EVOLUTION OF THE RIGHT TO HEALTH IN INDIA VIS-A-VIS
BIOINFORMATICS AND MEDICAL INFRASTRUCTURE IN BENGALURU
DISTRICT

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ABSTRACT

Objective: This research aims to identify the study of Right to Health and Development in India especially through the existing framework of Law specifically related to bioinformatics and medical infrastructure laws in India.

Methodology: Exploratory and Analytical research is employed in this work using Primary and secondary data from Legislations, Journals, Books, Articles, and reports and also a data set from empirically sourced data.

Result: The survey indicated that the Urban Primary Healthcare Centres (UPHC’s) find it difficult to address the Gender Disparities in Health Access, Age-Related Health Service Utilization, Effectiveness of Bioinformatics in Health Management, Impact of Medical Infrastructure on Health Outcomes, Regional Disparities in Health Access, Community Engagement and Health Services, Bioinformatics Adoption and Staff Capacity.

Conclusion: Right to health, bioinformatics and medical infrastructure in themselves are a very broad subject matter. The concept of Right to Health aimed at Development in the advent of advances in the technology, the study of medicine and the modes of experimentation, has changed drastically and the approach in respect to the findings involved in these studies have radically changed. Therefore, invariably this has to be dealt with constitutionally as Right to Health is an implied right that has taken birth from the fundamental right of Life and Liberty as envisioned under the Article 21 of the Indian Constitution and the same has to be looked into from a detailed perspective in relation to the medical infrastructure and preservation of the biological samples and subsequent updating in terms of databases. Ultimately the services offered in the UPHC’s by the state should be on par with, if not ahead, of the Private Health Care Centres in order for the concept of Right to Health to be fully realised and the UPHC’s should ensure work, clinical consideration, training, retirement aide, medical care, education and social security of the Doctors and staff at in the UPHC’s.

Keywords: Law, Constitution, Right to Health, Bioinformatics, Biotechnology, Healthcare, Health.

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RESUMO

Objetivo: Esta pesquisa visa identificar o estudo do Direito à Saúde e ao Desenvolvimento na Índia, especialmente através do quadro existente de Lei especificamente relacionada à bioinformática e leis de infraestrutura médica na Índia.

Metodologia: A pesquisa exploratória e analítica é empregada neste trabalho usando dados primários e secundários de Legislações, Revistas, Livros, Artigos e relatórios e também um conjunto de dados de fontes empíricas.
Evolution of The Right to Health in India Vis-A-Vis Bioinformatics and Medical Infrastructure in Bengaluru District

1 INTRODUCTION

The concept of health is perhaps one of the most generic and ancient in nature as protecting one’s health is like a reflex action in sentient beings. However, as time passed the need for a structured society grew and power and administration hand in hand gave a new meaning to the term state. In view of this the role of providing healthcare has emerged as a need of the hour in recent times. A point of consideration to be taken the governments is that, in order to facilitate a smooth running of the public policies in tune with the concept of welfare state, it would be factored by applying it to the matters of public health at both the national and state levels. It is due to this concept of the welfare state that the role of the government has become enlarged in integrating public health as a matter of importance when it comes to the functioning of the State. The foundation for this right to health has been upheld by the Universal Declaration of Human Rights (UDHR) and it is due to the setting of the attainable standards and the extension of the same by way of the Right to Development (RTD) in the future by the United Nations.

Development on the other hand has been the measure of success for such administration and governance by the state and similarly healthcare is seen as one of the key factors in deciding the development of the State. Article 1 of the United Nations declaration on Right to development defines the Right to development as “...an inalienable human right by virtue of which every human person and all peoples are entitled to participate in, contribute to, and enjoy economic, social, cultural and political development, in which all human rights and fundamental freedoms can be fully realized.”

The right to health has been an integral part of the right to live a life with dignity and the same has been upheld by the apex court of the country in various cases right from the inception of the Supreme Court of India. For a society, it is crucial to make sure that the personal health and overall health are being measured in a way, that can be attributable to the attainment
of highest standards by the State. Health has always been a primary importance for the individuals and also largely the public health as a matter of functioning by the state.

Bioinformatics is information pertaining to storing, retrieving and analysing biological data and it is an interdisciplinary field of work. It is often known as computational biology, which deals with a field of study that involves the use of mathematics and computer science tools to problems in molecular biology that require enormous amounts of data, processing, and analysis. (“Research Subject Guides: Bioinformatics: Bioinformatics Databases,” n.d.) says Databases are critical in molecular biology and, by extension, bioinformatics. Because molecular biology data are frequently inexpensive to produce, there is a proliferation of databases: the number of bioinformatics databases available worldwide is likely to be between 500 and 1,000 (Francois and Peer, 2003). Databases preserve not just molecular biology data, but also molecular biology literature and references. Bioinformatics databases are frequently very big and therefore require a watchful network for avoiding any misuse (Garfinkal, S., 2000). Bioinformatics law in India is at its latency and needs to be looked at in a detailed manner.

Therefore, the research carries forwards the following objectives:

- Examine the Integration of Public Health Policies: Look at the ways that a welfare state can function more smoothly when public health policies are integrated at the National and state levels.
- Examine the Right to Health as a Human Right: Learn about the groundwork for this right and consider how it upholds people’s dignity.
- Examine the Function of Healthcare in State Development: Look into the relationship between state development in general and healthcare in particular.
- Examine Indian Bioinformatics Legislation: Examine the current status of Indian bioinformatics law. Examine any applicable legal framework for bioinformatics and determine whether it adequately addresses the multidisciplinary nature of the field, particularly problems with data storage, retrieval, and analysis.
- Examine the importance of Medical Infrastructure in correlation to the non-state private entities and its impact on the Right to Health

2 THEOROTICAL FRAMEWORK

The Universal Declaration of Human Rights or the UDHR specifically laid down the foundations for the right to health as this right was focused centrally with the creation of health systems that are attributable with a centralized agency. Various studies conducted comparative analysis of the attribution of right to health amongst the Nations and this brought into the picture such indicators which would suggest the monitoring of health systems and focus on the working of such organizations in lieu of attaining the highest standard of health and ensuring that these standards are delivered to the citizens and the people of the country. It is through these standards and indicators that the right to health is being realized and through such studies it shows that the health systems need to be improved to better realize the applicability of right to health as a means rather than a mere compulsion to be followed.

Health and Healthcare should be looked in separate lens as one is factorial of the other this also works similarly with the concepts of personal health and overall health of the State in form of its citizens. It is pertinent to consider that when spoken in terms of health it doesn’t just attribute to the absence of any disease, but it is also attributable to the overall wellness of the individual. Public policy and its efficient functioning are detrimental to a competent discourse in a developed society.

Healthcare includes medical care in form of treatments and centres of medical parlance and another important aspect of healthcare is that of preventive care. Elements of preventive
care have been really significant in the past decade especially in the recent outbreak of the pandemic. The government has made sure that simplistic communication is passed through in all mediums including the physical and digital mediums. It has elaborated the role of frontline workers in the prevention and regulation of the pandemic and there by effectively displacing the preventive care in that form. One of the main factors of change in this regard was the government’s decision of not just relying on the government resources but also opening up to private partnerships with non-state actors as well. All of this when the figures relating to the Annual expenditure is staggeringly low at just 0.9% of the GDP aimed at the public spending (Mahal, A., et all, 2000). An elderly workforce, a growing middle-class population, a rising proportion of lifestyle diseases, increased emphasis on public-private partnerships, accelerated adoption of digital technologies, including telemedicine, as well as an increased investor interest and Foreign Direct Investment inflows over the last two decades, are all driving the growth of the Indian healthcare sector (Sarwal, R., et all, 2021). These developments have increased the need for better healthcare laws with more transparent approach.

It is therefore a cross section of the Right to Health and Development. To make sure that this transition is achieved, the mechanism to be adopted by the State has to be robust, transparent and efficient. India, being a densely populated country makes things difficult to have an all-centric approach. It is ideal to divide the applicability of laws through different tiers of the government from the Panchayats to that of the Union Government. Public health being a state subject matter makes it obligatory for the State Government to route it through the local bodies, the funds for which would be allocated in the State budget.

2.1 Bio-Informatics And Law In India

The study of Bioinformatics has been relatively new in the given scenario. The Bioinformatics as a concept emerged in the 1960’s and subsequently in the late 1970’s (O. Dayhoff, et al) as discipline is an amalgamation of Computer Science, Information Technology and Biology. The laws surrounding bioinformatics largely integrate with the intellectual property and the subsequent rights that are a bi-product of the intellectual property. This study helped to develop bioinformatics as a single stream to analyse and understand biological information. Over the years there have been many interpretations and definitions by various authors from across the world.

The definition of bioinformatics given by the National Centre for Bio-Technology Information is “the field of science in which biology, computer science and information technology merge into a single discipline.”

There are three important sub-disciplines within bioinformatics: the development of new algorithms and statistics with which to assess relationships among members of large data sets; the analysis and interpretation of various types of data including nucleotide and amino acid sequences, protein domains and protein structures: and the development and the implementation of tools that enable efficient access and management of different types of information. Bioinformatics in India evolved along with the evolution of Information technology and the companies whose focus was upon the operations relating to life science and biotechnology started engaging in bioinformatics as well. This was due to the fact that a larger market scale in the area could be obtained as these companies already had considerable market shares in the area of life sciences and biotechnology.

India’s biotechnology sector is one amongst the top tier in the Asia Pacific region and companies like Tata Consultancy Services, Infosys, WIPRO, BIOCON, etc., started making leaps in the bioinformatic sector. The main focus of this discipline was to respond to the demands for a flexible and efficient means of storing and managing large and complex...
biological data sets. Rapid developments in the said fields have brought in drastic changes and developments in information technology and therefore has resulted to produce a tremendous amount of information. The primary database constitutes from experimental research and its results like DNA, Protein sequencing, genome mapping, etc.,

The laws surrounding Bioinformatics, are largely intellectual property laws which protect the databases and also sue generis rights that could be used to protect the investment made over these data sets. However, there is a need for specific laws concerning bioinformatics should there be individual areas of expertise taking birth form the discipline. For technologies that could be patentable and other such intellectual properties, the provisions of TRIPS could be seen as a yardstick but sue generis protection sees an effect only in the European Union. Therefore, it is apt to associate bioinformatics as a necessary part that requires protection not only in terms of intellectual property rights but also extend it to incorporate any other subset of the same.

2.2 Medical And Healthcare Infrastructure In India

Medical infrastructure in India constitutes both the physical infrastructure and technological infrastructure brought in by the boom in information technology and recent innovation in medical science. Private health sector is in a considerably better position as opposed to the government health facilities. Health infrastructure is a key metric for determining a country’s health-care policy and welfare system. It denotes the importance of making health-care facilities a priority for investment. India has one of the world’s largest populations, which, when combined with widespread poverty, creates a severe challenge in the country. The country is geographically challenged, owing to its tropical climate, which are both a blessing and a curse.

A Subtropical Climate is favourable to agriculture, but it also provides a breeding ground for diseases. India’s population is highly susceptible to diseases as a result of a combination of poverty, population density, and climatic variables. Infrastructure has been regarded as the foundation for providing public health services. Skilled labour; integrated electronic information systems; public health organisations, resources, and research are the five components of health infrastructure. When talking about health infrastructure, it is not just talking about the results of a country’s health policy; but it is also talking about tangible capacity creation in the realm of public health delivery systems.

The term "healthcare” refers to the provision of services aimed at improving people’s health. Healthcare is defined as anything that helps to greater health, such as good food, clean air, exercise, medical intervention, and so on. Physical structure (buildings, etc.) and human resources are both required to give the desired health services; thus, healthcare infrastructure is a good blend of both. The ultimate objective is to bring both of them towards the same horizon in order to make healthcare affordable and more accessible across all the sections of the society.

Healthcare in the Tier-1 cities are up to the mark with some of the leading cities of the world, however it is the rest of the country that has to be taken into consideration and states have to watch over and implement efficient laws when talking about affordable healthcare and access to good medical supplies and technology. Therefore, when talking about the medical infrastructure, states have to ensure that there is the proper distribution of the health, healthcare benefits. The government must take an integrated approach that considers regional peculiarities with the support of local people; it must establish a decentralised structure that is district-based and which involves active participation from local level institutions such as Panchayats and Corporations.
As discussed above the healthcare (public health) falls under the state subject matter and therefore it is high time that one has to look at the states responsibility in making sure the health, healthcare and public health are met. Right to health is an extended fundamental right that is guaranteed through the Article 21 of the Indian Constitution. Right to health have been understood and interpreted through various judicial interpretations and has since become a part of the Article 21 making it an implied fundamental right that is subject to the constitutional protection. Hence the medical infrastructure and its laws in India are a mix of the state sponsored health and healthcare running in tandem with the private non state actors who have been encouraged to take up reforms in the medical infrastructure.

3 METHODOLOGY

Exploratory and Analytical research is employed in this work using Primary and secondary data from Legislations, Journals, Books, Articles, and reports and also a data set from empirically sourced data. To conduct the inquiry, both primary and secondary data will be collected. When necessary, primary data from published sources, unpublished items, and office records will be gathered through the survey approach.

3.1 Empirical Study

Empirical study relies upon the collection of data and its analysis within the ambit of research area by establishment of a workable research universe.

3.1.1 research tools: questionnaire, survey, observation

- Questionnaire – A questionnaire could be an investigative instrument that comprises of a set of questions or other sorts of prompts that points to gather data from respondents.
- Survey – Survey could be a quantitative investigative strategy utilized for collecting information from a set of respondents. Survey is characterized as the method of conducting inquiries that is sent to study respondents. The information collected from survey is factually analysed to draw significant inquiry about conclusions. An investigative survey is ordinarily a blend of close-ended questions and open-ended questions.
- Observation – Observation method often uses the researcher to spend a lot of time at such places and note the exact process without intervention of any kind.

3.2 Research Field: Bengaluru City

The researchers choose Bengaluru City as the Research area. Bengaluru City is the capital city of Karnataka State and is conveniently located within at the centre of the State. It is a Metropolitan City which has a blend of transitional areas and rural areas which allow the researcher to pursue application of the dataset in both settings.

4 RESULTS AND DISCUSSIONS

4.1 Demographic Result
Table 1. Shows the gender details of the participant where male population corresponding to the total universe of 175 participants are – 54.85%, and female are – 45.15%. The age of participants corresponding to 25 – 30 years are 36%, and age of participants corresponding to 30 – 35 years are 26.85%, and age of participants corresponding to above 35 years are 37.15%. About demographic regions, rural areas are 30.57%, Semi-urban area is 32.64%, and Urban Regions is 36.79%.

<table>
<thead>
<tr>
<th>Variable</th>
<th>No. of Participants</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>96</td>
<td>54.85%</td>
</tr>
<tr>
<td>Female</td>
<td>79</td>
<td>45.15%</td>
</tr>
<tr>
<td>Total</td>
<td>175</td>
<td>100</td>
</tr>
<tr>
<td>Age</td>
<td></td>
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<tr>
<td>25 – 30 year</td>
<td>63</td>
<td>36%</td>
</tr>
<tr>
<td>30 – 35 years</td>
<td>47</td>
<td>26.85%</td>
</tr>
<tr>
<td>Above 35 years</td>
<td>65</td>
<td>37.15%</td>
</tr>
<tr>
<td>Total</td>
<td>175</td>
<td>100</td>
</tr>
<tr>
<td>Regions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural areas</td>
<td>54</td>
<td>30.85%</td>
</tr>
<tr>
<td>Semi-urban areas</td>
<td>47</td>
<td>26.85%</td>
</tr>
<tr>
<td>Urban Regions</td>
<td>74</td>
<td>42.30%</td>
</tr>
<tr>
<td>Total</td>
<td>175</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Author-made table depicting details of participants

4.2 Realisation Of Right To Health In India In Relation To Bioinformatics And Medical Infrastructure In UPHC's In Bengaluru District

Table 2. Analysis of data

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Statements</th>
<th>Mean</th>
<th>T-Value</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Overall Right to Health Realization</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>To what extent has the right to health been realized in UPHCs in the Bengaluru district, considering bioinformatics and medical infrastructure?</td>
<td>4.29</td>
<td>18.236</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td><strong>Gender Disparities in Health Access</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Are there significant gender disparities in access to health services within UPHCs, considering the impact of bioinformatics and medical infrastructure?</td>
<td>4.23</td>
<td>17.499</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td><strong>Age-Related Health Service Utilization</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>How does age influence the utilization of health services in UPHCs, taking into account the role of bioinformatics and medical infrastructure?</td>
<td>4.17</td>
<td>16.910</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td><strong>Effectiveness of Bioinformatics in Health Management</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>To what extent has the integration of bioinformatics improved health management and service delivery in UPHCs?</td>
<td>4.11</td>
<td>15.719</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td><strong>Impact of Medical Infrastructure on Health Outcomes</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 2. Shows the mean value of results pertaining to the “Realisation of Right to Health in India in Relation to Bioinformatics and Medical Infrastructure in UPHC’s in Bengaluru District” the first statement is in relation to the Overall Right to Health Realization (mean value 4.29), the second statement is in relation to the Gender Disparities in Health Access (mean value 4.23), the third statement is in relation to the Age-Related Health Service Utilization (mean value 4.17), the fourth statement is in relation to the Effectiveness of Bioinformatics in Health Management (mean value 4.11), the fifth statement is in relation to the Impact of Medical Infrastructure on Health Outcomes (mean value 4.27), the sixth statement is in relation to the Regional Disparities in Health Access (mean value 4.13), the seventh statement is in relation to the Community Engagement and Health Services (mean value 4.07), the eighth statement is in relation to the Bioinformatics Adoption and Staff Capacity (mean value 4.19). The t-value of statements in a survey in the context of Realisation of Right to Health in India in Relation to Bioinformatics and Medical Infrastructure in UPHC’s in Bengaluru District is found to be significant because the t-value of each statement is positive and significant. After all, the significance value is less than 0.05 and positive.

5 CONCLUSION

Right to health and right to development are areas of concentration of laws and have a very broad subject matter. Similarly, the laws relating to bioinformatics, laws relating to the medical infrastructure and laws relating to the healthcare are all different areas that are very broad and yet in the Indian scenarios are largely unexplored. Therefore, the researcher has limited the area relating to bioinformatics and relating to the medical infrastructure into applicability towards the Right to health and Development. The right to health is a comprehensive right, stretching out not exclusively to convenient and proper medical care, yet additionally to the determinants of wellbeing, like admittance to protected and potable drinking water and sufficient disinfection, healthy occupational and ecological conditions, and access to health-related education and information. Right to improvement likewise investigates methods of advancement as a major right of citizens, alongside the directive principles that the
Evolution of The Right to Health in India Vis-A-Vis Bioinformatics and Medical Infrastructure in Bengaluru District

... constitution delivers. The Right to Development should ensure work, clinical consideration, and training and retirement aide, medical care, education and social security.

In the advent of advances in the technology of the study of medicine, the modes of experimentation in respect to the findings involved in these studies have radically changed. The Covid-19 pandemic has been an eye opener around the world as to how unprepared states can be with respect to the protection of the state against unknown pathological strains of a virus which was very much existent and deeply studied since the late 1980’s. Collection of data especially biological information and its processing in invariable and in a densely populated country like India and it is a large data set. Currently there isn’t an exclusive law dealing with bioinformatics and its usage in the medical healthcare infrastructure concerned. Therefore, invariably this has to be dealt with constitutionally as both Right to Health and Right to Development are implied rights that have taken birth from the fundamental right of Life and Liberty as envisioned under the Article 21 of the Indian Constitution.

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