Social History of Medicine in Colonial India

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Week 05

Lecture 04

Malarial Research and Surveys, Vaccine Research and Production

Hello and welcome to yet another lecture, Lecture number 24 and in this we will particularly focus on research on malaria and also the surveys related to malaria - the various malaria surveys, then specifically on research related to vaccine and also the production of vaccines. Due to the various sanitary measures and also gradual acceptance of vaccination and the rate at which it was done - very successfully, mortality from different diseases like smallpox, cholera and plague began to fall. But, malaria continued as an enduring and looming challenge though there was good progress on other diseases. Malaria was looming and it was still killing about 1 million people a year even in the beginning of the 20th century. Therefore it required urgent attention and more research both in the field investigation and surveys. The Malaria Survey of India was established in 1927 to investigate and to better understand the disease, its incidence, its spread and all that.

Researchers were also supposed to advise local officials on centrally-funded malaria schemes. There was also a Malaria Institute established in the Kasauli hill station which we have already come across several times - the hill station of Kasauli. As we will see later, there was a preference of hill stations for establishing some of these research centres. Also, detailed malaria surveys were carried out with funding from IRFA and also monitored by the Malaria Institute. These were accompanied by investigations of various species of Anopheles mosquito which was the vector - the distribution of these mosquitoes and their breeding habits and the various options available for controlling their presence and also, playing into their life-cycles if possible. Therefore, it involved different kinds of fields like epidemiology, entomology and protozoology.

We have been talking a lot about dyarchy which was primarily introduced in the Government of India act of 1919 which involved the devolution of powers to the states. And as we saw, medicine was one of those areas - those transferred subjects - which was devolved to the states (whereby state ministers had responsibilities), and further on, to local bodies. But, as we saw on that occasion, when we were discussing that, it is only the responsibility that was devolved but not accompanying funding. Therefore, now

that funding was not given, this devolution allowed the government of India to now channel funding resources more into these kinds of researches generally and malaria research was one of the beneficiaries. It was done by a group of men and mostly European IMS officers and though it was a small group, they had attained considerable reputation and India was reputed for its research by the late 1920s for the work done by them - being lauded nationally and internationally for the quality. But as, usual the question is, research is one thing - but what about the question of disease control on the ground - that is a different story. For insance, the League of Nations - which we have been mentioning as an international body which was started at the end of the First World War - had a Malaria Commission also which visited India. After completing its tour of the malarial areas and completing its study in 1929, one thing it did was to appreciate the high level of medical research that was done - there was no question about that, relatively speaking compared to the kind of work done elsewhere and also it was quite natural because of the kinds of facilities and the opportunities available in India, it was not surprising that India was leading in doing cutting edge research. But on the other hand, when it came to actual control on the ground, even this Commission felt there was a lot that was left to be desired. This commission recommended that the public health department should concentrate more efforts and resources on the control aspect - especially with regard to rural malaria. There was also criticism from other quarters that the Government of India was giving too much resources to research and not much for the actual control - sometimes more for that, the first one at the cost of the second one. And as I said, as regard to the second one it could always say that it is the responsibility of the provincial government and the local bodies. And, on the other side, at the scientific level, there was still that division of opinion between the opportunists and the quininists which we have already seen. The quininists - almost obsessed /focused only on quinine as a solution, whereas the opportunists were open to all possible opportunities and particularly were in favour of elimination of mosquitoes through proper sanitation and clearing of waters which served as a breeding ground for that vector. Because of that and because of a lack of uniform policy and willingness to fund as much as they did for research, effective malaria control could not be achieved. Even in the new capital – Delhi, which had special malaria programs especially in the 1930s and 40s, it is only towards independence, with the coming of DDT spray there was some relief. DDT was an insecticide which could kill mosquitoes effectively. That is one of the ways of eradicating mosquitoes. This was something which was long awaited - people like Ronald Ross and others - those on the opportunists side - were always advocating that there should be several ways looked at for eradicating the mosquitoes which were the carriers. That was something which the government was not willing to do. Now at least this insecticide could provide one viable opportunity.

Now moving on to vaccine research and production, as we have been seeing, vaccination proved very successful in combating some of the most threatening deadly diseases like

smallpox, cholera and plague and therefore vaccine research and production became very central to fighting epidemics and improving public health.

Not only that, as I had mentioned on a couple of other occasions, colonies also served as testing grounds for vaccines especially in kinds of enclaves like prisons and tea plantations. A particular example we can mention is that of the typhoid vaccine, which was developed and tested by Almroth Wright who was a professor of pathology at the Royal Medical School which was at Netley. He was actually unsuccessful in persuading the British army actually to try it in 1896. When he came here as a member of the Planning Commission, to India, he tried it on Indian soldiers - again army and its barracks/regiments were also kind of enclaves where you could do these kinds of trials and testings. In this case, he saw the trial as very successful, reporting only 44 cases of typhoid appearing among the 4502 who volunteered to take the vaccine. As we had seen earlier, on the recommendation of the British government, the Government of India allowed Haffkine to come to India and test the efficacy of the cholera vaccine. In 1893, he did trials at Agra, which showed the efficacy of his vaccine for the control of the disease in the Indian context also. While he was still here, the Government of India requested Haffkine to develop a vaccine for plague and he was given all kinds of facilities - for instance, research space at the Grant Medical College in Bombay. He developed the vaccine in 1896-97 - the first vaccine to be developed in India. The first tests were done in a prison in Bombay. Again, prisons were kind of enclaves which were useful for these kinds of tests. And then it was introduced beyond that kind of enclave - on experimental basis - among the wider population in Bombay city and also other towns in western India.

Moving on to another kind of vaccine - the anti-rabbies vaccine, which was particularly produced in the various Pasteur Institutes. These Pasteur Institutes were established in India to do research on anti-rabbies vaccine and also to produce them. They were modelled on the model of the Institut Pasteur in Paris. The first of these Pasteur Institutes was established in Kasauli, the hill station, in 1901. There were others also opened in other parts of India, different parts like, for instance, in the north east in Shillong and in the south in Coonoor, which is still there as the Pasteur Institutes of Southern India. Also, these were centres where people could also go for treatment in case of dog bites and other things. There was treatment done there, there was research done there and also production of anti-rabbies serum.

Generally across the board, now we are talking about different kinds of vaccines. Vaccine manufacture was done on a large scale with material from animal lymph. There was a Vaccine Institute established in Belgaum in 1905. It was producing about 600,000 doses annually. The Central Research Institute - we have already come across - was set up in Kasuali in 1904-05. Among other things - research and study of malaria and other things, it also produced vaccines. The King Institute set up in Guindy in 1904 in Madras

Presidency, in Madras town, did research as well as production of vaccine, and particularly contributed to the improvement of the quality of the animal lymph and its preservation. Because of all these developments British India was able to become self-sufficient in vaccine production by 1911. This is something we should particularly recollect at this point because we are talking - in the context of Covid-19- about India being a center of vaccine production and how we are not only self-sufficient, we are able to distribute to other countries. We have to remind ourselves that even more than a century ago we had that facility - we were self-sufficient. This is not something new - India excelling in vaccine production or even supplying to other countries, neighboring places is not something new. This kind of production capacity meant that there was a rapid increase in the number of vaccinations.

But all this is well and good - all of this research. But as we are saying and seeing, there are flip sides to this. One of that is that most of this research centers were seen as being remote: one is that they are physically remote up in the hills and away from the public, where the larger populations lived. But they were also remote in another other sense - remote from the actual problems, or in terms of the effect, the benefits they could give in terms of actual health care. The physical distance is because they were set up far away in the hills. And there was a particular reason - because the hills had a temperate climate - climate was very cool - and there was this very serious belief in the medical establishment that good research, any research, not only medical research, any research can be pursued only in cool climates and also by men who are from those kinds of places, temperate places, races from those kinds of places. One Viceroy in fact, Lord Lansdowne openly wrote that original scientific research required 'mental and physical qualifications which could not be found among races bred in the tropical climate to the same extent that they exist in more vigorous races of the northern latitudes' that is the temperate zones. In the light of these kinds of beliefs, the plains, like for instance, the cities of Calcutta or Bombay, were seen as unsuitable for high quality research because of the hot climate. Also another reason which was cited was that people were generally very hostile with regard to experiments with animals - or generally any religious groups which were against any kind of violence to animals - or those kinds of sensitivities about vivisection -the cutting of animals or generally any experimenting or any harm to animals.

All of this resulted in medical research being kept at a snobbish distance both from the Indian population -that is one thing. But also there is another dimension now, it is also away from potential Indians who could do research. The Indian aspirants were also seeing it as something as a distant fruit that they could not reach. Therefore much of this enterprise, for a long time, remained a privileged white-dominated enterprise - especially those of these which were on the hill stations. Of course, we have to say that Indians did enter the field of research and did contribute - we have the names like Upendranath

Brahmachari, Chopra and others. But by and large, this was a white-dominated affair - especially in these kinds of imperial laboratories. And another significant outcome, problem with this is that, research moved from, skipped away from, the Universities. Universities as such were underfunded - but that is where much of the teaching and research happened. With bright young minds, lot of potential Indian capital was there in the Universities. But since these researches were happening away from the Universities sector, and away generally from the population, it was a big loss both to the university (and the University research culture), as well as potential Indian youth/students as well as teachers who could have benefited and contributed. Therefore, it is not surprising that this remoteness also became an issue of public criticism. This was attacked by several nationalist leaders and also because of this specific reason that it was not producing commensurate benefits at the ground level in terms of improvement of health care to the people. For instance, world class research was done in malaria in these isolated centres but malaria disease itself continued ravaging the Indian cities, towns and villages. In fact, the funding needed at these locations for actual control, where people lived, were not forthcoming as it did for the research on the same problems. That is the irony - on the one hand, researchers published papers, made reputations for themselves and reputations for the centres - these kinds of research centres - while, on the other hand, people continued to fall, to die, to get sick. All of this meant that hill stations-based research meant increasing isolation of medical research workers from the everyday sanitary and medical practice. And let us remember, these are all part of the same medical workforce. And these people, considerable number of them (though small) - especially these kinds of talented people who could be very innovative, who could think differently, would come with all these kinds of innovative solutions, were all sitting and doing only that, not coming down or going to the places where the diseases were ravaging. That way, there was no persistent ready line of communication or channel of communication through which the benefit of what was happening there could pass here. Rather, quite ironically, what they were connecting to was actually the wider metropolitan world of research. That is the great irony - something which can happen even in modern days like where, as I used to say, people can become rich writing books on poverty – so people will continue to be poor, but then there can be people doing lots and lots of research and in fact they can make a lot of money through the publication and circulation of their books or they can make reputation for themselves. This happens in several fields - like on the one hand, we can produce lots of mathematical modelling, economic modelling and all that - they remain as models but what happens on the ground continues pretty much unchanged. That was what was happening here - that was one of the problems with regard to these isolated research centres, which were isolated in different senses: keeping themselves away from the crowd, keeping away from the prospective Indian talent, and worst of all keeping away from the actual diseases about which they were researching, about the cure for those diseases. That is the irony and that

is something of a useful lesson we should bear in mind - it is something which should not be repeated even in postcolonial situations like ours. Some of us are already in the field of research or will be going to fields of research, should also be having a careful eye on what our researchers can and cannot do and especially when we are using public money for that kind of research. On that note, we will close this lecture. Thank you.