

Knowledge, Attitude And Practice Regarding IPR Among Healthcare Professionals: A Cross-Sectional Study

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Abstract

Background- Intellectual property (IP) including patents, copyrights and trademarks are important for protecting academic and scientific innovations. Healthcare professionals are widely involved in research procedures, making it beneficial to protect these innovations under IPR. Assessing the awareness and understanding of IPR among healthcare professionals is therefore essential. This study aimed to evaluate the knowledge, attitude and practice (KAP) regarding IPR among healthcare professionals.

Materials and Methodology- This study used a cross-sectional, questionnaire- based study design among healthcare professionals in dental, medical and ayurvedic post graduate students and faculty members in in North Maharashtra region, India. The data was collected from 353 participants using convenient sampling technique. A validated, structured questionnaire comprising of 16-close ended questions was used to asses IPR awareness, attitude and practices.

Result- The results of present study indicated that while majority of healthcare professionals had basic awareness about the concept of IPR, there was lack in detailed knowledge about the process and utilization. Participants also have emphasized the need for structured, focused training programme to bridge this knowledge gap.

Conclusion- Although there was baseline awareness of IPR among healthcare professionals, formal understanding and its practice is limited. Incorporating structured educational and dedicated training programs in the healthcare academics may enhance awareness and promote better utilization IPR in healthcare research and innovation.

Keywords- Copyright, Healthcare professionals, Intellectual Property, Patent, Trademark

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I. Introduction

Innovation often begins with an idea, leading to new inventions, creative works, processes, or designs that are novel and useful. These creations, including designs, works, and emblems, are protected as intellectual property (IP) through trademarks, copyrights, and patents, safeguarding creators' rights and promoting innovation.^{1,2} The 2024 World Intellectual Property Indicators (WIPI) report from the World Intellectual Property Organization (WIPO) states that global patent filings reached a record high of 3.55 million, with China leading at 1.64 million. India ranked sixth with 64,480 filings, marking a 15.7% increase—the fastest growth among the top 20 countries in 2023.³ The laws and administrative procedure about intellectual property rights (IPR) have their origin in Europe.^{4,5} The world's first known law resembling modern copyright protection originated in Venice, Italy.⁵ In 1856 first Indian Laws related to IPR were established and they were based on British Patent system.^{4,5} The laws were altered from time to time and most recent change was made in 2019.⁴ The outlines of IPR are included in Article 27 of Universal Declaration of Human rights.¹ An IPR license allows legal use of intellectual property under agreed terms, preventing unfair practices. The "fair use" principle in copyright law permits limited use without the owner's consent.⁶ In India, the patent registration process is overseen by the Office of the Controller General of Patents, Designs, and Trademarks.⁶ In India, the grant of patents is **20 years** from the date of filing, Copyright protection lasts for the **lifetime of the author plus 60 years** after their death and a trademark for an initial period of **10 years** from the date of application and can be renewed indefinitely.⁶

The significance of IPR and patents has grown substantially across scientific fields in recent years.¹ IPR play a vital role in academics by fostering innovation, protecting original ideas, and encouraging collaboration. Managing IPRs in academics is vital as early-stage inventions often represent cutting-edge science, facing challenges in validation, industrial use, and market launch.⁷ Healthcare innovation involves advancements like

drugs, medical devices, treatments, and biomedical breakthroughs. Postgraduate students in healthcare are more involved in research, while faculty guide and mentor their development.⁴ Proper utilization of IPR can lead to significant benefits in both academic and practical settings. Patents grant exclusive rights to inventors, encouraging research and development.¹ Trademarks protect brand names and logos, while copyrights safeguard medical literature and software.^{1,2} IPR protect new ideas and inventions, especially in healthcare, which is a growing field for innovation and research.⁵ IPR ensures creators can control and benefit from their work, attracts investments, and encourages the sharing of knowledge.^{2,7,8} This protection helps prevent misuse or theft of ideas, supporting technological progress and cultural growth.^{4,5}

With the increasing demand for IPR in today's modern world, it is crucial for individuals, especially healthcare professionals, to be aware of the advancements in intellectual property. The aim of this study was to assess knowledge, attitude and practice regarding IPR among healthcare professionals.

II. Material And Methodology

The present study is a cross-sectional study conducted in North Maharashtra region, India among Healthcare professionals in dental, medical and ayurvedic post graduate students and faculty. Ethical clearance for the study was obtained from institutional ethical committee (EC/NEW/INST/2022/2959) prior to start of the study. The aim and objective of the study was explained to participants before obtaining the written informed consent.

A structured questionnaire was formulated containing 16 close ended questions in English language. The first part of the questionnaire included demographic details like name, age, gender etc. The second part consisted of questions that assessed the knowledge of the participants towards IPR. The study is conducted among medical, dental, ayurvedic postgraduate students and faculty in North Maharashtra region by convenient sampling method with a sample size of 353 participants.

Statistical Analysis

Data was collected from the questionnaire and it was transferred to an Excel sheet. Statistical analysis was carried out using SPSS Software version 20.

III. Results

The total sample comprised of 353 participants which included 188 (53.3%) male and 165 (46.7%) female participants. 74.2% of the participants are 30 years old or younger. 77.1% participants are Pg students from different institutes, distribution of participants by their specialty is shown in **Table 1 and Table 2** show the field distribution and designation distribution of participants respectively.

Table 1 – Field distribution among participants

Field	Distribution (%)
Dental	29.7
Medical	62.0
Ayurvedic	8.2

Table 2 – Designation Distribution among participants

Designation	Distribution (%)
Sr. lecturer	4.0
Reader	4.2
Professor	19.5
PG student	77.1

87% participants considered IPR as intangible assets owned by a person. Whereas 82.7% participants knew about the correct concept of trademark, copyright, patent and industrial design rights.

Table 3 – Awareness about various terms included in IPR

Terms included in IPR	YES (%)	NO (%)
Design or symbol	98	2
Ideas and logos	94.9	5.1
Drawings or plans	94.1	5.9
Geographical indications	93.8	6.2
Instruments and Machines	95.8	4.2
Test and treatment	85	15

Table 3 shows that 98% participants agreed that designs and symbols can be registered in IPR, 94.9% participants agreed that ideas and logos are registered, 94.1% participants agreed that drawings or plans can be registered, 93.8% participants stated that geographical indications can be registered, 95.8% participants stated that instruments and machines can be registered in IPR and 85% participants agreed that test and treatments can be registered under IPR. Out of the total participants, 76.8% knew that owner of IP, the successor in title of owner of IP and a license dully authorized by owner of IP are right holder of IPR.

Primary purpose and importance of IPR was stated as to protect and stimulate development and distribution of new products by 96.9% of the population, 94.3% participants agreed that IPR is to enable connected devices, 92.6% participants agreed it is to access healthcare technologies, 91.5% participants stated that IPR are to increase the quality of healthcare services and 87.3% participants stated IPR is to provide financial support for the research. 98.3 % participants agreed that IPR are to protect innovators, 96.9% participants agreed that it is to encourage innovation whereas, 95.2% individuals agreed it is to protect clinical data.

Table 4 Opinion regarding legal issues related to IPR in healthcare.

Legal issues for IPR in healthcare	Distribution (%)
Enforcement	6.8
Access to medicines	2.0
Piracy / cybercrimes	1.7
All of the above	89.5

Table 4 shows that 89.5% stated that enforcement, access to medicine and piracy/cybercrime all of these as legal issues for IPR in healthcare.

86.4% participants knew that utility patent, plant patent, design patent are the types of patents. Only 54.1% of the participants knew the correct duration of various terms of Intellectual properties. A total of 65.4% participants knew that patents can be applied at Indian patent office/e-filling. According to 53.3% participants IPR can limit the access to essential healthcare services. According to 96.6% participants IPR can be made easily accessible by reducing fees and by supporting startups, 90.1% participants stated streamlining procedures and modernizing IP office can help to make the registration easily accessible, according to 90.9% participants stated reducing the legal compliance can help to increase the accessibility, whereas increasing manpower was stated by 86.1% participants.

IPR procedure is stated as costly and time consuming by 77.6% participants. The need for incentivization of the process was stated by 74.5% of the participants. Out of all the participants only 59.2% participants have attended workshop for IPR and 85.8% of the participants suggested the need of inclusion of IPR in academic curriculum.

IV. Discussion

Understanding IPR is important in the healthcare sector, where innovations and technologies directly impact patient care, public health, and medical research. In the present study, 87% of the participants were aware that IPR are intangible assets owned by a person, awareness regarding inclusion of different terms in IPR is as follows- designs or symbols (98%), ideas and logos (94.9%), drawings or plans (94.1%), geographical indications (93.8%), Instruments and machines (95.8%) and test and treatments (85%), a similar study by Teixeira AA and Ferreira C found that 83% of science and technology industries use patents, 76% use trademarks, and 20% use copyrights to protect their data and maintain a competitive edge. This highlights the role of IPR in enabling innovators to gain financial benefits, supporting further research and production efforts.⁷ In the present study, 82.7% of participants correctly identified the scope of trademarks, copyrights, patents, and industrial design rights, a similar study conducted by Kumar V et al found that 85% of postgraduate students and 85.9% of faculty members recognized the importance of protecting copyrights in healthcare research. As both groups are actively involved in research and publication, this awareness highlights their understanding of IPR and the need to safeguard innovations and clinical data, However, a contrasting study by Ahmed et al. found that only 30% of law students understood the limitations of patents, indicating a lack of practical exposure to IPR concepts. Luigi Orsenigo *et al*, emphasized that patents not only safeguard innovations from imitation but also promote technological advancement by making technical information publicly accessible—information that might otherwise remain undisclosed.¹⁹ In the present study, only 54.1% of healthcare workers were aware of the correct duration of patents, copyrights, and trademarks. According to a study by Balahadia, Francis F. et al., the average awareness scores for the duration of trademarks and copyrights were 3.36 and 3.59, respectively.¹⁵ This highlights a key limitation—understanding the duration of IPR is important for their proper use and management. Similarly, a study by C.K. Metallidou et al. found that participants believed the duration of patents should be shortened, so that technological advancements can be made available to the public more quickly.¹⁷

In the present study 86.4% of participants recognized utility patent, plant patent, design patent as different patent types, according to study conducted by Deshpande *et al* 79.8% of postgraduate students and

87.2% of faculty were unaware about different types of IPR.⁴ showing lack of awareness and understanding of the various categories of IPR among postgraduate students and faculty members. In the present study 76.8% of healthcare professionals considered owner of IP, the successor in title of owner of IP, a licence dully authorized by owner of IP as right holder of IP whereas 19% of the healthcare professionals considered only owner of IP as right holder of IP. In the present study only 65.4% healthcare professionals knew that the patents can be filed at the Indian patent office/ e-filling can be done for the patents revealing a significant gap in awareness about intellectual property rights among healthcare professionals. A study by C.K. Metallidou found that very few graduate students had ever visited a patent office or even accessed the official patent website.¹⁷

In the present study 98.3% healthcare professionals agreed that IPR plays a critical role in safeguarding innovators and 96.9% healthcare professionals viewed IPR as a pathway of innovation according to study conducted by Pathan F, Anandhalli G. 70% participants agreed that copyrights are to protect interest of IP of authors and 80.95% of the participants considered IPR as a medium to take the permission from the authority.¹² In the present study 91.5% of participants linked IPR to improvements in the quality of healthcare services. These findings suggest a positive attitude of healthcare workers toward the foundational objectives of IPR among healthcare professionals, 85% of healthcare professionals understood that tests and treatments could be registered under IPR, reflecting an appreciation of IPR's broader applications in the healthcare sector.

A significant majority (96.9%) of participants recognized that IPR protects and stimulates the development and distribution of new products, Ong HB, *et al* stated that IPR protects creators and inventors thereby encouraging research, development, innovation and invention.⁸ While, 91.5% participants linked IPR to improved healthcare quality Thus, IPR is essential to improve the product and service quality also supports innovation in medical technologies, pharmaceuticals, and other healthcare domains. 94.3% of participants recognized IPR are to enable connected medical devices, 92.6% as to access healthcare technologies and 87.3% for providing financial support for the research these findings emphasize the pivotal role of IPR in enhancing healthcare outcomes.

In the present study 89.5% healthcare professionals considered enforcement, access to medicine, piracy/cybercrime as legal issues for IPR in healthcare system. Salazar S also mentioned piracy as a major problem associated with international industries at global level.¹⁴ In another study by Sathya Raj *et al*, it was found that most participants were unaware of the need to obtain permission for using website articles, incorporating videos into presentations, or copying segments from audio recordings, indicating a significant gap in awareness about copyright laws and ethical use of digital content in academic settings.¹⁸ These concerns point to the need for stronger policy frameworks and enhanced enforcement mechanisms. Additionally, In the current study 95.2% healthcare professionals acknowledged role of IPR in protecting clinical data, S Kannadhasan *et al* stated that creating copy and transfer of other person's data without their approval is a criminal offence thereby copyright act protects the IP from piracy and misuse.⁶ In the present study, 90.9% healthcare professionals suggested reducing legal compliance for widespread and easy accessibility of IPR, according to study conducted by Bansir R, Reddy K. 73% of the participants claimed the IP registration procedure to be difficult.¹⁶ this indicates there a need of legal awareness regarding uses of IPR and the healthcare professionals should be encouraged to use IPR to protect their data and to get benefit from the protected data via IPR.

In the present study, 53.3% participants considered IPR as the limitation for access to essential healthcare services this indicates that respondents believe that patents, trademarks, or other forms of intellectual property restrict the availability or affordability of critical healthcare resources, such as medications or medical technologies. According to study conducted by Kumar V. 45.5% postgraduate students and 41.4% faculty members considered that IPR are only for creating monopoly in the business and is not useful otherwise.¹¹ These finding suggest inadequate information about use of IPR indicating need to create awareness regarding the uses and benefits of IPR and efforts should be made to clear any misleading information regarding the procedure.

In the present study, 96.6% healthcare professionals suggested easy accessibility of IPR by reducing fees and by supporting startups and 74.5% healthcare professionals indicated need for incentivization of the procedure, according to study conducted by Hanafi AG *et al* 80% of the participants claimed high fees in article publication as a cause of not showing interest in publication.¹³ In a similar study conducted by Bansir R, Reddy K. stated that one of the reasons for disinterest in IPR of African university by participants is because of the unaffordability of the procedure and inadequate funding at the institution.¹⁶ Indicating a need for financial support as well as ease of the IPR filing procedure. In the present study, 90.1% healthcare professionals suggested streamlining the procedure and modernizing the IP office, 86.1% healthcare professionals suggested increasing the accessibility by increasing manpower, 77.6% healthcare professionals also referred IPR as costly and time-consuming procedure, this finding show major limitations of the IPR filing procedures indicating a need of change to make the procedure more accessible and less tiring.

In the present study, 59.2% of healthcare professionals stated that they have attended workshop for IPR and 85.8% Healthcare professionals suggested need of inclusion of IPR in academic curriculum for better understanding and knowledge gain in this field, according to study conducted by Deshpande *et al* 10.2% of

postgraduate and 17.2% faculty members have attended workshop on IPR and 82.7% faculty and 66.2% postgraduate students showed interest in attending a workshop on IPR suggesting the need of conducting workshops and including IPR in the academics as the majority of the participants never attended an workshop to improve their skill for future use and use in academics.⁴ Hazlina Mohd Padil *et al* has indicated that students often risk copyright infringement when submitting assignments. They should be given proper guidance on ethical writing and made aware of the Copyright Act 1987 and its rules on infringement.²⁰ Francis F. Balahadia *et al* has also suggested conducting of seminars, conferences and training workshops to benefit students and faculty studying in university.¹⁵

V. Conclusion And Recommendations

The study shows that while healthcare professionals value IPR, many lack detailed knowledge and training. To address this, there is a need for focused programs, accessible resources like workshops or online courses, and collaboration with IPR experts to improve awareness and practical understanding in the healthcare field.

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