Use of World Health Organization publications in Russian medical and public health journals. A Citation Analysis

Tatyana V. Kaigorodova, Ekatherina I. Zimina, Elena V. Kirsanova, Alexey I. Ivanov

WHO Documentation centre, Federal Public Health Institute, Moscow, Russian Federation (all authors)

Friday, 14.45 – 16.45 Parallel session E "Bibliometrics"

To better understand dissemination of WHO materials in Russia, the WHO Documentation Center has analyzed the use of WHO publications in the Russian medical and public health journals through a citation analysis. The massive of 33847 articles published in 74 Russian scientific journals on Clinical Medicine, Public Health and Health Economics and Management for 2000-2008 has been collected with 1,827 articles identified as citing WHO materials. Selection and analysis of scientific journals was based on the following criteria: journal focus; circulation; target groups of readership; availability in the Internet (abstract/full text); in what reference databases the journal is cited, etc. A special module has been designed to implement a detail analysis of the use of WHO publications in scientific articles published in the sampled journals: by types of WHO documents (resolutions of World Health Assembly; WHO meetings proceedings; guidelines, WHO Technical Report Series, WHO monographs, etc); thematic categories of WHO publications; etc. Citation analysis helped identify Russian journals with high number of references to WHO materials. Results of the analysis helped understand what WHO materials and in what contexts Russian specialists use. Citation analysis has shown that more frequently WHO materials have been cited by articles on noncommunicable diseases, mother and child health and communicable diseases. Pharmaceuticals, health systems and health promotion rank fourth, fifth and sixth respectively. Analytical and methodological documents (WHO Technical reports series, guidelines and monographs) are cited more frequently. The average citation age of WHO materials is 1996.7. World health reports have the youngest average age of references equaling to 2000.56, followed by WHO policy papers - 2000.95. The rates show that those types of WHO materials are rather fast to reach the Russian research community. A list of most cited WHO publications by absolute number of references looks the following: 5 technical reports, 3 monographs by WHO Observatory, 2 guidelines and 1 strategy. Translations into Russian accounted for 30% of all references to WHO materials, while books by the European Observatory on Health Systems and Policies accounted for more than 50% of all references to WHO books. The analysis helped better understand interest area of the Russian health researchers in WHO publications.

Introduction. WHO documents and publications cover all health-related issues from policy papers and health systems development analyses to practical guidelines for doctors and nurses. WHO information is a valuable resource for both decision-makers and different specialists in medicine and allied sciences.

A number of studies conducted in the Russian Federation and abroad showed high research and practical value of WHO information.[1] At the same time the studies have also

[1] WHO Documentation centres: Building an information network in the European Region. Report on WHO Meeting. Copenhagen, 15-17 November 1993. – WHO Regional Office for Europe. Copenhagen. 1994. EUR/ICP/HBI 016 – P.10; Кайгородова Т. В., Зимина Е.И., Иванов А.В. Использование Интернет-ресурсов Всемирной организации здравоохранения российскими специалистами // Здравоохранение Российской Федерации – 2009. - № 1. - С. 23-25; Кайгородова Т. В., Зимина Е.И., Иванов А.В. Информационные потребности российских специалистов в материалах ВОЗ // Здравоохранение Российской Федерации. 2008. - № 6. - С. 37-40.

identified low user awareness of multiple WHO resources and ways to retrieve such information. Many health care specialists are not skilled enough to work with international websites, which constitutes a barrier for information consumers. Studies conducted by WHO have come to a similar conclusion: "The majority of WHO documents are not available to the target audience because either people do not know that such information exists or this information is not available to them"[2].

The aim of our study is to analyze the use of WHO materials by the Russian medical and health research community.

Objectives include as follows:

1. to compile a representative array of medical and health articles from the national journals for the last 9 years (2000-2008);
2. to design a special module to implement citation analysis;
3. to analyze the selected representative array of journal articles on the basis of the developed module; and
4. to conduct statistical processing of the results and identify most cited WHO sources as well as the Russian journals that cite WHO materials most frequently as well as subject areas that show highest demand for WHO materials.

Methods. Citation analysis is not a new method. It is mainly used to identify scientific efficiency of journals and individual researchers. Dr. E.Garfield has pioneered this method (1972[3]; 1985[4]; etc.). Applying this method, a number of authors have been exploring what sources were used by researchers in their studies. In particular they were analyzing the use of epidemiology publications across different medical sciences. (Oakes J.M., 2005[5]; Hasbrouck L.M., Tallano J., Hirshon J.M., Dannenberg A.L., 2003[6]; Dannenberg A.L.,1985[7]).

We have pooled the experience of international authors in applying citation analysis to evaluate the use of different publications in research and developed our original methods. To perform citation analysis of the use of WHO materials in the Russian scientific medical journals we have selected a nine-year time span and included publications from 2000-2008. Selection of journals for this citation analysis was made with due regards to specific objective factors pertaining to the Russian information environment.

First, the Russian scientific journals are mainly "isolated" from the global information databases. Except for a couple of journals they are not included in MEDLINE, EMBASE, etc. Refraining from exploring reasons for non-inclusion, we had to select an array of materials for analysis from the Russian information sources (both electronic and hard copies available in Russian libraries).

Secondly, citation analysis requires availability of references to each analytical article. Some library databases that includes only bibliographical description of articles does not suffice for implementing citation analysis. Currently, full text articles are mainly available in hard copy journals in libraries. Electronic full text libraries are yet to be developed in Russia. At present, there is only one free electronic library – www.e-library.ru. Basically, this library contains issues of scientific journals for 2006-2009, though there are certain journals with longer retrospective.

---

[2] Документация ВОЗ и стратегия достижения здоровья для всех в Европе. Отчет о Совещании рабочей группы ВОЗ, Берлин, 12-15 ноября 1990 г. – Европейское региональное бюро ВОЗ. 1991, EUR/ICP/HBI 014 – 23 с.

[3] E.Garfield. Citation Analysis as a Tool in Journal Evaluation // Science. 1972. – Vol. 178. – P.471-479.

[4] E.Garfield. Uses and misuses of citation frequency //Essays of an Information Scientist. – 1985. – Vol. 8.

[5] Oakes J.M. An Analysis of American Journal of Epidemiology Citations with Special Reference to Statistics and Social Science //Am. J. Epidemiol. – 2005. – Vol.161. – P.494-500

[6] Hasbrouck L.M., Tallano J., Hirshon J.M., Dannenberg A.L. Use of Epidemiology in Clinical Medical Publications, 1983-1999: A Citation Analysis // Am. J. Epidemiol. – 2003. – Vol. 157. – P. 399-408

[7] Dannenberg A.L. Use of Epidemiology in Medical Specialties: An Examination by Citation Analysis // Am. J. Epidemiol. – 1985. – Vol.121. – P.140-151.

Websites of the Russian journals and publishing houses have but few electronic full text publications due to their market policy aimed at increased sales of their products.

Thirdly, the Russian market of medical journals is highly dynamic: due to financial crisis in the 90s many scientific journals either reduced the number of annual issues or came into oblivion. On the other hand, in the 2000s, many new journals on different clinical areas have sprung up while other journals increased the number of their issues. This situation accounts for uneven distribution of issues of different journals over time.

The above-mentioned three factors have determined the journal sampling, i.e. we have searched electronic information through www.e-library.ru (publications for 2006-2008) and implemented manual searchers in the Central Scientific Medical Library and Russian State Library – major depositaries of scientific and medical information in Russia (publications for 2000-2005).

The list of journals for citation analysis consists of 74 journals including 64 journals on different medical disciplines from the Supreme Attestation Commission (SAC) of the Russian Federation register and 10 journals on health system strengthening and public health outside the SAC register. SAC is authorized to confer a degree, outlines most informative and quality journals in which a degree applicant should publish a certain number of publications, which is the main condition for receiving a degree in the Russian Federation (Doctor of Science and Candidate of Science). Inclusion of journals on different medical and health disciplines in this analysis was guided by the idea of ensuring objective presentation of the disciplines in the analysis (there were individual journals on certain disciplines).

Journals on healthcare organization have been selected outside the SAC as they are few in number compared to the health journals. On the other hand, at large, WHO information aims at addressing organizational and political issues in healthcare.

The keywords for searching articles included:

- World Health Organization and аббревиатура WHO
- WHO Regional office for Europe and WHO EURO
- World health report
- International classification of diseases and ICD-10
- International classification of functioning, disability and health and ICF
- - European Observatory on Health Systems and Policies
- Health for all

The next step was to develop a ***special module for citation analysis.***

1. Peculiar features of articles

- bibliographical description of the article that cited WHO materials;
- output data of the journal that published this article;
- topical headings and keywords that describe the article contents; one article can be simultaneously attributed to one to three headings if it focuses on interdisciplinary research.

2. Peculiar features of the citation source:

- bibliographical description of the cited source including year of publication;
- type of the cited source;
- publication language;
- focus of the cited source according to its attribution to one to three topical headings similar to the article indexing.

Based on the developed module, all 1’827 articles that cited WHO materials have been entered in the module according to the mentioned above categories.

Results. Having calculated the number of references to WHO materials in each journal under study, w have selected the journals which articles most frequently cited WHO materials. There were a total of 12 such journals:

- *«Профилактика заболеваний и укрепление здоровья»(“Profilaktika zabolevanij i ukreplenie zdorovia”)*
- *«Вопросы питания» “Voprocy pitania”*
- *«Кардиоваскулярная терапия и профилактика» (“Kardiovascularnaia terapia i profilaktika”)*
- *«Вопросы вирусологии» (“Voprocy virusologii”)*
- *«Терапевтический архив» (“Terapevticheskiy arkhiv”)*
- *«Вопросы современной педиатрии» (“Voprocy sovremennoj pediatrii”)*
- *«Общественное здоровье и профилактика заболеваний» (“Obstchestvennoe zdorovie i profilaktika zabolevanij”)*
- *«Проблемы управления здравоохранением» (“Problemy upravlenia zdravookhraneniem”)*
- *«Журнал микробиологии, эпидемиологии и иммунобиологии» (“Jurnal mikrobiologii, epidemiologii i immunologii”)*
- *«Медицинская паразитология и паразитарные болезни» (“Meditzinskaia parazitologia i parazitarnye bolezni”)*
- *«Клиническая фармакология и терапия» (“Klinicheskaia farmakologia i terapia”)*
- *«Вестник дерматологии и венерологии» (Vestnik dermatologii i venerologii”)*

Having rated all articles from the journal massive (2000-2008) with references to WHO materials, by headings we have identified the following topics of articles with highest citation rates of WHO materials.

Table 1

Topics of Articles with Highest Citation Rates of WHO Materials

#	**Categories**	**Number of references**
	Noncommunicable diseases control	746
	Maternal and Child Health	396
	Communicable diseases	367
	Pharmaceuticals	348
	Health systems	253
	Health Promotion and Disease Prevention	210

The analysis implies that articles on noncommunicable diseases, mother and child health and communicable diseases used WHO materials more frequently. “Noncommunicable diseases” heading almost doubles in number of articles the second largest heading “Mother and Child Health”. Articles on “Cardiovascular diseases” top the “Noncommunicable diseases” heading and twice exceed in number the second largest sub-heading of “Mental Health”.

Distribution of all reference sources ***by English and Russian languages*** showed that 958 sources (34.20%) out of 2’801 references have been translated into Russian; while 1’843 (65.80%) have been published in English. It implies that translation into consumer’s language increases the use of information by one-third times. Yet, it is fair to say that citation of the English-language sources shows that the Russian researchers know English enough to read international scientific documents.

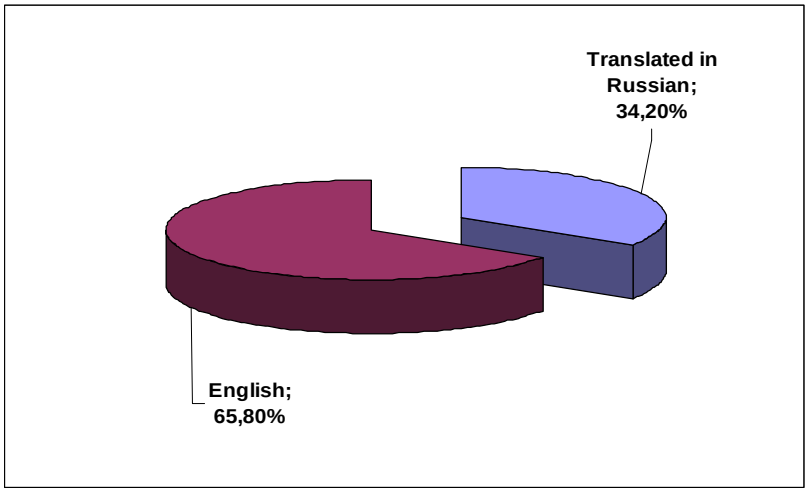

Fig.1. Distribution of reference sources by language

The average age of citation identified at 1996.7 for the study period 2000-2008 shows. And the majority of WHO documents that have been cited were published in the 90s-2000s. On the other hand, citation of the WHO core documents (1947) and pioneers of different research trends in the 70s-80s of the last century as well as retrospective research should be considered as well.

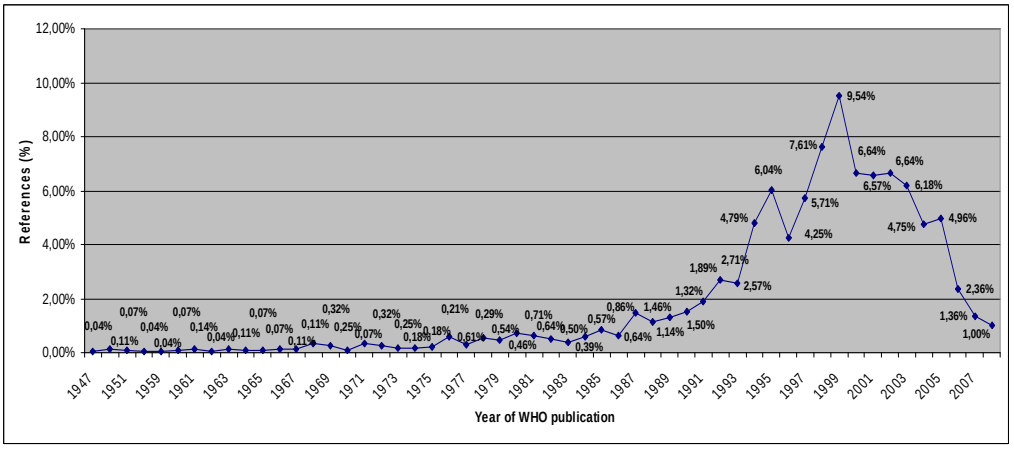

Fig.2. Distribution of references by the year of citation sources for the entire number of articles for 2000-2008

Articles published during each year under the study (2000-2008) cited WHO materials published in the same year. For example, articles published in 2000 have 2 references to WHO materials published in 2000 also. In the massive of articles published in 2000-2006 there are just few such references, i.e. 1-2 references per year. And only in 2007 the number of references was 7, and in 2008 – 14. All WHO materials cited have been taken from the WHO web-site. This only reconfirms that availability of WHO materials online considerably improves access to information to the consumer, i.e. authors of scientific articles cite WHO materials in the same year when they have been published.

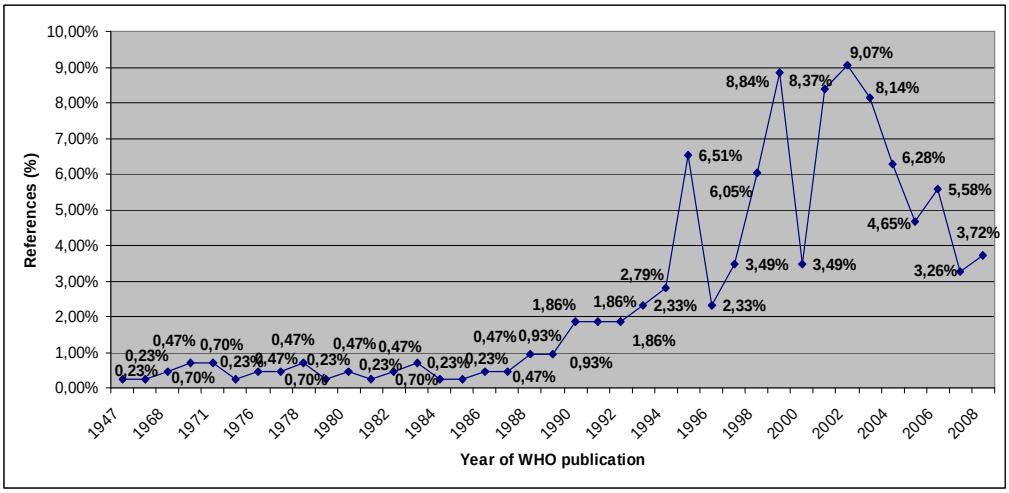

Fig.3. Distribution of references by the year of WHO publications in the Russian articles published in the 2008

Should we confine our analysis to articles published in Russia in 2008, the average age of citation of WHO publications will reach 1998.27. The time trend differs from the average age of citation line for the entire study period. The time trend has four picks in 1996, 1999, 2003 and 2007 respectively with the highest one in 2003. It means that in general, WHO documents reach the Russian scientific community rather fast.

Most Cited Types of WHO Materials. The table 2 shows that in general, analytical and methodological documents dominate the citation. Small wonder, as they are developed by the globally recognized researchers and, on the other hand, are mostly available in the Internet, which is not the case for analytical materials published by the majority of publishing houses world-wide and disseminated for a fee.

Table 2

Most Cited Types of WHO Materials

#	**Types of WHO Materials**	**Number of references**
	WHO Technical report series	387
	Guidelines	379
	Monographs/Books	348
	Policy papers	177
	Statistics	131
	World Health Reports	126

WHO Technical Reports Series. "WHO Technical Reports Series" ranks first among the analytical papers. The series summarizes research results on different topics and includes objective data from countries world-wide. Till 2000, the series was almost fully translated into Russian by the "Медицина" Publishing house ("Medicine"). Unfortunately, since 2000 when the publishing house put of hold translation of the series other publishers have not resumed this activity, which is wrong from our point of view as the analysis shows that the "WHO Technical Report Series" is the highest cited type of WHO publications.

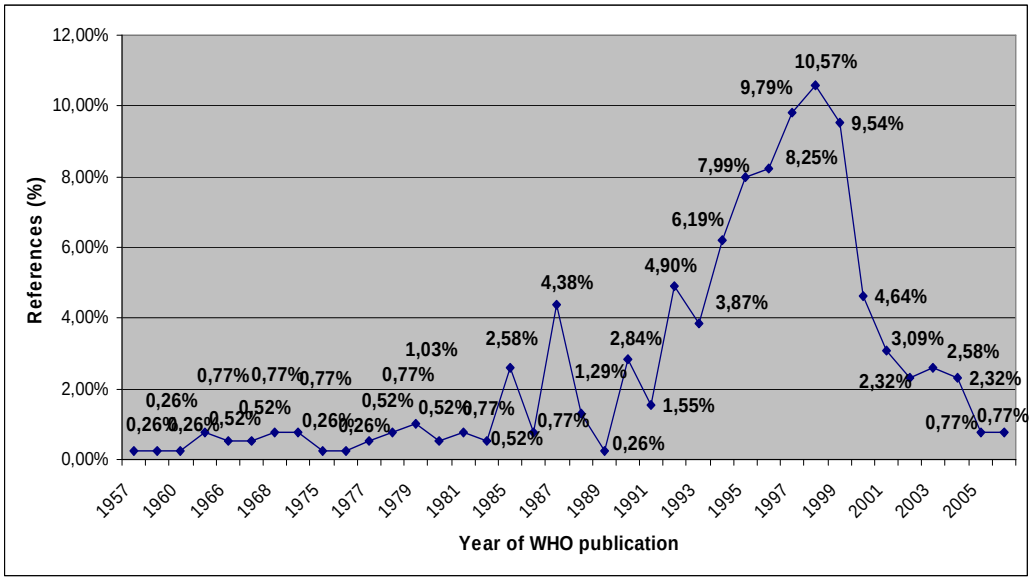

Fig.4. Age of citation of the "WHO Technical Reports Series" in the study array

Table 3 shows that topics of the "WHO Technical reports Series" share much similarity with the general topics cited. Publications on nutrition are most cited from the "WHO Technical reports Series" publications, seconded by diabetes mellitus and cardiology that can be generally attributed to the rubric of "Noncommunicable diseases". "Child Health" and "Communicable diseases" headings follow next.

Table 3

References to "WHO Technical reports Series" Publications by Topics (first ten most cited topics)

#	Topic of the "WHO Technical reports Series" publications	Absolute value
1.	Nutrition	68
2.	Diabetes Mellitus	49
3.	Cardiovascular diseases	47
4.	Pharmaceuticals	29
5.	Child health	28
6.	Communicable diseases	25
7.	Obesity	21
8.	Women health	19
9.	Aging	11
10.	Oral health	11

Guidelines are second most cited types of the WHO materials. WHO develops different guidelines including clinical and organizational ones. The range of topics they cover is vast. Guidelines serve a very useful resource for practical work either treatment of patients, prevention program design or drug supply. The analysis showed that the average age of guidelines cited by the Russian researchers is 1998.11 (which is lower than the average year of the array – 1998.27 and higher than the average age of "WHO Technical Report Series" publications – 1993.90. Citation rates of the WHO guidelines climaxed in 2000 reaching 22.28% of all guidelines cited. In general, guidelines published in 1995-2005 were actively cited.

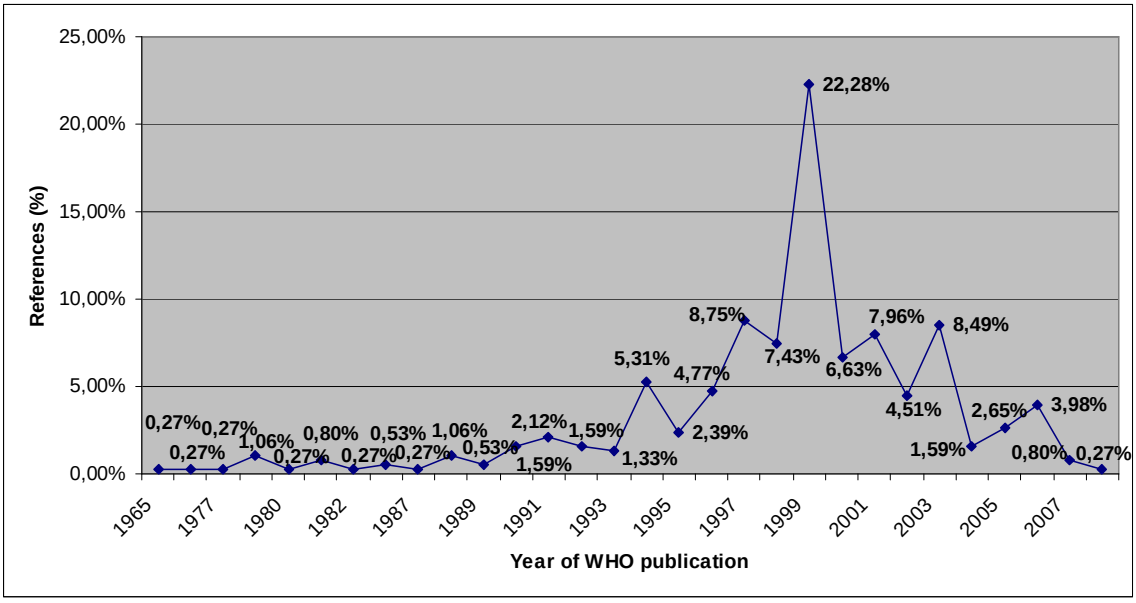

Fig.5. **Distribution of references to WHO guidelines by years of publication**

Peculiar features of guidelines as information sources are their value that is determined by the modern data, methods and techniques that the guidelines outline. In other words, new, up-to-date guidelines are most informative. Therefore, modern guidelines should be more actively advertised while the use of guidelines published in 1995 only shows that up-to-date evidence is yet to reach its audience.

Table 4

Distribution of Guidelines by Specialty Categories in line with Citation Rates

#	Specialty	Absolute #
1.	Cardiovascular diseases	76
2.	Communicable diseases, including Tuberculosis	74
3.	Child health	38
4.	Pharmaceuticals	27
5.	Oncology	14
6.	Nutrition	13
7.	STI	12
8.	Tobacco control	11
9.	Mental health	11
10.	Women' health	10

Guidelines on prevention and treatment of cardiovascular diseases rank first accounting for 20,05% of all guidelines cited; guidelines on communicable diseases control are second best

cited – 19,53% (including TB guidelines - 10.55%), followed by child health guidelines accounting for 10.03% (IMCI series).

WHO publications classified as **"Monographs"** rank third. The average age of monograph citation is 1995.44 which is older than the average age of all citations (1996.70). However, some monographs remain up-to-date and informative regardless of the year of publication as they are used for comparative analyses and background information.

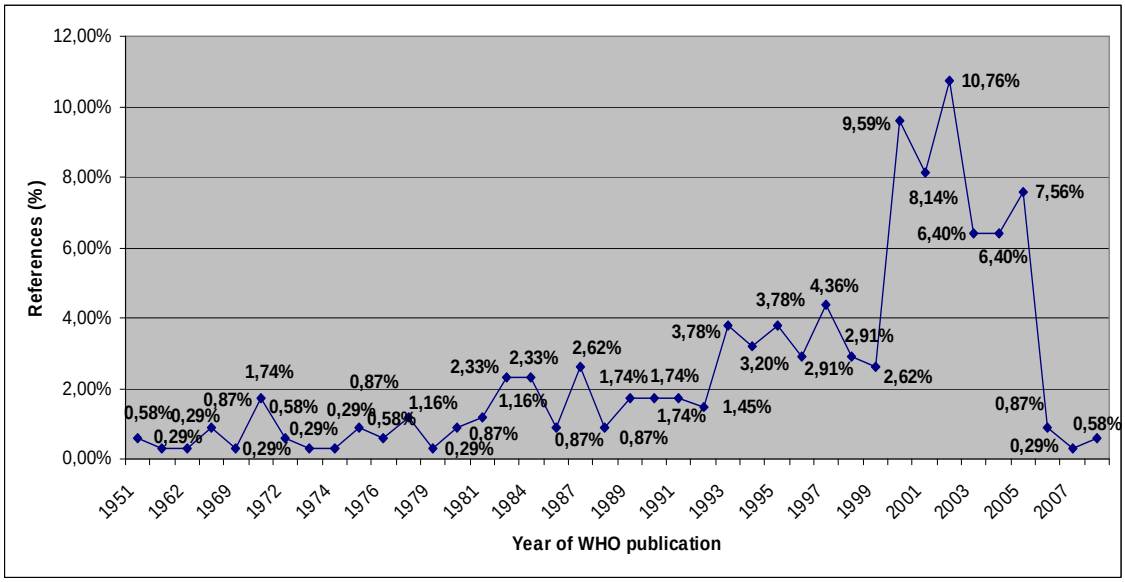

Fig.6. **Age of references to WHO monographs**

Figure 6 shows three picks. Most cited monographs were published in 2003 (10.76%), in 2001 (9.59%) and in 2006 (7.56%) respectively. Generally, monographs/books published in the 2000s account for half of all references to WHO monographs – 53.21%, suggesting that WHO monographs are rather quick to reach the Russian research community.

Table 5 shows that WHO monographs on health systems are most cited by the Russian articles. Mainly, the monographs include books by the European Observatory on Health Systems and Policies. It should be noted here that the majority of the Observatory publications cited by the Russian researchers have been translated into Russian. We believe that availability of the Russian language translation has significantly increased the use of Observatory publications. Figure 7 shows that the publications translated into Russian account for more than half of all references.

Table 5

Distribution of WHO Monographs by Specialty Categories

	Specialty	**Absolute #**	**% of the total # of monographs cited**
	Health systems	46	13,22
	Cardiology	33	9,48
	Communicable diseases	31	8,91
	Mental health	28	8,05
	Oncology	23	6,61
	Child health	20	5,75
	Health Promotion	19	5,46
	Hospitals	18	5,17

	Nutrition	14	4,02
0	Pharmaceuticals	14	4,02

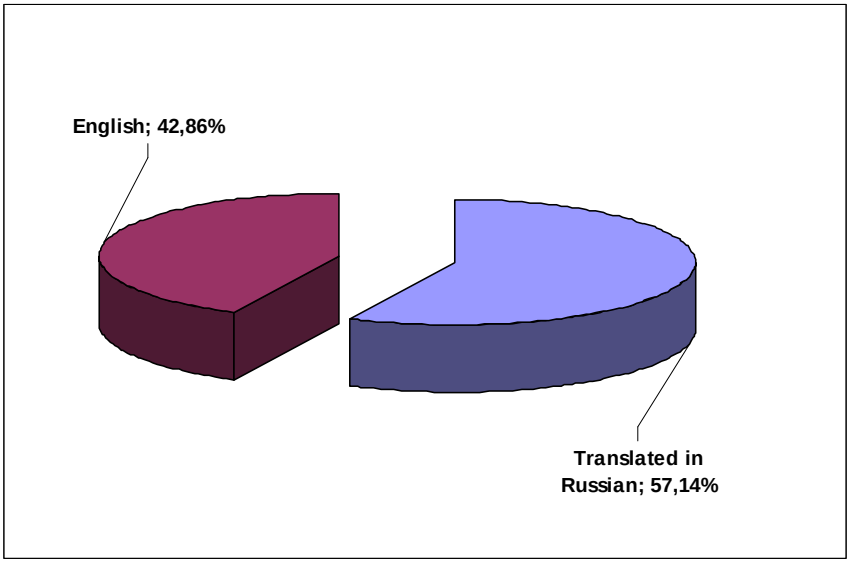

Fig.7. Ration between references to Russian and English language books by the Observatory

We would like to summarize our study by a **list of most cited WHO publications** by absolute number of references. It shows that 4 from 5 the most cited publication are focused on Noncommunicble diseases and 1 – on Health Systems. 3 from 5 publications are translated into Russian.

Table 6

List of most cited WHO publications by absolute number of references

#	**WHO publications**	**Number of references**
1	WHO/ISH guidelines for the management of hypertension. (1999)	54
2	WHO strategy for prevention and control of chronic respiratory diseases (2002)	29
3	Arterial Hypertension Control Report of the Expert Committee #862 (1997)	26
4	World Health Report 2002. Reducing Risk, Promoting Healthy Life	24
5	World Health Report 2000. Health Systems: Improving Performance	22

Conclusion. To summarize our study we would like to conclude that citation analysis can be applied to identify the use of information materials by the research community through analysis of the references to publications.

In general, the study has the following major findings:

- Analytical and methodological documents dominate the citation. Small wonder, as they are developed by the globally recognized researchers and, on the other hand, are mostly available in the Internet, which is not the case for analytical materials published by the majority of publishing houses world-wide and disseminated for a fee;

- Analytical documents on non-communicable and communicable diseases, children's health and health systems turn out to be most cited among WHO publications;

- Translation of materials into the consumer's language increases citation by 30-50%;
- Availability of full texts on-line facilitates use of the WHO materials within the year of their publication.