Social History of Medicine in Colonial India

John Bosco Lourdusamy

Dept of Humanities and Social Sciences

IIT Madras

Week 05

Lecture 03

Tropical and Bacteriological Research

Hello and welcome to another lecture, lecture number 23 which is specifically on research, medical research. We have been talking about several diseases in the context of epidemics and even otherwise and we have been talking about various kinds of studies and research even during those lectures. But this lecture is exclusively on research, the research culture, what prompted the sort of the problems and all factors associated with research. And as you would expect, the establishment of research institutions was a product of the intersection of some amount of colonial interest, colonial commercial and other considerations and on the other hand, scientific interest, genuine interest to understand the dimensions of various disease and ways of cure and all that. And there were these kinds of specific reasons: one was the concern about having a healthy workforce which would ensure the profitability of the colonial enterprise. Another would be to bolster, or at least maintain the reputation of the colonial enterprise abroad - especially at a time when there was lot of bad press, bad public opinion about certain of the things happening in India, whether it is exploitation or the atrocities, or famine - all those kinds of negative reports which were going from here - all of those could be neutralized by some good research being done. That was another propelling factor. And more directly, it could reduce the risk of epidemics which have impact on lot of economic activities in diverse ways. In that way also research could help and contribute to economic benefits. Coming to some of the problems in the methods of understanding disease and tackling them, we have been saying that by about the 1880s the rest of the world had come to terms with germ theory of disease which was a totally new understanding of disease as opposed to earlier forms like humoral theory or other kinds of environmental theories like miasmatic theories and other such things. But as we already saw, the colonial medical establishment here in India was very reluctant, not just very reluctant, they were also very forcefully denying any kind of causal relationship between enteric fever which is typhoid and other such diseases like malaria. They denied any connection between those diseases and germ theory. Even as I said, from 1880s, after the discovery of suspected causal organisms, the Sanitary Commissioner of the Government of India was very categorical that germ theory just cannot be applied to the

entire history of for instance,enteric fever in India or to any other disease. And on the other hand, they were also concerned that putting too much emphasis, undue emphasis on a specific organism could also prejudice the larger sanitary measures, all-purpose sanitary measures which they were doing, which they felt was more effective, more comprehensive as it was taking into account - whether insanitary condition, the contamination of water and food, an all that. This meant, this kind of reluctance, this kind of denial mode carried the danger of all medical policies being focused too much or sometimes even exclusively on sanitary measures. And apart from all this (with regard to understanding the particular causes, the differences, they are taking or not taking, but since we are talking about research), there are some problems with research - approach to research as such in general. I am mentioning this particularly because the kinds of things we are talking about here about the role of germs and all that was in fact spawning not only new interest into research, but entire new fields like bacteriology and parasitology, which meant there should be that kind of mode and mood, that kind of a culture which is very conducive and which will react very favourably to these kinds of emerging trends. But what we see in India was actually the opposite.

There was from the beginning, in the colonial enterprise - there was a general discouragement of research. Medical officers were seen more from a bureaucratic point of view - their primary task was to discharge their administrative duties and their actual ward work, actual work as doctors, as healthcare workers. They should not be acting too 'smart' and talking about things like research and therefore since that was the trend, that was the untold message - that you should not be acting too smart - thinking of these kinds of things (like research), just do your job - because Indian Medical Service is a kind of a Service - IMS is Indian Medical **Service**, it is not like some kind of a research enterprise or research body. They were constantly reminded of it in very many indirect ways and therefore the IMS officers or general health professionals also tried to tread the safe path and not being too unconventional to be thinking or talking in terms of research. Of course there were always exceptions like Ronald Ross who struggled hard and made their way. And generally also the medical establishment (in due course), took research on a more serious note, especially with the recommendation of the Plague Commission in 1901. Also, there was a need to find alternative methods to coercive actions as we saw for instance with the plague or other epidemic diseases like cholera, lots of steps had to be taken which involved a lot of cultural clashes, too much of invasiveness. Therefore research was one option which could give alternative paths to those kinds of coercive measures. There was also pressure from the medical establishment in Britain especially given the fact that India was a very fertile ground to study many diseases, as much as diseases were problems - they were also opportunities at least from a science and research point of view. And generally, there was by this time, a general push for laboratory research with more and more discoveries of germs and parasites and their

vectors and especially successful identification of some of these agents as in the case of malaria and plague. That built a new tempo and momentum and there was also the realization that localized bacteriological research - focusing on the particular diseases of particular areas – could, in turn, contribute to greater awareness of all the kinds of epidemic diseases themselves and also reliable knowledge about the history of the growth and intensity of the particular disease. For instance, if you know about the cholera germ, it will also be helpful even from a sanitary point of view - beyond the particular disease, it could also be useful for more common everyday sickness and the address the questions of more common diseases and the address the questions of mortality generally born out of other reasons also. Therefore, research and particularly the emerging new field of bacteriology assumed the same stature, the same level of importance in public health that for instance, vaccination had about a century before and as I said, a place like India, with its diversity of diseases and its mosquitoes and other kinds of germs and carriers, was one wide-open laboratory for these kinds of studies. The benefits of the studies here could contribute not only to understanding of disease here, but also wider global body of knowledge and consequently to healthcare beyond India as well. These were some of the kinds of reasons related to diseases and the kinds of emerging research atmosphere. But also there was the role of personalities that also mattered who is at the top. For instance, Lord Curzon, the Viceroy was a great proponent of imperial research. He was a great fan of setting up many central research institutions - which in fact happened during his viceroyalty - because he was one who firmly believed in very fruitful relationships between the government, the scientific establishment, research and the making of public policy - broadly between science and policy. Apart from his own personal belief and interest in this kind of relationship, he also lent the authority of his office which in fact had very practical fruits, especially in particular fields like agriculture and medicine during the term of his viceroyalty. And there were also other kinds of personalities who mattered - in this case more specifically scientific ones and this one is a very important one - this is Hankin. A great boost to research climate in India happened - especially in the context of the rise of bacteriology as a new field - when he H. Hankin was appointed as a Chemical Examiner for the North Western provinces in 1892. When we talk about examiners you should not confuse it with some kind of an examiner as in an academic institution - like a PhD examiner or internal or external examiner who is coming to value papers or thesis. Here, examiner means one examining water bodies, testing those kinds of things related to healthcare, examining soil, for instance, toxicity of materials - that kind of a specific post. His appointment to that post was a very welcome thing not only for what he was doing, that job, but to the larger question of research because he was someone who was very well-versed with these latest developments and with the works of some of the emerging big names in the field like Louis Pasteur and Robert Koch. He was also a gifted writer, and through his work, his own research work, medical work, and writings, he could

create the kind of awareness and appetite for research which, as I said, was very much lacking with the kind of the colonial bureaucratic medical structure and culture. He campaigned very vigorously for instance, for particular things like the establishment of the anti-rabbies Pasteur Institute in India - several of them were eventually established.

The first one was established in Kausali up in the hills in 1901. And of course keeping the point about the role of particular individuals, another big name which mattered was Haffkine. He arrived in India in 1893 and he again was a leading and emerging bacteriologist. He was trained in Paris itself - he was Russian-born - but he was trained in Paris. He arrived actually on the recommendation of the British government because he had approached the British government for permission to visit India to conduct trials for the cholera vaccine. He had some understanding of the efficacy of the cholera vaccine in other contexts. He wanted to do his trials in India and he was allowed - the British government impressed upon the colonial government in India to allow him and he came and he conducted his trials and the efficacy of the cholera vaccine was proved in the Indian situation as well. When plague broke out in 1896-97, the government requested him for help and suggested to him that he could possibly develop a vaccine which in fact he did.. It's one of the first vaccines developed within India - especially now in the context of Covid we have been talking a lot about vaccine and India's special place as a global supplier - here we see it was even discovered here and in his lab at Bombay which was called the Plague laboratories since 1899. Later it was renamed as the Bombay Bacteriological Laboratory in 1905 and eventually as the Haffkine Institute in 1925. It's important to note that neither Hankin nor Haffkin were members of the IMS or the Royal Army Medical Corps which was particularly in charge of the white component of the Indian Army here - which meant that there were other faces who were playing an important role. Of course, it doesn't mean that IMS officers were not involved. for instance, Ronald Ross, Leonard Rogers were all IMS officers but there was now room for people from beyond the IMS.

One of the important milestones in this new culture of research and especially in the emerging field was the setting of the Imperial Bacteriological Laboratory which was opened in Pune - it will be moved up the hills later on, for reasons of climate and temperature and other things. Here the particular focus was on veterinary science - that's also something to be noted - it's not just about human beings – of course, there's a connection between the animals treated and under this rubric and humans - like supply of milk and other such things. But veterinary science generally was one of those fields under the broad rubric of tropical medicine which attracted attention. And more and more such specialist institutions were created for research into diseases like plague, cholera and other tropical diseases - not only for research and understanding of these diseases but also for actual production of vaccines also to combat them. One such was the Central Research Institute at Kasauli in the hills of Punjab in 1906 and it had a

special responsibility for malaria research. Eventually it also did other kinds of research as well. What we are talking about are Imperial all-India laboratories and then there there was a category of provincial laboratories. Two in fact, were very famous - one in Bombay we are talking about the bacteriological lab that was upgraded and after that only it became the Haffkine Institute - that is in 1925. In Madras, the King Institute of Preventive Medicine was set up in the area of Guindy in 1904 which again is still existent and doing pioneering work in that and other areas. In 1906 the Bacteriological Department - we have been talking about particular institutes - the Bacteriological Department as such, which was later called as the Medical Research Department - was created to oversee the running of these kinds of institutes - as a kind of an overall body overseeing the researches being conducted at these institutes. And as I mentioned earlier, (we have the example of a Haffkin and Hankin already, and subsequently too), the recruitment was opened beyond the fold of the IMS. One of the implications of all this is that, medical research became part of the state sector rather than something which is done at the university level which is where researches generally happen. Also these laboratories had no access to patients unless they were medical colleges which had their clinics linked to the particular laboratories there. But one saving grace is that the staff from here went out and taught undergraduates in neighboring colleges. And always research involves funding - that is one of the important determinants of the success of research in any given place. One important landmark in that regard is the setting up of the Indian Research Fund Association - IRFA - which we will encounter repeatedly hereafter. This was set up in 1911 through the efforts of the Education Member of the Viceroy's Council - Sir Harcourt Butler and Sir Pardy Lukis - the Surgeon General at that time. This can be seen as a kind of a foreshadow - the mother - of what we now have as the ICMR - Indian Council for Medical Research. One of the most significant things is that this was started even before the Medical Research Council was started in Britain. Even more famous and successful is this MRC in Britain - there is a whole host of research institutions called the MRC Labs – MRC-supported labs even today. In fact several MRC labs in Britain are homes to several Nobel Prizes. So, even before that MRC was started in Britain, we had the IRFA here. The aim of IRFA was to recruit and train medical researchers and provide adequate funding for that. It channelled funds from the government and private benefactors to approved programs of medical research. The funding came from an annual grant of 5 lakhs from the government. And the government, always - even when it funded - as you will see in several cases, it always - encouraged alternative sources of finance. This is something which for instance, even governments now do - for instance, institutions like IITs are still funded (by government), but there is a constant advice to look for other sources of funding from the industry, from alumni and all that. So this has a long history! And given the colonial situation and the background - we know the hesitancy of the colonial state to fund - there was always a prodding to find other means like public subscriptions, philanthropy

and all that and some bit of the money for this also came from such subscriptions whereby life members paid a lumpsum of 5000 rupees, whereas temporary members paid 100 rupees annually. This was reasonable building up of a reasonable amount of money - of funding. For instance, by 1927-28 IRFA was spending about 11 lakhs per year - it was considerably high sum for that period. That kind of money was spent on research and of course, the focus was on imperial science - the kind of areas that we were talking about - also specifically to set up Imperial laboratories. Apart from sponsoring those areas and those laboratories and those fields of research, it also financed the periodical called the Indian Journal of Medical Research. We also have to mention that journals play an important role as signifiers of the emerging scientific culture in a place - this is one of the tell-tale signs of the level of science - especially in its modern form in any given place - apart from other things like scientific bodies like Royal Society and all that. This is one manifestation of how science - and in this case medical science - was coming on its own on Indian soil. This journal was established in 1913 and it was edited by the Director General of the Indian Medical Service and the Sanitary Commission to the Government of India. This was accessible to members who were also outside - the non-medical community. IRFA, as I said, promoted field research across several new and emerging disciplines/ areas. Of special focus and importance was the tropical medicine which itself was an emerging domain as we saw, and which in turn, encompassed several domains. Particularly because it was touted as a new area, there was also an insistence on new kinds of institutions both for training or education as well as research. Also, tropical medicine was acquiring great currency as a central paradigm for the epidemiological challenges of the 1890s and also in reviving IMS prestige. In fact, considering the importance of this emerging field of tropical medicine, there was criticism in British medical circles about the lack of commensurate interest in the area - especially for the promotion of research - not only in the colonies - but in Britain itself , by way of general interest in the new field, and also by way of those kinds of institutions in Britain itself - possibly providing ground for preparing doctors there itself with all the advantage of the metropolis before going to the colonies.

In course of time this was redressed - the Liverpool School of Tropical Medicine was founded in 1898. This was the first institution in the world for research and teaching in tropical medicine. Soon the London School of Hygiene and Tropical medicine was started in 1899 and the prospect of research into tropical disease was also used as an attraction for getting talented young British into the IMS. As we saw, IMS was losing much of its sheen - especially it was not a very attractive proposition for the young emerging English medical graduates due to several reasons - one of which, we saw, was because too many Indians were also getting into - it was getting too Indianized. And there were other such reasons like better opportunities back home and other such things. But now, IMS could be an attractive destination particularly because of the new kinds of opportunities opened by this emerging field. Within India itself, the just like the

Liverpool and London Schools, the Calcutta School of Tropical Medicine was opened in 1921 - again to study a wide range of tropical diseases. Much of the funding and research strategy of IRFA was also channelized towards tropical research. The predominance of tropical medicine was manifested in works in several related fields like veterinary science (as I mentioned earlier), tropical surgery, tropical midwifery - with prolific publications on these areas coming out from India in the 1920s and 30s.

The Indian medical establishment also collaborated with the League of Nations which was formed at the end of the First World War to promote greater international understanding. The Indian medical establishment collaborated with that international body in its own medical and sanitary works. Also the Indian establishment was very active in the Far-Eastern Association for Tropical Medicine - in fact the annual session of that Association was held in Calcutta in 1927. Also now, as I said, one of the important changes that was happening to IMS was that more and more Indians were entering the IMS. Just as they were entering the IMS itself more and more Indians were also participating in the emerging research fields and opportunities and they did excel in several areas and Upendranath Brahmachari's work on Kala-azar is well known - what he did in 1920s. Another big name is R.N. Chopra who was a professor of physiology at the Calcutta School. He was known for his interest in pharmacology but already he was very famous in that domain. He also had interest in tropical medicine - not just interest - in fact, he even published a textbook on tropical medicine in 1936.

Then this Journal we are talking about - IJMR- published the pioneering works which were coming out from India on malaria, cholera, kala-azar, plague and several fields - which established its own stature as leading medical journal. And all of these things - whatever we have been discussing so far - the various kinds of researches, the kind of towering personalities who were here in India - some of whom had come straight from Paris, and all these kinds of advantages or conducive situations together raised India's place in medical research even as it was a colony. What it meant in terms of actual alleviation of the sufferings or healthcare that's a different question - but at least in terms of research, it's something very significant that even before independence, (including participation of Indians), India made a name in the international stage in the world of medical research. On that note, we will close this lecture. Thank you.