

# Features and prevalence of plagiarism in biomedical science

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**Abstract.** Integrity is fundamental value for scientists, especially for medical science which results have immediate impact on health. Plagiarism is form of dishonesty, “illegitimate appropriation of intellectual property, ideas, methods, results, text, speech or thought for the purpose of displaying as its own.” Plagiarism can be prevented by using software (computer installed, on Internet) for examination of all scientific papers before publication or reviewing process and education. This article explains past and future research projects of our Department.

**Keywords.** Medical Informatics, Meta-Analysis, Plagiarism, Research Integrity, Questionnaire, Scientific Misconduct, Software

## Introduction

Our research team has been investigating plagiarism in biomedical science for the last fifteen years which was well recognized in Croatian and international scientific community [1-6]. Aims of previous projects were to investigate features and prevalence of plagiarism in manuscripts submitted to a medical journal and in student's essays, to construct a standardized questionnaire in order to measure attitude towards plagiarism, and to perform a systematic review of data assessing the prevalence of plagiarism and the perception of its causes among the scientific community.

## 1. Methods

The prevalence of plagiarism was studied on manuscripts submitted for publication in the *Croatian Medical Journal* (CMJ, <http://www.cmj.hr/>). Prevalence was measured by using software: *eTBLAST* (<http://etest.vbi.vt.edu/etblast3/>), *CrossCheck* (<http://www.crossref.org/>) and *WCOPYFIND* (<http://plagiarism.bloomfieldmedia.com/z-wordpress/software/wcopyfind/>) and manual verification of similar texts [7]. Prevalence of plagiarism among students was examined with *WCOPYFIND* software [3].

Attitude towards plagiarism was anonymously examined with our standardized questionnaire [8] on corresponding authors of manuscripts received in the CMJ whilst prevalence of plagiarism among students was investigated using a survey [2].

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For the systematic review, literature is being examined for studies measuring the prevalence of plagiarism using papers describing computational methods and questionnaires.

## 2. Results

Every ninth manuscript submitted in the CMJ was plagiarized (11 %), out of which 3% self-plagiarized [7]. More than half students plagiarized (more than 10 % text) of their essays. Medical students had permissive attitude towards plagiarism. Standardized questionnaire scale consisting of 29 items *Attitude Towards Plagiarism* was constructed, validated, and published [8].

## 3. Discussion

It was suggested and highly supported by our results that scientific journals should check manuscripts with plagiarism detection software and appoint research integrity editors (CMJ from 2001) [7-10]. Following data from previous research [2,6,7,10] we have set three objectives for future projects: (a) to measure attitude towards plagiarism among scientists (b) to investigate the prevalence of plagiarism in CMJ, *Biochemia Medica* (<http://biochemia-medica.com/>) [11], and *Acta Stomatologica Croatica* (<http://www.ascro.hr/>), and (c) to determine the characteristics of scientific plagiarism with a systematic review and a meta-analysis of published scientific studies that measure the prevalence of plagiarism, as well as to compare features of plagiarism in biomedicine with other scientific disciplines.

Our research focused on plagiarism, and our team from the Department of Medical Informatics (<http://mi.medri.hr/indexeng.htm>) is open to scientific cooperation regarding this topic. (Note: supported by project 13.06.1.2.29 of the University of Rijeka.)

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