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RESEARCH ON THE ADVANCEMENT OF ACADEMIC CLASS STRUCTURE FOR BIOMEDICAL LABORATORY SCIENCE

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ABSTRACT

Biomedical laboratory science is the subject of this investigation, which includes a discussion of the field's identity and classification system. The National Research Foundation of Korea's academic research area classification scheme does not include biological laboratory science. Since the first department of biomedical laboratory science was formed in 1963, there have been approximately 52 additional departments. While the biomedical laboratory sciences have scientific legitimacy, they have not received professional recognition in most establishments. According to academic research, physical therapy, occupational therapy, and dental hygiene are all categorized according to academic research areas. The authorities have all given their seals of approval to their official names. The biomedical laboratory classification system is a new educational field classification system that is the subject of this study. These are the main findings of this investigation. Clinical pathology is a class, and biomedical laboratory science is a division for the discipline of a medical laboratory technologist.

1. Introduction

Classifications from the National Research Foundation, the national scientific and technological standard, and the Korean Industrial Technology Classification will all be used to create new health and medical academic classification system [1, 2]. The former Korea Research Foundation's academic classification and the Korea Science Foundation's research activity classification will be combined. This academic research classification is a summary of academic research fields so that it can be effective in supporting academic research projects and is used to manage statistics of academic research support, investigate the status of research activities at universities, acceptance of research tasks and examinations and evaluations [3, 4]. The system is divided into eight major classifications, including seven major classifications of literature, social sciences, natural sciences, engineering, medicine, agricultural oceanography, and art sports, and a complex that mixes two or more of the above classifications; the system is divided into eight major classifications - middle classifications. This class has a hierarchical structure of subclasses. Dentistry is part of the larger classification of medicine, which includes nursing, Traditional Chinese medicine, pharmacy, veterinary medicine, and the middle categorization of fundamental medicine (or biological science) and clinical medicine [5].

After completing an article training course at Dongsan Christian Hospital (later known as Keimyung University Dongsan Medical Center) in 1958, Hyoshi went on to complete a two-year degree program at Severance Hospital (later known as Severance Hospital Medical Technology Institute, a part of Yonsei University Medical School) in 1963. College of Medical Technology, Korea University College of Health, Korea University College of Medical Technology Yonsei University's One State Campus School of Health and Clinical Pathology is the first four-year institution to launch in this field (later Yonsei University School of Health Sciences Clinical Pathology). At Keimyung University's College of Natural Sciences, the first graduate school was a master's degree in public health and pathology technology, and the Ph.D. program was established in 1991[4]. According to the Korea Association of Colleges and Universities, 52 colleges and universities in Korea specialize in clinical pathology in 2017, 26 three-year and 26 four-year colleges.
Clinical pharmacology is currently not classified as academic research by the Korean Research Foundation, even though it has developed a unique research area and education system through high-quality change and growth, and it is difficult to recognize Lim's hospitalization as a separate discipline in academic research [6-8].

Clinical pharmacology, clinical chemistry, diagnostic hemodialysis, clinical microbiology, diagnostic immunodedynamics, transfusion medicine, cytogenetics, diagnostic cytology, test informatics, examination medicine, field examination are all included in the classification of academic research fields for clinical pharmacology. Pathology, clinical pathology, medical genetics, and clinical biophysics all fall under the broad umbrella of clinical pathology. Academic identity and criticality are stressed in knowledge-based and lifelong learning cultures, and this emphasis and perspective are subject to change in response to changing conditions [9]. Therefore, clinical pharmacological exams can

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only be developed if the academic identity is established [10-12]. Theoretical formulations on clinical pharmacology are desperately needed in today's world. This research aims to develop an educational classification system so that the academic theory of Lim's pharmacological examination is suitable for technical and academic classification by comparing the standard classification system, department classification, occupational classification, book classification, journal classification, etc.

2. Literature Review

The National Research Foundation's academic research field classification was established in 1998, and the national science and technology standard classification was established in 2002. Physiotherapy and occupational therapy were registered in the academic research category in 2002 and dental hygiene in 2015, enhancing their position as experts and scientific evidence. In the case of the Department of Clinical Pathology and the Department of Radiology of the College of Health Sciences, the name of the medical institution's medical department (Clinical Pathology [Current Department of Laboratory Medicine]; Radiology [Current Department of Radiology]) or the name of the medical school classroom (Department of Clinical Pathology [Current Department of Laboratory Medicine]; Radiology Department Because it is similar to [Current Radiology Department]), it may be misunderstood and may cause policy errors or misidentifications in various standard classification system information. In the case of clinical pathologists, compared to other occupations of medical technicians, it is the only "inconsistency between the name of the license and the academic language in Korean and English", and thus "the legal and institutional environment improvement" In conveying the meaning of the poem "Good", unnecessary explanations to members, groups, or institutions are required, or there is a disadvantage in conflicts of interest [32, 33]. There are currently four uncomfortable truths about the name of a clinical pathologist or medical technologist.

First, in the case of the license name, In 1962, the Korean Association of Clinical Laboratory Technologists (now the Korean Association of Clinical Pathologists) recognized the qualifications of the Japanese Society for Clinical Pathology (currently the Japanese Society of Laboratory Medicine) and the Japanese Institute of Clinical Pathology (now the Japan Institute of Clinical Laboratory Science). (Used in 1954-2002, changed to clinical examination after 2003) and marked as a clinical pathologist [34]. In English, a medical technologist is quoted from the American Society of Clinical Laboratory Technicians (from the American Society of Clinical Laboratory Technicians in 1933 to the American Society of Medical Technologists in 1936).

Second, in the case of study, the Korean language used clinical laboratory technology in the rules of the Korean Association for Clinical Laboratory Science in 1962, clinical pathology technology in the articles of association of the Korean Association of Clinical Pathologists in 1965, and clinical pathology testing through the amendment of the articles of incorporation in 1996. have. The English notation of academic studies is not stipulated in the articles of association, and the American Society of Clinical Laboratory Technicians (1933 American Society of Clinical Laboratory Technicians, 1936 American Society of Medical Technologists, 1993 American Society for Clinical Laboratory Science) and international clinical pathologists Medical technology, clinical laboratory technology, and medical laboratory technology were indicated by citing the organization (International Association of Medical Laboratory Technology in 1954, and changed to International Federation of Biomedical Laboratory Science in 2000). As the university designation was permitted in the university's name, three-year universities use clinical laboratory science and medical laboratory science, and four-year universities use biomedical laboratory science.

Third, medical technologists and medical technology are no longer closely related. Korean clinical pathologists are Japanese clinical laboratory technicians and Taiwanese medical laboratory technicians. The clinical pathology departments of junior colleges include Japanese clinical laboratory tests, Taiwan medical laboratory departments, regular university clinical pathology departments, Japanese clinical laboratory science departments and Taiwan medical laboratory biotechnology departments. Departments (clinical laboratory science and medical biotechnology, medical laboratory science and biotechnology) are indicated [35]. In Japan Medical Technology College, Faculty of Medical Technology, medical technology, and medical technology are described as medical technology. In addition, the US encyclopedia Wikipedia introduces medical technology (health technology) as "medical technology" that broadly includes medical devices, information technology, biotechnology, and health management services [36, 37]. Suppose a clinical pathologist's profession or academic field is written as a medical technologist or medical technology in public relations or public relations. In that case, it will not be translated directly, and communication will be difficult.

Fourth, the names of clinical pathologists and laboratory technicians are vague in their identities when differentiated from clinical pathologists (currently laboratory medicine doctors) and clinical pathologists (current laboratory medicine). In August 2017, in the half-century of clinical pathologists, a significant event occurred in "Registered in Journals". "Journal of Clinical Laboratory Science," the official journal of the Korean Association of Clinical Pathologists, was launched in 1967 and was selected as a re-candidate academic journal such as KCI in 2014. and received a lot of attention from members and professors.

The coming year 2018 is meaningful as it marks the 50th anniversary of the first training of clinical pathologists in Korea in 1958. There was no clear presentation on the tasks or applications that the clinical pathologist should be responsible for after the education. The prospects for the systematic education process and use as a professional, the future status, etc., were unclear. In January 2016, the Korean Association of Clinical Pathologists opened a research project with the

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goal of "Registration of Academic Research Areas" to establish the study of clinical pathologists, which had been recognized only as a means of vocational education in the past, should stand.

Currently, clinical pathology is not registered in the National Research Foundation's academic research category, and thus social approval has not been secured. Therefore, professors, researchers, and clinical pathologists related to clinical pathology must seriously recognize clinical pathology's institutional status. To this end, establishing a firm academic and theoretical system of clinical pathology must be preceded, and securing the identity of clinical pathology is a priority. The Korean Association of Clinical Pathologists as a professional organization, the Korean Society of Clinical Laboratory Science as an academic organization, and the Korean Association of Professors of Clinical Pathology as an educational and research organization should exert synergy between industry-academia-research as an academic community to be listed, and we will have to make efforts by mutual recognition and persuasion.

The limitation of this study is that there may be other concepts other than the derived academic classification system of clinical pathology because it did not attempt methods such as general consent procedures or investigations of experts and group members related to the educational classification system. In addition, no research related to research projects submitted to the National Research Foundation of Korea or public institutions was conducted. The revision procedure in academic research is carried out by collecting opinions from the relevant society or organization, reviewing the suitability of the National Research Foundation, and reflecting the KRI (Korean Researcher Information) system [38]. Finally, to establish an identity based on the values and philosophy of clinical pathology, it is necessary to open all possibilities, check the basics, and make an effort to rearrange the direction. Alternative names include direct translation abbreviations. Considering the number of characters and the expansion of the area, we propose "biomedical laboratory technologist, abbreviated technologist, and biomedical laboratory science" [39]. Industry-academia-research organizations improve subject areas, present boundaries between professional and academic groups, establish the Society for Genetic and Molecular Biological Testing, participate in the Korean Scientific Journals Editors' Council or Korean Medical Journal Editors' Council, academic revisions, and the Journal of the Korean Society of Clinical Laboratory Science. It is thought that strategic policies should be established regarding the increase of the citation index, the registration of the international citation index database, and the discovery of researchers.

3. Materials and Methods

"Research Tasks for Clinical Pharmacology Studies" was not involved in this study. We gathered a standard classification system, collated the idea of clinical pharmacology, and determined the position of clinical pharmacological exams in the standard classification system through the website of a public institution.

1. *Academic introduction of clinical pathologists*
   Forensic pathologists, hematologists, parasitologists, microbiologists, biochemists, cytopathologists, and radioisotope technicians are included in the "Enforcement Decree of the Act on Medical Technicians, etc." because they "perform tasks related to chemical or physiological examinations," according to the decree. Specimen testing and physiological testing employing elements" is what he does for a living. "Clinical Pathologist Occupational Information," according to the Korea Vocational Competency Development Institute, is "to assist prevent, diagnose and cure illnesses by using patient blood and urine and other bodily fluids and tissue for different medical tests." The "Clinical Pathologist Department Information" is "research that evaluates a patient's blood, bodily fluid, urine, tissue, etc., utilizing chemical, biological, physical, and genetic approaches."
2. *Research classification*
   The academic classification system applied for by the Korean Society for Clinical HospitalIzation is listed in the Korea Research Foundation's "Academic Research Classification" and "National Science and Technology Table Quasi-Classification" [13-15].
3. *Department Classification*
   The Department of Clinical Pathology, which is majored in clinical pathology, is listed in the "Classification" of the Korea Institute of Education and Development [16-18].
4. *Class of occupation*
   The clinical pathophysim is listed in the Statistics Office's "Korea Employment Classification" and the "National Occupational Competency Standard Classification" of the Korea Human Resources Agency.
   Book classification Books on clinical pathology and clinical pathology are divided into "Korean Cross Classifications" in the National Central Library [19, 20].
5. *Medical Book Classification*
   The medical book does not use the Korean Cross classification. Still, it is divided into "US National Library of Medicine Classifications" [13] if you look at the 2016 revision of the US National Library of Medicine.
6. *Science Journal Domestic Classification*
   Domestic journals are divided into Korean journals and Korean general journals. 1) KCI (Korea Citation Index) listed (candidate) at the National Research Foundation for humanities, society, performance, complex, natural,

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engineering, agricultural fisheries marine, and pharmaceutical fields. 2) nature, engineering, agricultural fisheries, marine, and medicinal.

7. *International Classification of Science Journals*
   International journals are divided into international journals and international general journals. In the case of scientific journals, a typical international journal includes the "SCI-E (sci-included) journal" provided by Clarivate Analytics and the "Scopes journal" provided by Elsevier.
8. *Introducing the Curriculum of The Department of Medical Examination biotechnology at the National University of Daegu*
   National University is Korea's national S University and is an educational institution with Nobel laureates and leading political leaders [21-23]. During the medical examination humdrum technology department, it is impressive that the chemicals, i.e., organic chemistry, analytical chemistry, biochemistry, and clinical biochemistry, are designated as major necessities, and clinical chemistry is labeled as clinical biochemistry and blood bank.

4. Result

Objective implications and justifications for the academic establishment have been summarized through the systematic classification and evaluation of the Korean Association of Clinical Pathologists and the Korean Society of Clinical Laboratory Science.

1. *Introduction to the study of clinical pathology*
   A doctor's medical specialty is "clinical pathology (also known as laboratory medicine, laboratory medicine, diagnostic laboratory medicine)," according to the American Medical Association [24]. Health checkups or screening tests for disease detection or prevention and prognosis and treatment policy decisions based on severity and course of a patient's ailment [25-27]. As an applied study, this one looks at several areas required for evaluating follow-up and observing outcomes. The English term for clinical pathology is clinical pathology.
2. *Definition and English transcription of clinical pathology*
   The Clinical Pathologist majored in "Clinical Pathology (or clinical laboratory science, medical laboratory science, biomedical science) laboratory science." Analysis of illnesses, biochemical, explosive, and molecular biological procedures, the maintenance ability of analyzers in examining patients separated from them, and novel diagnostic reagents and technologies are studied in this applied research. When referring to clinical pharmacology, medical pharmacology, and biological pharmacology, Anglo-Saxons use the terms clinical pharmacology. However, "clinical pathology science, clinical laboratory pathology" is the closest phrase to a direct relationship. A four-year university department's official abbreviation is IFLS (International Federal Laboratory Science) (IFBLS). From "biometric laboratory science," it was developed.
3. *Location in academic research in clinical pharmacology*
   To meet one-half of the criteria of classification system building, the academic research area in clinical pathology is positioned under the large-classification pharmaceutical and heavy-class clinical pathology. Histological, genetic, molecular biological and physiological, biochemical and pathological disciplines are used in the natural and medical sciences, and research on "pathology, clinical, diagnostics" (e.g., cytopathology, clinical cell studies and diagnostic cell studies) and "blood flow chemistry" are examples of clinical pathology subdivisions
4. *Listed cases of medical technicians*
   Physiotherapy and occupational therapy were listed in the academic research classification in 2002 and 2015, and in the case of physiotherapy and occupational therapy, it is the difference that the primary classification and the dentistry are located in the small classification [28]. On the other hand, clinical pharmacology, radiotechnology, dentistry Engineering, medical records, and opticians are not listed.
5. *Status of Medical Sciences in Korea*
   In the Department of Clinical Medicine at the College of Health Sciences, two academic groups, principally professors. The first, the Korean Society for Clinical Examination and Technology, was founded in 1978. The Korean Publication of Clinical Laboratory Science, a KCI-listed journal, publishes the work of over 500 clinical pathologists, diagnostic medical equipment industry workers, and medical life scientists. More than 600 members of the Korean Medical Association, founded in 1995 and is located in the Department of Clinical Cardiology, Natural Sciences, Biochemistry, Microbiology, Medical Life Sciences, and Medical Sciences and publishes the KCI-listed journal "Biometric Science Letters" [29].
6. *Current status of international clinical pathologists' academic journals*
   The official journals were published by clinical pathologists in 3 Chinese-speaking countries (Korea, Japan, Taiwan) and 5 English-speaking countries (English, USA, Canada, Australia, New Zealand) [30, 31].

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7. *SCI (Science Citation Index; SCI and SCI-Expanded) domestic journals*
   As of March 2017, there are 8,892 journals registered at the SCI level, of which 109 are published in Korea [24]. In particular, journals in medicine, dentistry, veterinary medicine, pharmacy, nursing, nutrition, and life science did not exist in 1996, but 35 were registered in 2016. In the case of "Experimental and Molecular Medicine" published by the Society of Biochemical and Molecular Biology, the SCI impact factor was the highest at 5.164.
8. *Current status of SCI-level medical laboratory technology, pathology journals*
   There were 30 categories of medical laboratory technology and 79 types of pathology listed in Clarivate Analytics' "SCI-E (including SCI) subject category as of March 2017. As early as 1960, the term "medical laboratory technology" was included in the SCI database's keyword list. Published by the Institute of Biomedical Science, a clinical pathology organization in the United Kingdom, the "British Journal of Biomedical Science" is designated as SCI-E by the International Classification of Diseases (ICD). It's worth noting that this is a scholarly publication. The Korean Society of Laboratory Medicine (previously the Korean Society of Clinical Pathology) publishes the only SCI-E-registered Journal in Korea, "Annals of Laboratory Medicine."
9. Current status of research fields in the Journal of Clinical Laboratory Science for 50 years since its foundation. The Journal's articles were analyzed twice for this study. Since 1967's first volume until 2016's 48th, 1,351 papers have been published (unpublished between 1968 and 1969). The Korean Society of Clinical Pathology, the Korean Society of Clinical Pathology Journal, and the Korean Society of Clinical Laboratory Science Journal have all undergone journal name changes. Microbiology 292 articles, parasitology 29 articles, pathology 173 articles, genetics 31 articles, and 83 other papers can be found through the Korean Society of Clinical Laboratory Science website >Journals >Thesis Search >Archives >Area.

5. Conclusion

To approach laboratory science in an organized manner, this research examined the academic categorization system for clinical pathology and the field's unique character (or clinical laboratory science, medical laboratory science, biomedical laboratory science). The National Research Foundation of Korea does not include clinical pathology in its definition of "academic research.". When it was initially formed in 1963, there are now 52 clinical pathology departments around the country. Clinical pathology, despite its academic roots, lacks an official professional designation. There is a standardized classification of academic research disciplines, and physical, occupational, and dental therapy are included. A new method of academic categorization for clinical pathology is proposed in this work. These are the key findings from the research. There are two primary types of clinical pathology: middle-class clinical pathology and sub-classical clinical pathology. There are subcategories for "blood transfusion, immunochemistry, parasitology, genetic, molecular biology, histologic cytology, and cardiovascular neurophysiology" in the academic terminology.

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