolescence” has ranked among the top indexing (or Medical Subject Heading [MESH]) terms. A *Subject Content Analysis of AIDS Literature, as Produced in Latin America and the Caribbean* ranked ‘Adolescence’ in number six with a total of 840 records between 1983 and 1997, behind ‘Human’ (3992), ‘Female’ (2111), ‘Male’ (2042), ‘Adult’ (1514), and ‘Risk Factors’ (893). Macias-Chapula, Sotolongo-Aguilar, Magde & Solorio-Lagunas (1999). Bierbaum, Brooks & Brooks (1992), too, noted a consistent visibility of the term ‘Adolescence’ in the AIDS literature between 1983 and 1989. The term (which is also used to index literature on the youth) improved in rank from position 20 in 1983 to 15 in 1987. Both studies indicate, therefore, that adolescence is one of the factors that are highly associated with AIDS. It is worthy noting, however, that these studies have been general in nature. To the best of our knowledge, there are no bibliometric studies that have been specifically conducted to analyze HIV/AIDS research as it affects youths despite these young people being the most affected.

The purpose of this study is to present an analysis of the HIV/AIDS literature pertaining to the youths with the view to determining and comparing its nature, trends, type and other characteristics as indexed in the AIDSEARCH database between 1982 and 2002. The study seeks to provide researchers and health professionals with information that may assist them in their decision making processes and take appropriate actions in the intervention programs. Specifically, the study sought to examine the trend of research in HIV/AIDS as it relates to the youth; to analyze the indexing time lag; to examine the sources that publish AIDS information on the young persons; to find out the most productive countries; to identify the language(s) of communicating HIV/AIDS information; to find out the most researched countries and group of youths (i.e. males or females); and examine the subject distribution of the AIDS literature on youths.

3. Methodology

The bibliographic data were obtained from the AIDSEARCH database on CD-ROM, ©1991-2003. AIDSEARCH is a combination of three database files, namely, the MEDLINE AIDS/HIV Subset, AIDSDRUGS & AIDSTRIALS. The database, which is updated quarterly and currently contains over 334000 records, is compiled by the National Library of Medicine (NLM) of the U.S. Department of Health and Human Services. Generally, its subject coverage includes health and medicine, life and social sciences. It provides information about Acquired Immunodeficiency Syndrome (AIDS) and related topics such as clinical trials and the substances being tested.

Relevant documents were identified from 1980 to 2002 using the keywords “adolescen*”, “teen*”, “young”, and “youth*”, as truncated, within the TITLE field. In addition and given that the term “youth” or the phrases “young persons” or “young people” are not among the subject indexing terms, we used “adolescen*”, “middle age”, and “adult” to filter the data so as to obtain records specific to the young persons. Although the search was limited to the human population, records that discussed both humans and animals were noted and included in the final analysis of data. Bibliographic details (i.e. name of author, address, year of publication, date of entry, source, publication type, country of publication, geographic area – as subject, language, study type, gender of focus, etc.) of HIV/AIDS papers were identified and saved as .txt (text) files. This file format permits one to analyze data using the bibliometric tool box – BIBEXCEL (computer software that was prepared by Olle Persson and the Umea University, Sweden).

The indexing (entry) time lag was calculated as the difference between the year of entry and the year of publication. The frequencies were then identified and used to calculate the average indexing time lag. Integer counts technique, thus, assigning a whole number to a publication, was used to analyse the publications. This technique was employed when counting the number of publications by year of publication, year of entry, gender, country of publication, journal (or source) and language of publication as provided by the database. An analysis of the number of publications by publication type and geographic area was on the basis of fractional counts. This was made necessary because a particular record was found to belong to two or more publication type categories. Similarly, wherever two or more countries were the focus of one publication, fractional analysis was applied. Therefore, in fractional analysis, each publication type and geographic region in a record received a fraction of the total number of publication types and geographic regions in that record, respectively. For example, assuming that three records were retrieved and their document types, source publication, and year of publication were given as follows:

Record	Document type	Source	Year
A	Journal Article/News	INT Conf AIDS	1989
B	News/Editorial	AIDS	1990
C	Journal Article	AIDS	1990

From the above simple presentation and using fractional counting in the case of document types, journal articles and News would each record 1 ½ entries while Editorial will be counted as ½. Using integer counts in the case of sources and years of publication, on the other hand, will yield the following results: AIDS (2) and INT Conf AIDS (1); 1990 (2) and 1989 (1).

Included in the analysis were journal articles, news items, reviews, letters, newspaper articles, editorials, abstracts, comments, biographies, bibliographies, theses, and monographs. Bibexcel computer software (version 2002) and Microsoft's Excel program (©2002) were used to analyze data. The analysis of data was done so as to identify the trend of research on HIV/AIDS as pertains to the young people since the beginning of the epidemic, i.e. to find out whether it is growing or decreasing; to identify the group, male or female, that is most researched; to identify the mostly used channel of communicating HIV/AIDS research on youths; identify the countries/geographic region(s) that is/are most discussed; to identify the commonly used language of communicating the research findings; to examine the types of documents; identify core resources on youths and HIV/AIDS; to identify the countries of research publication; and to measure the time it takes for a formal publication to be entered in an index, i.e. indexing time lag.

4. Results and discussions

The results are represented as discussed under items 4.1 to 4.9

4.1 Youths and HIV/AIDS: trend of research

The total number of HIV/AIDS papers that focused on young people was 2975 accounting for approximately 1.3% of the total HIV/AIDS-related publications indexed in the database and published between 1980 and 2002 as Table I shows.

Table I Youths and HIV/AIDS: Distribution by year of publication

Year of Publication	Youth papers	Change in Percentage	Cumulative youth papers	Percentage	Change in Cumulative %
2002	117	-40.6	2975	100	3.90
2001	197	+17.96	2858	96.10	6.70
2000	167	-9.7	2661	89.40	4.60
1999	185	-55.1	2494	83.80	6.20
1998	412	+154.3	2309	77.60	13.80
1997	162	-50.8	1897	63.80	5.50
1996	329	+133.3	1735	58.30	11.00
1995	141	-41.3	1406	47.30	4.80
1994	240	-6.98	1265	42.50	8.00
1993	258	+9.3	1025	34.50	8.70
1992	236	+56.3	767	25.80	8.00
1991	151	-3.8	531	17.80	5.00
1990	157	-5.4	380	12.80	5.30
1989	166	+514.8	223	7.50	5.58
1988	27	+285.7	57	1.92	0.91
1887	7	+133.3	30	1.01	0.24
1986	3	0	23	0.77	0.10
1985	3	+66.7	20	0.67	0.10
1984	1	0	17	0.57	0.03
1983	1	-92.3	16	0.54	0.04
1982	13	+550	15	0.50	0.43
1981	2	+100	2	0.07	0.07
1980	0	-	0	0	-

Evidently, there has been a significant increase in HIV research and publications on young people. Research, too, has shown that interest in the health of young people grew significantly in the early 1990s. Hughes & McCauley (1998) attributes this great leap in research output and concern about the young people's sexual and reproductive health to, in part, real or perceived increases in their sexual activity and the high rates of HIV infection among the youths. Likewise, production of literature as regards HIV/AIDS as it affects the youth greatly improved in the 1990s. This period witnessed the publication of 2281 records, which accounted for 76.6% of the total youth papers as compared to the previous decade's 380 (12.8%). Nevertheless, there was a sharp increase of records from 27 to 166 between 1987 and 1989, creating a cumulative percentage change of 6.49. The highest percentage change (+514.8%) occurred between 1988 and 1989.

4.2 Youths and HIV/AIDS: distribution of literature by year of entry

The publications were analyzed by the years of entry and publication spread over three decades to compare the indexing time lag over the three decades, i.e. 1981-1990, 1991-2000 and 2001-2002. The principle behind the indexing time lag, defined as "the number of months or years between the publication of an article and the publication of an index that refers to the article" (Diodato, 1994), was employed to measure the time lapse between the publication of the article and its entry into the database. According to Diodato (1994), this time lag is a very important indicator when measuring the efficiency of an indexing service. It is equally crucial when considering the time it takes for any research finding to reach its targeted audience.

An analysis of the indexing time lag (see Appendix A, B, & C) showed that whereas it took an average of one-half ($\frac{1}{2}$) years each to enter a publication into the AIDSEARCH database in 1981-1990 and 1991-2000 year-periods, respectively, the average time lag for the two-year period of 2001-2002 was approximately six and half ($6\frac{1}{2}$) years. However, the average time lag for the entire period of study was three and half ($3\frac{1}{2}$) years. The time lag interval ranged between 0 and 20 years. This long delay in indexing of HIV/AIDS records can be attributed to the frequency of journal production, the comprehensiveness of the indexing and abstracting services, or simply the ineffectiveness of the service (Diodato, 1994). Alternatively, some articles take long to reach the indexing service. A survey of these services would definitely shed more light on the reasons for such delays.

4.3 Youths and HIV/AIDS: distribution of literature by country of publication

Table 2 shows that publications on youths and HIV/AIDS were published in 46 countries. This analysis produced quite an interesting pattern of distribution in that almost half of the publications were published in the USA (49.9%) while the remaining half was spread across 45 countries. An analysis of the top twenty countries reveals that seventeen of them are from "First" and "Second" World categories while only three countries came from the "Third World" category (see <http://www.nationsonline.org/oneworld/countries.html> for the categories). The highest ranking of the Third World countries is Mexico with 7 (0.24%) records followed by Brazil (6 or 0.20%) and South Africa (5 or 0.17%). This scenario has serious implications on the quality of the LDC's sources that publish HIV/AIDS information and their coverage in key bibliographic databases. This suggests further investigation of research outputs in the domain based on representation in local databases (such as SABINET in South Africa) to help understand the source of low output, whether database indexing requirements-related or research output-related.

4.4 Youths and HIV/AIDS: distribution of literature by language of publication

Sixteen languages were used to publish HIV/AIDS literature specific to the youths. English language (94.8%) was dominant as has been observed in previous studies (Macias-Chapula, 2000; Macias-Chapula & Mijangos-Nolasco, 2002; Pratt, 1992). Onyancha & Ocholla (2004b) attributes this to increasing recognition of English as a medium of scientific communication and indeed an international language that publishing houses prefer. Thus, the language is popular with regard to publication and scientific communication (Ocholla, 2000). Furthermore, given that majority of the documents were published in English-speaking countries, e.g. the USA, Canada, Switzerland and England, among others, it is apparent that English language-based documents would dominate. Other languages used to publish AIDS literature on youths are French (1.42%), Spanish (1.28%), German (0.74%), Russian (0.44%), Italian (0.30%), Danish (0.24%), and Portuguese (0.13%). The rest consists of Swedish (0.13%), Dutch (0.10%), and Norwegian (0.07%) while Chinese, Hungarian, Japanese, Romanian and Ukrainian accounted for 0.03% each of the total 2968 records that provided information on the language of publication.

Table 2 Youths and HIV/AIDS: distribution of records by publication country, 1981-2002 (N=2969)

No.	Rank	Country	Number of records	Percentage
1	1	United States	1482	49.90
2	2	Canada	325	10.90
3	3	Switzerland	281	9.46
4	4	England	256	8.62
5	5	Germany/W. Germany	152	5.12
6	6	Netherlands	125	4.21
7	7	Japan	92	3.10
8	8	Italy	62	2.09
9	9	France	33	1.11
10	10	Spain	22	0.74
11	11	Australia	21	0.71
12	12	Denmark	16	0.54
13	13	Russia/USSR	12	0.40
14	14	Ireland	7	0.24
15	14	Mexico	7	0.24
16	15	Brazil	6	0.20
17	15	Norway	6	0.20
18	15	Puerto Rico	6	0.20
19	15	Sweden	6	0.20
20	16	South Africa	5	0.17
21	16	Thailand	5	0.17
22	17	Kenya	4	0.13
23	18	Scotland	3	0.10
24	18	Singapore	3	0.10
25	19	Argentina	2	0.07
26	19	Bangladesh	2	0.07
27	19	Belgium	2	0.07
28	19	Chile	2	0.07
29	19	Ethiopia	2	0.07
30	19	India	2	0.07
31	19	Nigeria	2	0.07
32	19	Pakistan	2	0.07
33	19	Taiwan	2	0.07
34	19	Ukraine	2	0.07
35	20	China	1	0.03
36	20	Cuba	1	0.03
37	20	Czech Republic	1	0.03
38	20	Greece	1	0.03
39	20	Hungary	1	0.03
40	20	Israel	1	0.03
41	20	Jamaica	1	0.03
42	20	New Zealand	1	0.03
43	20	Papua New Guinea	1	0.03
44	20	Portugal	1	0.03
45	20	Romania	1	0.03
46	20	Zimbabwe	1	0.03
TOTAL			2969	100

4.5 Youths and HIV/AIDS: distribution of literature by gender

Table 3 shows the distribution of publications by gender, i.e. female or male, between 1980 and 2002. Generally, the results reveal a rise/fall/rise/fall pattern of production in the three categories during this period of study. A total of 391 (17.38%) publications focused on only males while those that dealt exclusively with females numbered 336 (14.93%). The publications that jointly discussed females and males totalled 1523, which accounted for 67.69% of the total number of publications whose gender information was provided by the database (i.e. 2250).

Table 3 Youths and HIV/AIDS: distribution of literature by gender, 1980-2002 (N=2250)

Year of publication	Female	Male	Male/Female	TOTAL
1980	-	-	-	0
1981	-	2	-	2
1982	-	12	1	13
1983	-	1	-	1
1984	-	-	1	1
1985	1	1	-	2
1986	-	3	-	3
1987	1	3	3	7
1988	1	4	10	15
1989	13	14	58	85
1990	16	15	69	100
1991	13	10	79	102
1992	20	34	133	187
1993	19	36	147	202
1994	22	30	130	182
1995	29	17	74	120
1996	34	47	131	212
1997	37	18	91	146
1998	44	60	209	313
1999	21	26	96	143
2000	16	20	104	140
2001	28	20	124	172
2002	21	18	63	102
TOTAL	336	391	1523	2250
Percentage	14.93	17.38	67.69	100

Although the number of publications may not be an absolute indicator of interest, seemingly, there was more interest on males than there was on females despite the fact that women are more vulnerable than men (Ministry of Health – Kenya, 2002; World Bank, 2003; World Health Organization, 2004). The Ministry of Health – Kenya (2002) recognises that “young women in the age groups 15-19 and 20-24 are more than twice as likely to be infected as males in the same age group”. However, this relationship was not identified in this study since males accounted for 17.38% while the females consisted of 14.93% of the publications. One other interesting observation was the absence of records that focused on females during the beginning of the epidemic, i.e. between 1980 and 1984. During this period, the epidemic was commonly referred to as the “gay disease”, among other terms (Krishna, Durrah & Winkler, 1997; Lupton, Chapman & Wong, 1993; Pratt, 1992), which implies that it affected mostly males. In fact, the first clinical case was reported in Los Angeles, USA, when five young men who were homosexuals were treated for biopsy-confirmed *Pneumocystis Carinii* pneumonia (Begley, Check, Wingert & Conway, 2001; Konforti, 2001; National Institute of Allergy and Infectious Diseases [NIAID], 2003).

4.6 Youths and HIV/AIDS: distribution of literature by document type

The distribution of records by publication type is shown in Table 4, which indicates that journal articles led with 1483 (49.80%) postings followed by Abstracts, which accounted for 39.10%. Out of a total of 2975 records, Clinical Trials accounted for 2.2% followed by Letters (2.12%), News (1.68%), Newspaper articles (1.38%), Comments (0.81%) and Editorials (0.81%). There were a total of 21 different document types. At the bottom of the Table are Biographies,

Directories, Interviews, Monographs, Technical reports, and Theses, each consisting 1 (0.03%) record. The same trend has been reported in previous studies (Macias-Chapula, 2000; Macias-Chapula & Mijangos-Nolasco, 2002). Less visible were theses, monographs, technical reports and directories. Editorials, comments, newspaper articles, news items, and letters to the editor featured fairly well, implying that popular publications as well as newspapers and magazines do play a great role in reporting and disseminating HIV/AIDS information. As Lewison (2001:185) recommends, there is need for bibliometricians to make use of the newspapers in conducting bibliometric studies because they are cheap and readily available and normally change little between editions; they are widely read and their readership is well characterised both socially and geographically; the citing articles have many of the characteristics of a scientific paper, e.g. author, title, and length of paper; and the cited sources are usually identified reasonably clearly.

Table 4 Youths and HIV/AIDS: Distribution of Literature by Publication Type, 1980-2002 (N=2975)

Number	Rank	Document type	Number of publications	Percentage
1	1	Journal Article	1483	49.80
2	2	Meeting Abstracts	1162	39.10
3	3	Clinical Trial	66	2.22
4	4	Letter	63	2.12
5	5	News	50	1.68
6	6	Newspaper Article	41	1.38
7	7	Comment	24	0.81
8	7	Editorial	24	0.81
9	7	Guideline	24	0.81
10	8	Evaluation Studies	11	0.37
11	9	Randomized Controlled Trial	6	0.20
12	10	Congresses	5	0.17
13	10	Review	5	0.17
14	11	Clinical Conference	3	0.10
15	12	Bibliography	2	0.07
16	13	Biography	1	0.03
17	13	Directory	1	0.03
18	13	Interview	1	0.03
19	13	Monograph	1	0.03
20	13	Technical Report	1	0.03
21	13	Thesis	1	0.03
TOTAL			2975	100

4.7 Youths and HIV/AIDS: distribution of literature by source

A total of 535 journals and other publications were used to publish HIV/AIDS literature related to the youths. Of these, 284 (53.1%) were found indexed in the Institute of Scientific Information's (ISI) databases, which index only high impact journals. Analysis of the journal overlap in the key bibliographic databases such as ISI's Science Citation Index, and the Social Sciences Citation Index is essential. Only 2904 publications, accounting for 97.6% of the total youth publications, provided details on the sources. The results in Table 5 present the top twenty sources of HIV/AIDS in respect to the youths.

An analysis of the scatter of papers in the sources that carry HIV/AIDS information indicates that *International Conference on AIDS* formed the core or nucleus of that information. This source accounted for 34.7% (1008 papers) of the total papers reviewed. Similar observations were made by Macias-Chapula (2000) who noted that "this publication alone became a relevant source for information in the field" of AIDS research in Haiti. The rest of the top twenty sources consisted of 759 (26.1%) records while the remaining titles, which can be termed as the third zone in the Bradford analysis, were 1137 (39.2%). Other core sources of HIV/AIDS information on youths will include such titles as *Journal of Adolescent Health*, *AIDS Education and Prevention*, *AIDS*, and *International Journal of S T D & AIDS*.

Table 5 Youths and HIV/AIDS: distribution of literature by source, 1980-2002

Number	Source	Number of Publications	Percentage
1	Int Conf AIDS	1008	34.7
2	Journal of Adolescent Health	141	4.86
3	AIDS Education and Prevention	82	2.82
4	AIDS	62	2.13
5	International Journal of S T D & AIDS	44	1.52
6	Pediatrya	44	1.52
7	AIDS Care	43	1.48
8	J A M A: The Journal of the American Medical..	43	1.48
9	Journal of School Health	33	1.14
10	Journal of Acquired Immune Deficiency Syndromes	31	1.07
11	American Journal of Public Health	30	1.03
12	Sexually Transmitted Infections	29	1.00
13	Natl Conf Women HIV	27	0.93
14	AIDS Patient Care and S T Ds	25	0.86
15	Journal of Adolescence	25	0.86
16	Archives of Pediatrics & Adolescent Medicine	24	0.83
17	HIV Infect Women Conf	20	0.69
18	Journal of Acquired Immune Deficiency Syndromes...	20	0.69
19	Family Planning Perspectives	19	0.65
20	Public Health Reports	17	0.59
	Others	1137	39.20
TOTAL		2904	100

4.8 Youths and HIV/AIDS: distribution of literature by country (as MeSH terms)

Only 862 publications, accounting for 29.9% of the total number of publications that focused on the youths, provided details on the country or geographic area of focus. A total of 96 countries/geographic regions were the focus of the HIV/AIDS research as it affects the youths. As Table 6 shows, majority of the records discussed HIV/AIDS in the USA (29%) and Brazil (13.2%). Thus, the US obtained the highest frequency both as a country of publication (publisher) and country of focus (the "researched"). This may imply that majority of researchers were residents of the US. Interestingly, too, unlike in the earlier analysis of data according to the country of publication where Third World countries were rarely visible, the distribution of records by "researched" countries shows that 65% of the top twenty countries and about 69% of the 96 countries/geographic regions analysed in this study, were Third World countries. This implies that the greatest focus on the pandemic is in Less Developed Countries (LDCs), most probably because of high HIV/AIDS prevalence rates.

Table 6 Youths and HIV/AIDS: distribution of literature by countries (countries as MeSH terms), 1980-2002 (N=862)

Number	Geographic area	Number of Publications	Percentage
1	United States	250	29.00
2	Brazil	114	13.20
3	Uganda	47	5.45
4	Canada	32	3.71
5	Nigeria	28	3.25
6	India	27	3.13
7	Thailand	25	2.90
8	Italy	18	2.09
9	Mexico	17	1.97
10	France	14	1.62

11	Kenya	13	1.51
12	Argentina	12	1.39
13	Puerto Rico	12	1.39
14	Netherlands	11	1.28
15	Columbia	10	1.16
16	Russia	10	1.16
17	Zimbabwe	10	1.16
18	Democratic Republic of the Congo	9	1.04
19	Australia	8	0.93
20	Cameroon	8	0.93
	Others	187	21.70
	Total	862	100

Table 7 Youths and HIV/AIDS: Distribution of Literature by Main MeSH Terms

Rank	MeSH Terms	Number of Records
1	HIV Infections	1565
2	Acquired Immunodeficiency Syndrome	1134
3	Sex behaviour	1126
4	HIV Infections [prevention & control]	893
5	Risk Factors	781
6	Acquired Immunodeficiency Syndrome [Prevention & Control]	732
7	Knowledge, Attitudes, Practice	700
8	Health Education	693
9	Risk-Taking	499
10	HIV Infections [Epidemiology]	469
11	Sexually Transmitted Diseases	408
12	HIV Infections [Transmission]	375
13	Sex Education	291
14	Acquired Immunodeficiency Syndrome [Transmission]	276
15	Sexually Transmitted Diseases [Prevention & Control]	266
16	HIV Infections [psychology]	234
17	Sexual Partners	231
18	Condoms [utilization]	226
19	Acquired Immunodeficiency Syndrome [epidemiology]	219
20	Urban population	213
21	Age factors	196
22	Homosexuality, Male	162
23	Prevalence	152
24	HIV Seroprevalence	150
25	Health Behaviour	125

4.9 Youths and HIV/AIDS: distribution of literature by main MeSH terms

The distribution pattern of literature by the content using the main MeSH terms showed similar patterns to a study conducted by Macias-Chapula & Mijangos-Nolasco (2002) in Central Africa. *HIV infections* and *Acquired Immunodeficiency Syndrome* (AIDS) obtained high frequencies with 1383 and 953, respectively. This distribution pattern is shown in Table 7. Of particular interest to epidemiologists and HIV/AIDS control and prevention workers is the high ranking of HIV infections [prevention and control] and AIDS [prevention and control] entries. This revelation shows that HIV/AIDS prevention and control programs are the priority areas in the fight against the disease as it affects the youths. The identification of *Health education* and *Sex education* and *Condoms [utilization]* also reflects the means of the intervention programs. It was also noted that homosexuality-related terms featured prominently as title words as well as MeSH terms

most probably because the disease originated with gays. Further analysis of the occurrence of terms as index terms or keywords and how the same words are used within the titles need to be conducted. Such an analysis may also point out the differences between titles and keywords as fields of information searching and retrieval.

5. Conclusion

The need for the provision of information for purposes of protecting young people against HIV and STD infections has resulted in increased research activities manifested in the growth of publications from 380(12.8%) in 1981-1990 to 2281(76.6%) in the last decade. However, in order to achieve faster dissemination of the relevant information, publishing organizations and more especially those involved in indexing and abstracting services need to improve on both the publishing and indexing time lag. In average this study found that it takes approximately three and half (3½) years to index a published article. A study to analyse the publishing time lag is highly recommended.

Collection development managers and other information providing institutions and individuals would greatly enhance the provision of information by identifying and subscribing to the core resources on HIV/AIDS, both as identified in this study and other similar studies since getting the right information into the right hands is critical to launching any successful research. We could not, however, establish how widely these sources of HIV/AIDS information are read. We therefore recommend an analysis of these sources' scientific impact.

Besides the provision of information to support researchers' and decision makers' activities, there is need to provide relevant information on HIV transmission to the youths because, "while the young may be the most vulnerable population, they are also the most receptive to prevention messages and will [easily and readily] adopt more responsible behaviours" (Centre for African Family Studies, 2001:10). Research in HIV/AIDS tends to be focussed on the prevention and control (1625) of the pandemic. In the second rank position was epidemiology of HIV and AIDS. Concern has also been shown on sex education, sex behaviour, risk factors and health education. Knowledge on the modes of transmission seems to be emphasized, too. There is, however, need for further research – through trend analysis – to examine shifts in HIV/AIDS research with regard to the different sub-fields of study.

Developing countries need to improve the quality and visibility of their publications on HIV/AIDS research findings. While using popular journals and databases to achieve visibility is common, the creation and subsequent use of local databases could also be the answer. Web-publishing such as through institutional repositories for open access is another outlet worth exploring. Expectedly, majority of the sources of information, particularly those published in developing countries are not covered in the MEDLINE database and other similar databases. We assume that publication in languages other than English are not sufficiently covered as well. Among the requirements for selection and inclusion of the sources in databases is quality, frequency, and relevance, etc. These aspects need improvement on the part of the local sources.

Finally, it is worth noting that the findings of this study are probably biased in favour of western countries, English based publications and journal publications and therefore one should be extremely cautious when drawing generalized conclusions, despite a tendency by researchers to generalise findings based on sampling. For instance, many articles that have been published or broadcasted in mass media on youths and HIV/AIDS but have not been analysed in this study. It is also most probable that AIDSearch may have not index a large part of publications generated and published in developing countries. Further research is therefore recommended to analyse literature that is published in developing countries, on the one hand, and as covered in the mass media and other local databases (e.g. SABINET host in South Africa)

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Appendix A: Youths and HIV/AIDS: Distribution by year of Entry, 1983-1990

Year of Entry	Total Number of Pubs./Year of Entry	Year Published	Entry Time Lag (x)	Frequency f(x)	f(x)
1983	1	1982	1	1	1
1988	1	1987	1	1	1
1989	3	1988	1	1	1
		1989	0	2	0
1990	158	1989	1	88	88
		1990	0	70	0
TOTAL	163			163	91

Appendix B: Youths and HIV/AIDS: Distribution by year of Entry, 1991-2000

Year of Entry	Total Number of Pubs./Year of Entry	Year Published	Entry Time Lag (x)	Frequency f(x)	$\Sigma f(x)$
1991	49	1989	1	1	1
		1991	0	48	0
1992	117	1991	1	1	1
		1992	0	116	0
1993	128	1992	1	3	3
		1993	0	125	0
1994	106	1993	1	9	9
		1994	0	97	0
1995	44	1993	2	2	4
		1994	1	14	14
		1995	0	28	0
1996	9	1995	1	4	4
		1996	0	5	0
1997	264	1996	1	226	226
		1997	0	38	0
1998	281	1996	2	3	6
		1997	1	5	5
		1998	0	273	0
1999	11	1998	1	5	5
		1999	0	6	0
2000	127	1984	16	1	16
		1985	15	1	15
		1986	14	1	14
		1988	12	1	12
		1990	10	1	10
		1991	9	2	18
		1992	8	4	32
		1993	7	4	28
		1994	6	4	24
		1995	5	5	25
		1996	4	2	8
		1997	3	4	12
1998		1998	2	7	14
		1999	1	78	78
2000	0	12	0		
TOTAL	1136			1136	584

Appendix C: Youths and HIV/AIDS: Distribution by year of Entry, 2001-2002

Year of Entry	Total Number of Pubs./Year of Entry	Year Published	Entry Time Lag (x)	Frequency f(x)	$\Sigma f(x)$
2001	1320	1981	20	2	40
		1982	19	12	228
		1983	18	1	18
		1985	16	1	16
		1986	15	2	30
		1987	14	6	84
		1988	13	25	325
		1989	12	75	900
		1990	11	86	946
		1991	10	99	990
		1992	9	111	999
		1993	8	117	936
		1994	7	125	875
		1995	6	104	624
		1996	5	93	465
		1997	4	115	460
		1998	3	125	375
		1999	2	97	194
		2000	1	95	95
		2002	5	2001	0
1985	17			1	17
1992	10			2	20
1993	9			1	9
1998	4			1	4
TOTAL	1325			1325	8650