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Medical Informatics

Analysis of Abstracts from the Medical Theses Written in Macedonian Language and Proposal of Standards for Abstract Preparation

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Abstract

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Key words: medical science; PhD; MSc; Faculty of Medicine in Skopje, Republic of Macedonia.

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AIM: The aim of this study was to analyse abstracts from the medical theses written in Macedonian language and propose standards for abstract preparation.

MATERIAL AND METHODS: A total number of 97 English abstracts from the medical PhD theses and 122 Medical MSc theses defended at the Faculty of Medicine, Ss Cyril and Methodius University of Skopje, Republic of Macedonia in the period of 2007-2012 were analysed. Author definition, institution definition, language definition, deposition in the Central Medical Library, presence or absence of English abstracts, number of structured abstract, key words, and mentor declaration were analysed.

RESULTS: In the 97 Macedonian medical PhD theses (defended 2007-2012) author, institution or language were not defined. All PhD theses were deposited in the Central Medical Library. In 18.6% PhD theses, there was no English abstract, in 74.2% the abstracts were not structured, 36.1% of them were without key words, and 8.2% were without statement of the mentor. Similar findings were noticed in the 122 Macedonian medical MSc theses (defended 2007-2012) which did not have author, institution or language defined. Four percentages of MSc theses were not deposited in the Central Medical Library, 32.8% MSc theses were submitted for defence without an English abstract, 65.6% MSc theses had no structured abstracts and 45.9% of them had no key words. Significant number of MSc theses (21.3%) was submitted for defence without statement of the mentor and one medical MSc was retracted.

CONCLUSION: Standards for preparation English and Macedonian abstracts for medical PhD and MSc theses are proposed in order to increase their quality and international availability.

Introduction

Doctoral dissertation is the highest achievement at the educational level in most countries of the world. In the Republic of Macedonia, process of preparation and defense of medical PhD theses can be divided in three different periods.

In the very beginning, the draft versions of the PhD theses were proposed by the author and submitted to the Scientific Board, reviewed by the commission consisting of three members and the final version was prepared. This last step, the preparation of the medical PhD thesis, was the sole responsibility of the author with very small, if any, support of the mentor of the dissertation and the institution where the author was affiliated. Completed PhD thesis was submitted for revision by the three members of the commission, and proposed for acceptance to the Scientific-Educational Board of the Medical Faculty in Skopje. The thesis was presented and defended publicly in front of five members of the commission.

The content of the medical PhD thesis was not allowed to be published during the preparation, nor after the defense. The printed copy of the medical PhD (written in Macedonian language, and deposited in the Central Medical Library and/or other libraries) was the only source for complete scientific information. The abstract written usually in English was the unique peace of scientific information for the non-Macedonian audience/scholars, but was insufficient to serve as a scientific source [1]. Macedonian medical PhD theses defended in that period were practically restricted to the use of Macedonian scientists only.

In the second period, significant changes were introduced aimed to increase the quality and availability of the medical PhD theses. The criterion of three published papers, one of which in the journal indexed in PubMed, was a prerequisite for the PhD to be accepted for review and for defence. The other steps were similar as in the previous period. Such policy has significantly increased the number of

published papers by the Macedonian medical scientists indexed in PubMed [2] and Scopus [3].

The third period started in the year 2011 with the establishment of PhD School at the Ss Cyril and Methodius University of Skopje (UKIM) by organized educational support for the authors, mentors and faculties as members of the UKIM. The first generation of PhD candidates is in the process of education and preparation of proposals. We shall see the results after the completion of the first generation (around 2014-2015 year).

Macedonian medical PhD theses are deposited in the Central Medical Library at the Faculty of Medicine, Ss Cyril and Methodius University of Skopje and are publicly available in a printed version. Unfortunately, there is neither available electronic form of the medical PhD theses nor repository of dissertations (individual or institutional). From time to time, some of the Macedonian medical PhD theses are published in their short versions or in a form of an abstract. Macedonian Journal of Medical Sciences published abstracts of Macedonian medical PhD [4-9] and MSc theses [10-15], starting from the year 2007. They are published as given in the theses themselves with the addition of the authors, titles, affiliations, dates of defence and mentors.

The aim of this study was to analyse abstracts from the medical theses written in Macedonian language and propose standards for abstract preparation.

Material and Methods

A total number of 97 English abstracts from the medical PhD theses and 122 medical MSc theses defended at the Faculty of Medicine, Ss Cyril and Methodius University of Skopje, Republic of Macedonia during the period of 2007-2012 were analysed. Author definition, institution definition, language definition, deposition in the Central Medical Library, presence or absence of English abstracts, number of structured abstracts, key words, and mentor declaration were analysed. Typical English abstract preparation of medical PhD thesis written in Macedonian language is shown in Fig. 1.

Based on the findings in this study, as well as

on the international standards, standards for abstract preparation of the medical theses written in Macedonian language were suggested.

ABSTRACT

The killer cell immunoglobulin-like receptors (KIR) are surface molecules important for regulation of the activity of natural killer (NK) cells and some subsets of T cells. They act through interaction with ligands found on target cells producing activating or inhibitory signal. An extensive diversity exists in the KIR gene locus. In this PhD thesis we have set an aim to determine the KIR gene and genotype frequencies in different populations from Republic of Macedonia and to analyze eventual associations (both positive and negative) between certain KIR genes/genotypes and selected diseases.

Total of 421 DNA samples from unrelated volunteer healthy donors from the Macedonian human DNA bank (214 Macedonians, 104 Albanians and 103 Roma), 63 patients with confirmed infection with H1N1 pandemic influenza virus, 4 patients infected with West Nile encephalitis virus and 63 patients with haematological malignancy, and 24 volunteer donors of bone marrow were analyzed.

All the 16 KIR genes were determined in the Macedonian population, and total of 56 different KIR genotypes were genotyped in the Macedonian population, of which 14 new genotypes that were referred to the database www.allele-frequencies.net. The comparison of KIR gene frequencies between Albanians and Macedonians living in Republic of Macedonia reveals statistically significant difference for *KIR2DL1* ($p=0.001$) and *KIR2DS4* ($p=0.050$). Total of 46 different KIR genotypes were found in the studied Albanian population, of which five new. The comparison of KIR gene frequencies between Roma and Macedonians from Republic of Macedonia reveals statistically significant difference for *KIR3DL1* ($p=0.038$) and *KIR2DS1* ($p=0.011$). Total of 36 different KIR genotypes were found in the Roma population, of which six were new. The comparison of KIR gene frequencies between patients with H1N1 infection and healthy controls from Republic of Macedonia reveals statistically significant difference for *KIR2DL1* ($F=1$ in the patients group, and $F=0.994$ in the controls group, $p=0.045$). As much as 3 of the 4 patients with severe form of encephalitis caused by the West Nile virus, had the same KIR genotype (Bx71), while the fourth patient had genotype Bx89. The comparison of KIR gene frequencies between 63 haematological patients and healthy Macedonians reveals statistically significant difference for the *KIR3DL2* framework gene ($F=1$ in the control group, and $F=0.95$ in patients group, $p=0.001$). When we analyzed only patients with acute myeloid leukemia, we have found the *KIR2DS1* and *KIR2DS5* genes to be significantly more frequent in patients than in controls. Statistically significant difference was found for the frequencies of Bx3 and Bx439 both present more often in the group of haematological patients than the control group ($p=0.017$ and $p=0.009$, respectively). When comparing the frequencies of the 16 analyzed KIR genes in the pairs patient-donor with 214 healthy Macedonians, a statistically significant difference was found for *KIR2DS1* which was more frequent in the group of sibling donors ($p=0.004$), and especially frequent in the subgroup of 13 donors from pairs where severe graft versus host reaction was seen ($p=0.002$).

These results may be used in anthropological studies, but can also be helpful in clarification of the impact of the KIR molecules in the development and/or progression of the viral infections, and their association with the haematological malignant diseases and the course of the transplantation of bone marrow.

Keywords: KIR gene polymorphism, SSP genotyping, Macedonian population, Albanian population, Roma population, H1N1 pandemic influenza, West Nile encephalitis virus, association study, haematological malignant disease, bone marrow transplantation, graft versus host reaction, Republic of Macedonia.

Figure 1: Typical English abstract preparation of medical PhD thesis written in Macedonian language. Ask yourself: Who is the author?; Where the dissertation was prepared?; Which language is written in?; Who is the mentor? There is no information about the basic questions.

Results

Abstracts in Macedonian medical PhD theses

In the 97 Macedonian medical PhD theses (defended 2007-2012) there was no definition of author, institution or language. All PhD theses were deposited in the Central Medical Library. In 18 (18.6%) PhD theses there was no English abstract, in 72 (74.2%) the abstracts were not structured, in 35 (36.1%) there were no key words, and in 8 (8.2%) there was no declaration of the mentor (Table 1).

Table 1: Analysis of different parts of abstracts in the Macedonian Medical PhD theses.

	2007	2008	2009	2010	2011	2012	2007-2012
Number of PhD theses (n)	7	15	24	8	22	21	97
No author definition [n (%)]	7 (100)	15 (100)	24 (100)	8 (100)	22 (100)	21 (100)	97 (100)
No institution definition [n (%)]	7 (100)	15 (100)	24 (100)	8 (100)	22 (100)	21 (100)	97 (100)
No language definition [n (%)]	7 (100)	15 (100)	24 (100)	8 (100)	22 (100)	21 (100)	97 (100)
No deposition in CML* [n (%)]	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
No abstract [n (%)]	1 (14.3)	5 (33.3)	6 (25.0)	0 (0)	2 (9.1)	4 (19.0)	18 (18.6)
No structured abstract [n (%)]	6 (85.7)	14 (93.3)	22 (91.7)	7 (87.5)	10 (45.4)	13 (61.9)	72 (74.2)
No Key Words [n (%)]	0 (0)	2 (13.3)	11 (45.8)	2 (25.0)	9 (40.9)	11 (52.4)	35 (36.1)
No mentor declaration [n (%)]	0 (0)	3 (20.0)	0 (0)	4 (50.0)	0 (0)	1 (4.8)	8 (8.2)
Reference	[4]	[5]	[6]	[7]	[8]	[9]	This paper

Abstracts in Macedonian medical MSc theses

Similar findings were noticed in the 122 Macedonian medical MSc theses (defended 2007-2012), which did not have author, institution or language definition. Five (4.1%) theses were not deposited in the Central Medical Library. Forty (32.8%) MSc theses were submitted for defence without an English abstract. Eighty (65.6%) MSc theses were without structured abstracts and 56 (45.9%) of them were without key words. Significant

number of MSc theses [26 (21.3%)] were submitted for defence without declaration of the mentor. One medical MSc was retracted ([A. Strezova. Genotyping of HLA-A, HLAC and HLA-B loci with Reverse Line Strip hybridization in Macedonian Population and association of HLA class I alleles with spondylitis (MSc thesis). Skopje, Republic of Macedonia: Institute of Immunobiology and Human Genetics, Faculty of Medicine, University "Ss Kiril and Metodij"; 2009.)] [16] (Table 2).

Table 2: Analysis of different parts of abstracts in the Medical MSc theses from the Republic of Macedonia.

	2007	2008	2009	2010	2011	2012	2007-2012
Number of MSc theses (n)	20	26	30	13	23	10	122
No author definition [n (%)]	20 (100)	26 (100)	30 (100)	13 (100)	23 (100)	10 (100)	122 (100)
No institution definition [n (%)]	20 (100)	26 (100)	30 (100)	13 (100)	23 (100)	10 (100)	122 (100)
No language definition [n (%)]	20 (100)	26 (100)	30 (100)	13 (100)	23 (100)	10 (100)	122 (100)
No deposition in CML* [n (%)]	0 (0)	2 (7.7)	1 (3.3)	0 (0)	2 (8.7)	0 (0)	5 (4.1)
No abstract [n (%)]	3 (15.0)	9 (34.6)	8 (26.7)	6 (61.5)	11 (47.8)	3 (30.0)	40 (32.8)
No structured abstract [n (%)]	18 (90.0)	20 (76.9)	8 (26.7)	13 (100)	17 (73.0)	4 (40.0)	80 (65.6)
No Key Words [n (%)]	7 (35.0)	12 (46.1)	14 (46.7)	9 (69.3)	11 (47.8)	3 (30.0)	56 (45.9)
No mentor declaration [n (%)]	7 (35.0)	5 (19.2)	2 (6.7)*	5 (38.5)	7 (30.4)	0 (0)	26 (21.3)
Reference	[10]	[11]	[12]	[13]	[14]	[15]	This paper

*One Medical MSc was retracted ([A. Strezova. Genotyping of HLA-A, HLAC and HLA-B loci with Reverse Line Strip hybridization in Macedonian Population and association of HLA class I alleles with spondylitis (MSc thesis). Skopje, Republic of Macedonia: Institute of Immunobiology and Human Genetics, Faculty of Medicine, University "Ss Kiril and Metodij"; 2009.)] [16].

Proposal of standards for publication abstracts in the theses

Ten tasks were identified during the preparation, submission, defence, repository and publication of the medical theses.

Beside the PhD candidate of the dissertation, the responsible person in the Central Medical Library, the Vice-Dean for science, Ss Cyril and Methodius University of Skopje, as well as publishers are responsible for the quality of the different steps during preparation of dissertations (Table 3).

Table 3: Shared responsibilities during preparation of Medical theses in Republic of Macedonia.

Task	Primary Responsibility
1. Writing of the theses	PhD or MSc candidate
2. Control of abstracts (Macedonian and English)	Responsible person in the Central Medical Library
3. Individual control of all applied guidelines	Mentor
4. General control of application of guidelines	Vice-Dean for science
5. Guidelines for preparation of dissertation	Vice-Dean for science
6. Deposition of printed theses	Responsible person in the Central Medical Library
7. Public defence of theses	Vice-Dean for science
8. Deposition in individual repository	PhD or MSc candidate
9. Deposition in institutional repository	Ss Cyril and Methodius University of Skopje
10. Printed and/or electronic publication	Publisher

A proposal for the preparation of English abstracts in the medical PhD and MSc theses written in Macedonian language is given in Figure 2. Structure of the abstract text (background, aim, material and methods, results, and conclusion) can be modified depending on the fields and subfields of the dissertation to an eight-heading format (objective,

design, setting, patients, intervention, main outcome measures, results, and conclusions for original articles). The number of the words in this part of the abstract should be standardised, usually 500 words, but not more than 1,500 words. Otherwise, the abstract should be classified as expanded abstract, brief report or similar [17].

Discussion

We present the bibliographic results of the English abstracts in Macedonian medical PhD theses (defended 2007-2012) where no definition of author, institution or language was found. There was no English abstract in 18.6% PhD theses, the abstracts were not structured in 74.2%, 36.1% of them had no key words, and 8.2% had no declaration of the mentor. Similar findings were found in the 122 Macedonian medical MSc theses (defended 2007-2012), which did not have author, institution or language definition. Four percentages of MSc theses were not deposited in the Central Medical Library, 32.8% MSc theses were submitted for defence without an English abstract, 65.6% MSc theses were without structured abstracts and, 45.9% of them were without key words. Significant number of MSc theses (21.3%) was submitted for defence without declaration of the mentor and one medical MSc was retracted.

The first PhD at the Faculty of Medicine in Skopje was defended on May 17, 1958 by Dr. Radovan Perchinkovski entitled "The role of electrophoresis in the cardiovascular diseases". The

Abstract	
Name and surname (e-mail):	Aleksandar Petlichkovski (petlichkovski@yahoo.com)
Title:	Molecular analysis of polymorphisms of Killer immunoglobulin-like receptor genes and alleles in Republic of Macedonia
Affiliation:	<i>Institute of Immunobiology and Human Genetics, Medical Faculty, Ss Cyril and Methodius University of Skopje, Skopje, Republic of Macedonia</i>
Language:	Macedonian
Theses:	PhD
Field, Subfield:	Medicine, Basic Medicine
BACKGROUND:	The killer cell immunoglobulin-like receptors (KIR) are surface molecules, which are important for regulation of the activity of natural killer (NK) cells and some subsets of T cells. They act through interaction with ligands found on target cells producing activating or inhibitory signal. An extensive diversity exists in the KIR gene locus.
AIM:	In this PhD thesis we have set an aim to determine the KIR gene and genotype frequencies in different populations from Republic of Macedonia and to analyze eventual associations (both positive and negative) between certain KIR genes/genotypes and selected diseases.
MATERIAL AND METHODS:	Total of 421 DNA samples from unrelated volunteer healthy donors from the Macedonian human DNA bank (214 Macedonians, 104 Albanians and 103 Roma), 63 patients with confirmed infection with H1N1 pandemic influenza virus, 4 patients infected with West Nile encephalitis virus and 63 patients with haematological malignancy, and 24 volunteer donors of bone marrow were analyzed.
RESULTS:	All the 16 KIR genes were determined in the Macedonian population, and total of 56 different KIR genotypes were genotyped in the Macedonian population, of which 14 new genotypes that were referred to the database www.allelefreqencies.net . The comparison of KIR gene frequencies between Albanians and Macedonians living in Republic of Macedonia reveals statistically significant difference for <i>KIR2DL1</i> ($p=0.001$) and <i>KIR2DS4</i> ($p=0.050$). Total of 45 different KIR genotypes were found in the studied Albanian population, of which five new. The comparison of KIR gene frequencies between Roma and Macedonians from Republic of Macedonia reveals statistically significant difference for <i>KIR3DL1</i> ($p=0.038$) and <i>KIR2DS1</i> ($p=0.011$). Total of 35 different KIR genotypes were found in the Roma population, of which six were new. The comparison of KIR gene frequencies between patients with H1N1 infection and healthy controls from Republic of Macedonia reveals statistically significant difference for <i>KIR2DL1</i> ($F=1$ in the patients group, and $F=0.994$ in the controls group, $p=0.045$). As much as 3 of the 4 patients with severe form of encephalitis caused by the West Nile virus, had the same KIR genotype (Bx71), while the fourth patient had genotype Bx89. The comparison of KIR gene frequencies between 63 haematological patients and healthy Macedonians reveals statistically significant difference for the <i>KIR3DL2</i> framework gene ($F=1$ in the control group, and $F=0.95$ in patients group, $p=0.001$). When we analyzed only patients with acute myeloid leukemia, we have found the <i>KIR2DS1</i> and <i>KIR2DS5</i> genes to be significantly more frequent in patients than in controls. Statistically significant difference was found for the frequencies of Bx3 and Bx439 both present more often in the group of haematological patients than the control group ($p=0.017$ and $p=0.009$, respectively). When comparing the frequencies of the 16 analyzed KIR genes in the pairs patient-donor with 214 healthy Macedonians, a statistically significant difference was found for <i>KIR2DS1</i> which was more frequent in the group of sibling donors ($p=0.004$), and especially frequent in the subgroup of 13 donors from pairs where severe graft versus host reaction was seen ($p=0.002$).
CONCLUSIONS:	These results may be used in anthropological studies, but can also be helpful in clarification of the impact of the KIR molecules in the development and/or progression of the viral infections, and their association with the haematological malignant diseases and the course of the transplantation of bone marrow.
Key words:	<i>KIR gene polymorphism; SSP genotyping; Macedonian population; Albanian population; Roma population; H1N1 pandemic influenza; West Nile encephalitis virus; association study; haematological malignant disease; bone marrow transplantation; graft versus host reaction; Republic of Macedonia.</i>
Defended:	October 17, 2013.
Mentor (e-mail):	Prof. Dr. Mirko Spiroski, Institute of Immunobiology and Human Genetics, Medical Faculty, Ss Cyril and Methodius University of Skopje, Skopje, Republic of Macedonia (mspiroski@yahoo.com)
Link:	http://www.????.pdf

Figure 2: Proposal of standards for abstract preparation of medical PhD and MSc theses written in Macedonian language.

first PhD defended outside the Faculty of Medicine in Skopje was “Adsorptional characteristics of alkaloids and hydration effects of alkaloids (morphine, codeine, thebaine and papaverine) on macromolecular systems in electrical and resorption field at different pH values” by Nada Chumbeljkj (Belgrade: Faculty of Pharmacy, 1965). The first Master of Science (MSc) thesis at the Faculty of Medicine in Skopje was defended on November 18, 1976 by Dr. Katica Zafirovska entitled “Balance of liquids and electrolytes in renal insufficiency”. The first Master of Science thesis defended outside the Faculty of Medicine in Skopje was “Toxicological effect of hydrargirum in the machineries of electrolysis” by Dr. Vladimir Cvetanov (Zagreb: Faculty of Medicine, March 17, 1970) [18].

In 1973 postgraduate studies were introduced at the Faculty of Medicine in Skopje in order to transfer more profound knowledge to the medical students from different branches of medicine. After completing their studies and given a public elaboration of their thesis, the students acquired the title Master of Sciences (MSc) in medicine. If in the first 40 years this title was attained by 55 candidates, 50 years later MSc was attained by 112 doctors. In 2003 postgraduate studies in public health were introduced at the Faculty of Medicine [18].

In 1987 the Ad Hoc Working Group for Critical Appraisal of the Medical Literature, under the leadership of Dr. R. Brian Haynes, McMaster University, Hamilton, Ont., proposed a system for making more informative abstracts of clinical trials [19]. To assist clinicians in quickly finding articles that are both scientifically sound and applicable to their practices, the Ad Hoc Working Group for Critical Appraisal of the Medical Literature proposed, in 1987, a seven heading format for informative abstracts in clinical articles [19, 20]. Accepting Altman’s proposal [21], Haynes et al., in 1990, revised the format and content requirements for structured abstracts to an eight-heading format (objective, design, setting, patients, intervention, main outcome measures, results, and conclusions for original articles) [22]. In 1993, the International Committee of Medical Journal Editors (the so-called “Vancouver group”) recommended use of structured abstracts in the “Uniform Requirements for Journals Submitted to Biomedical Journals” [23]. Following these proposals, medical journals in Europe and the United States have tried to provide more informative abstracts for articles of clinical interest.

Several authors published results of structured abstracts analysis in biomedical papers. One study examined the occurrence of structured abstracts in MEDLINE from March 1989 to December 1991. The study revealed that the number of structured abstracts in MEDLINE and the number of MEDLINE journals publishing structured abstracts

increased substantially between 1989 and 1991. On average, articles with structured abstracts had more access points (Medical Subject Heading [MeSH®] terms and text words) than MEDLINE articles as a whole [24]. Both the number of individual records with structured abstracts and the number of journals publishing structured abstracts has increased steadily since 1991. Structured abstracts appeared in 20.3% of the 580,583 articles indexed for MEDLINE in 2005, and the upward trend was continuing (23.0% in 2008). More than 1,000 journals have continuously published structured abstracts (starting in one year after the proposal and continuing through 2005) in contrast to only 10 journals in 1989–1991 [25]. The top thirty journals according to impact factors noted in the “Medicine, General and Internal” category of the ISI Journal Citation Reports (2000) were sampled. Among 304 original articles that included abstracts, 188 (61.8%) had structured and 116 (38.2%) had unstructured abstracts. One hundred twenty-five (66.5%) of the abstracts used the introduction, methods, results, and discussion (IMRAD) format, and 63 (33.5%) used the 8-heading format proposed by Haynes et al. Twenty-one journals requested structured abstracts in their instructions to authors; 8 journals requested the 8-heading format; and 1 journal requested it only for intervention studies [26]. Another study evaluated the use of machine learning techniques in the classification of sentence type. A total of 7253 structured abstracts and 204 unstructured abstracts of Randomized Controlled Trials from MEDLINE were parsed into sentences and each sentence was labelled as one of four types (Introduction, Method, Result, or Conclusion). Support Vector Machine (SVM) and Linear Classifier models were generated and evaluated on cross-validated data. They concluded that classification of sentence type seems feasible within the domain of randomized control trials. Identification of sentence types may be helpful for providing context to end-users or other text summarization techniques [27].

The paper “How to Write an Abstract That Will Be Accepted for Presentation at a National Meeting” discusses the steps and offers suggestions for writing each of the abstract’s components (title, author list, introduction, methods, results, and conclusions); considers the advantages and disadvantages of incorporating a table or figure into the abstract; offers several general writing tips; and provides annotated examples of well-prepared abstracts: one from an original study, one from a method/device evaluation, and one from a case report [28]. The evaluation of abstracts for scientific meetings has been shown to suffer from poor inter observer reliability. A measure was developed to assess the formal quality of abstract submissions in a standardized way. A quality index was developed for the evaluation of scientific meeting abstracts which was shown to be reliable, valid and useful [29]. It would be very useful to introduce quality

index for the evaluation of PhD theses abstracts similar to the previous one.

The best solution for international availability and visibility of the medical PhD theses prepared and defended at the Faculty of Medicine in Skopje is to prepare them in English with Macedonian abstract, but the tradition and the Law on High Education restrict their preparation in Macedonian language. Electronic version of the medical PhD theses deposited either in the Individual repositories of PhD or in Institutional repository at the Medical Faculty or UKIM will force the standardisation not only of the elements of the English abstracts, but also of the other parts of the dissertations.

In conclusion, it can be emphasised that the English abstracts in Macedonian medical PhD and MSc theses, written in Macedonian, do not fulfil bibliographic and international criteria. It is necessary to propose and to include all bibliographic data in the English abstracts of the Macedonian medical theses necessary for international visibility.

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