

Intellectual Property and Copyright Protection in Grade-A Tertiary Hospitals: Current Status and Challenges

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Abstract: In recent years, amidst an environment where medical promotion systems have heightened requirements for research quality, large domestic hospitals, particularly Grade-A Tertiary hospitals, have faced not only research pressures but also severe challenges regarding intellectual property and copyright protection. Effective intellectual property protection is crucial for the scientific research innovation and achievement transformation of hospitals and medical practitioners, while also influencing medical quality and industry development levels. Despite the formulation of numerous intellectual property-related laws and regulations by the state by 2024, there remains significant confusion in clinical practice regarding how to effectively apply intellectual property protection policies. Furthermore, with the diversification of medical activities, balancing patient privacy rights with intellectual property issues has become an urgent problem to solve. To delve into the importance of intellectual property protection, this article combines examples from relevant hospitals to discuss the vital role of intellectual property in medical innovation, research achievement transformation, and clinical medicine development, proposing corresponding improvement strategies. The article aims to provide references for the sustainable development of Grade-A Tertiary hospitals and promote the advancement of the medical industry.

Keywords: Grade-A Tertiary hospitals; Intellectual property; Copyright protection; Clinical medicine; Medical innovation

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1. Introduction

Intellectual property protection can foster innovation, safeguard research results, and facilitate technology transfer. In Grade-A Tertiary hospitals, where teaching, research, and clinical practice coexist, intellectual property protection holds significant importance. In the context of rapid medical industry development, the emphasis on intellectual property affects hospitals' economic benefits and medical service quality ^[1].

Implementing intellectual property management in the medical field through relevant strategies helps protect various important technological achievements and contributes to creating more beneficial medical innovations and advancements for work ^[2].

Grade-A Tertiary hospitals represent the highest level of hospitals in China, boasting advanced medical technologies and extensive clinical experience, and occupying a pivotal position in the national medical system. These hospitals not only provide high-quality medical services to the general public but also undertake the tasks of cultivating a large number of medical and health personnel and conducting scientific research. However, with fierce competition in the medical market, Grade-A Tertiary hospitals face numerous issues regarding intellectual property protection, including weak awareness, inadequate laws and regulations, and a lack of professional teams ^[3].

The main challenges in intellectual property protection for Grade-A Tertiary hospitals are as follows: Firstly, hospitals have limited awareness of intellectual property and lack experience and methods in intellectual property application and management, resulting in ineffective protection of their research and development achievements ^[4]. Secondly, the development of information technology has led to a contradiction between scientific research and legal protection in the era of big data—while data utilization is prevalent, how to protect individual privacy poses a challenge. Hospitals face the risk of infringement liability during the research process ^[5]. Thirdly, some hospitals have inadequate internal controls, with insufficient recognition of the novel technologies, drugs, and other achievements independently developed by their staff, especially researchers, failing to promptly incorporate them into the intellectual property protection system of relevant departments ^[6]. Therefore, given these challenges, it is imperative to strengthen intellectual property protection within Grade-A Tertiary hospitals.

2. Intellectual property and copyright protection

2.1. Basic concepts and classifications of intellectual property

2.1.1. Definition of intellectual property

Intellectual property is a proprietary right granted by law to individuals for their intellectually creative achievements, aiming to protect their legitimate interests and encourage innovation in intellectual activities ^[7]. The core of intellectual property is to legally protect people's intellectual achievements from being arbitrarily utilized or replicated by others. It encompasses literary, artistic, and scientific works, as well as confidential information, written language, products, designs, patents, and other forms related to industry, commerce, and services. With intellectual property, creators can receive compensation for their inventions and creations, giving rise to the issue of intellectual property protection ^[8]. In today's society, intellectual property has become a significant global asset, and protecting intellectual property is one of the driving forces for promoting social development, cultural prosperity, and technological advancement amidst globalization.

2.1.2. Classification of intellectual property

There are three main types of intellectual property related to clinical medicine: patent rights, copyrights, and trademark rights ^[9].

- (1) Patents: Patents refer to the exclusive rights granted by the state to inventors or rights holders for their inventions. Patents include invention patents, utility model patents, and design patents, where: 1) Invention patents protect new technical solutions, generally with a high technical level and a protection

- period of 20 years; 2) Utility model patents protect new technical solutions applicable to practical use proposed for the shape, structure, or combination of a product, with a protection period of 10 years; 3) Design patents protect new designs formed by designing the shape, pattern, color, or combination thereof of a product suitable for industrial application, with a protection period of 10 years.
- (2) Copyrights: Copyrights refer to the ownership that authors have over the literary, artistic, and scientific works they create, including reproduction rights, distribution rights, exhibition rights, performance rights, etc. Copyrights do not require registration; as long as a work exists, copyright arises. They are unconditional and protected by specific national laws, with a protection period of the author's lifetime plus 50-70 years after their death (varying according to different countries' laws)^[9].
 - (3) Trademarks: A trademark is a symbol used to distinguish goods and services, preventing others from using identical or similar marks to cause confusion among the relevant public. Only registered trademarks are valid for 10 years, but can be renewed indefinitely. The validity of a trademark is determined by its use^[9].

In a legal sense, different types of intellectual property apply to different fields and have distinct protection methods, forming the intellectual property system we are familiar with today, providing legal protection for innovation and entrepreneurship. For Grade-A Tertiary hospitals, patents and copyrights are the most common, with trademarks being used less frequently.

2.2. Maintenance of innovation achievements and copyrights in Grade-A Tertiary hospitals

2.2.1. Characteristics of medical innovation

Medical innovation in Grade-A Tertiary hospitals has the following characteristics: Firstly, medical innovation often arises from the cross-fusion of multidisciplinary knowledge, including medicine, engineering, computer science, and other professional expertise^[10]. Interdisciplinary collaboration enables hospitals to create more advanced medical technologies or treatment methods. For example, the application of artificial intelligence in medical diagnosis and personalized treatment has significantly transformed traditional medical models and is expected to form a new trend of big data + intelligence + medicine in the future^[11]. Secondly, medical innovation achievements are based on clinical data and emphasize practical processes^[12], also valuing patient opinions. Thirdly, the success of medical innovation products relies on clinical trials and extensive data analysis for evaluation, continuously adjusting products and services during the innovation process based on trial and analysis results to ultimately achieve better treatment outcomes or enhance patients' treatment experiences. Medical innovation products have high social value, positively impacting public health and improving overall medical service quality^[13]. Therefore, effectively protecting the intellectual property formed through medical innovation enables hospitals to derive benefits and incentives in this regard in the future.

2.2.2. Applicability analysis of relevant copyright laws and regulations

For the innovation achievements of Grade-A Tertiary hospitals, strengthening copyright protection is crucial. Hospital research achievements, academic papers, medical technologies, and software are works or objects protected by copyright law; they not only protect authors' creative rights but also serve as regulations for hospital intellectual property management^[14]. However, due to the unique characteristics of medical innovation, existing copyright laws and regulations cannot fully protect the intellectual property and research

innovation achievements with copyright attributes of Grade-A Tertiary hospitals. For instance, with the rapid development of medical technology, numerous new technological inventions and creations have emerged in artificial intelligence, big data analysis, and other areas, with corresponding innovation achievements having strong copyright attributes. However, current laws lack relevant provisions, often failing to provide reasonable protection for new technological research and development and computer software^[14]. Moreover, in cases of multi-unit collaboration, issues such as confirming copyright ownership arise. Therefore, Grade-A Tertiary hospitals should strengthen their learning and understanding of copyright-related laws and regulations, formulate and improve relevant rules and regulations, and fully safeguard the legitimate rights and interests of innovation achievements, thereby facilitating the hospital's development and growth^[15].

2.3. Current status of intellectual property protection in Grade-A Tertiary hospitals

2.3.1. Implementation of copyright protection work

Most Grade-A Tertiary hospitals adopt various measures to protect the copyrights of their achieved outcomes or medical literature, such as registering copyrights, using DRM (Digital Rights Management) technology, and signing confidentiality agreements^[16]. Research results indicate that the vast majority of hospitals have recognized the importance of intellectual property and are establishing relevant management systems to combat plagiarism, piracy, and other behaviors that infringe upon researchers' legitimate rights and interests. Simultaneously, they conduct internal training on copyright-related issues, encouraging researchers to comply more with copyright laws and regulations during the writing process. Additionally, hospitals collaborate with in-house legal advisors to improve relevant copyright protection policies, ensuring there are legal bases for addressing plagiarism, piracy, and other behaviors^[17].

However, this protection system still faces numerous challenges in practice. Firstly, some hospitals have not yet established effective systems for copyright registration and management, failing to register important clinical outcomes in a timely manner, resulting in a lack of legal protection. Secondly, with the development of the internet, the phenomenon of "copying and transferring" has become increasingly severe, with rapid dissemination leading to rampant plagiarism, infringement, and even piracy^[18].

2.3.2. Effectiveness evaluation of protection measures

From existing research on the effectiveness of copyright protection measures in Grade-A Tertiary hospitals, although these hospitals have taken some measures to protect their copyrights, they have not fully achieved the desired effects. On the one hand, China's copyright registration rate is low, and some hospital researchers have weak awareness of copyrights, leaving many achievements unprotected. On the other hand, although some hospitals have started adopting digital copyright management-related technologies, the implementation costs are high, and operators of these technologies require certain professional training^[19].

Furthermore, hospitals often find themselves in distress due to infringement disputes, involving cumbersome legal procedures and high time costs in handling these events, leading some hospitals to abandon their rights protection efforts. Moreover, hospitals' investments in copyright protection do not yield reasonable returns, resulting in a lack of motivation among hospital management to increase protection efforts. Therefore, further construction of protection mechanisms is necessary, prompting hospitals to take copyright issues seriously. Simultaneously, achieving better protection of hospitals' research achievements and intellectual property from infringement requires leveraging certain legal and technological means^[20].

2.4. Case analysis

2.4.1. Analysis of successful cases

For Grade-A Tertiary hospitals, a good example of copyright protection involves managing and legally protecting research achievements. One hospital developed a new type of medical device, applying for patents and registering copyrights during the process ^[21]. Through this approach, they protected their innovation achievements and laid a solid foundation for the subsequent commercialization of the product. This hospital transformed research achievements into a product, yielding significant economic benefits while also bringing certain social benefits and enhancing the hospital's academic influence and research capabilities. Secondly, this hospital attached great importance to leveraging its legal department for intellectual property management, ensuring that all staff members complied with relevant laws and regulations during work to prevent infringement. Therefore, hospitals can learn from successful cases based on their actual situations, implementing effective copyright protection and intellectual property management to promote hospital development ^[22].

2.4.2. Analysis of failed cases and lessons learned

In contrast, successful cases provide relevant experience for Grade-A Tertiary hospitals, while failed cases serve as warnings. For instance, a medical institution failed to value the research achievements of a new drug, neglecting to apply for relevant patents in a timely manner during the achievement transformation process. When the institution's research achievements emerged, other companies directly replicated and commercialized them, causing significant economic losses and undermining the institution's clinical academic status ^[23]. Simultaneously, unclear copyright ownership issues existed in research projects, leading to contradictions among some individuals and hindering the progress of the entire research work. Through analyzing such failed cases, it can be concluded that strict adherence to intellectual property management and protection is necessary from both legal and research perspectives, as it constitutes not only rights but also fundamental hospital work. It is hoped that major hospitals will increase their attention, actively establish relevant rules and regulations, and take preventive measures to avoid such outcomes ^[24].

2.5. Future development directions and improvement suggestions

2.5.1. Vigorously cultivating intellectual property awareness

As Grade-A Tertiary hospitals attach great importance to the protection, management, and utilization of intellectual property, the awareness of intellectual property protection among medical staff remains insufficient in reality. Therefore, to strengthen medical staff's awareness of intellectual property protection, relevant training or promotional activities should be conducted to familiarize medical staff with basic knowledge of intellectual property, including what intellectual property is, why it should be protected, and how to effectively protect and manage it ^[25]. Research indicates that strengthening effective management of hospital intellectual property helps protect innovations, inventions, and research achievements, enhancing the hospital's comprehensive competitiveness and research capabilities. Effective hospital intellectual property management also standardizes various management tasks related to intellectual property within the hospital, such as regulating departments' application rights for intellectual property, maintenance, and usage systems, guiding the hospital's intellectual property work towards scientific and standardized development, thereby cultivating medical staff's awareness of intellectual property and promoting the hospital's technological development and innovation to new heights.

2.5.2. Improving relevant laws and regulations to meet the needs of the healthcare industry

Due to the rapid development of the medical industry, existing laws and regulations can no longer fully meet the current requirements for intellectual property protection. Relevant functional departments should conduct a comprehensive and detailed review, evaluation, and revision of existing laws and regulations to meet the special needs of the medical industry. It is recommended to introduce specialized clauses in relevant regulations involving medical technology, intellectual property, and other fields, such as clearly defining the rights and obligations of medical institutions to avoid unnecessary legal disputes. Establish a corresponding intellectual property management system based on the characteristics of the medical industry, guiding hospitals and research institutions to actively carry out technological innovation, achievement transformation, and application in the medical field. Increase efforts in intellectual property protection, assisting medical institutions in addressing intellectual property-related challenges in the medical industry ^[26]. A sound legal system can better safeguard the healthy development of the medical industry.

3. Conclusion

Based on the current state of intellectual property (IP) and copyright protection in tertiary-level grade-A hospitals amidst the evolving landscape of modern medicine, this paper, through literature review and practical work experience, concludes that while there has been some improvement in IP protection in China's tertiary-level grade-A hospitals, significant gaps remain. Intellectual property serves as a crucial indicator of a hospital's innovative capacity and plays a pivotal role in promoting the development of general practice within the healthcare sector. Effective protection of new drug development, the creation of novel medical devices, and the practical application of clinical research findings are essential for hospitals to fully leverage their potential, encouraging medical staff to explore boldly and innovate fearlessly, ultimately better serving patients.

Despite varying conclusions from different studies, certain contradictions persist. Some argue that stringent IP protection can motivate healthcare professionals to engage in more scientific research and drive hospitals to enhance their innovation. Conversely, others contend that overly strict IP protection may hinder information sharing and collaborative exchange among personnel, thereby slowing the pace of medical advancement. The relationship between the two is not always as expected to move in the same direction. Therefore, finding an appropriate balance in incentivizing innovation is crucial, ensuring that the rights and obligations of innovators are properly arranged on the basis of mutual benefit and win-win outcomes for stakeholders, while preventing the adverse effects of excessive IP protection. In addition to specific policy support, hospitals must also foster a culture of inclusivity, cooperation, and resource sharing and refine the operational guidelines for internal processes.

The survey reveals that the paths for improvement in strengthening IP and copyright protection in tertiary-level grade-A hospitals include conducting publicity and education to enhance awareness of IP protection regulations, refining management models to standardize and improve procedures for IP declaration, utilization, and rights defense within medical institutions, and establishing open sharing platforms to facilitate cross-institutional collaboration in IP protection and medical innovation development. It is believed that these improvement measures will facilitate further progress in IP protection work in tertiary-level grade-A hospitals, ultimately benefiting the entire healthcare industry and patients at large.

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