3. Historical Discourse on Fevers and the Context of Establishment of Fever Clinics in Kerala

The present chapter is an attempt to trace the history of fevers, viz. their prevalent types, the theories about it and the treatment followed. As fevers were prevalent in every society since early times, the history of fevers to certain extent is also the history of medicine. However, it is obvious that fevers itself is not a homogeneous category. The classification and distinction of fevers during different periods is interesting as it can explain the discourse on fevers in those times. Thus, in this chapter, the history of fevers among the Western society since sixteenth century will be examined as a pre-text to understand the Indian experience of fevers since the nineteenth century. This will be the context for analyzing the history of fever care in the state of Kerala with special reference to the post 1990s when the epidemic of fever struck the state. It is in this milieu that the discourse on fevers in Kerala and the context of establishment of fever clinics in the state will be investigated. Bynum and Nutton (1981) cautions the study of fevers as that which should limit the inquiry to researcher’s specific purpose not only because the study area involves a variety of complementary techniques and sources that makes it complex but also the fact that there is limit to one’s scholarly armour. Historical analyses of fevers envisage not only the forms of response to fever but also the medical men’s understanding of disease in general. This is because as Pickstone (1992: 128) on his discussion on ‘fever’ argues:

... the changes in ideas about epidemics need to be understood in terms of political theory and medical theory and that these can be fully understood via an historical sociology of knowledge which roots ideas in changing social structures.

3.1 Early History of Fevers in the West

Fevers were identified in the Hippocratic writing as ‘acute’, with seasonal onset with a duration of twenty one days consisting of three periods of seven days duration and was associated with bile during that period (Smith, W.D. 1981). The importance of bile could possibly due to the then prevalent humoral theory, where bile was one of the humours. Additionally high fever was treated as dangerous; cessation of fever usually indicated progress to recovery (ibid.). Fevers were attributed different names as well as treated also as the primary symptom for certain diseases. Nursing care followed by purgation and
nourishment at proper times were the medical treatments practised (ibid). A special
warning to the physician depicted during that period becomes relevant even now, “Do
not, if you are the physician, treat wrongly for fear of turning the fever into another worse
disease” (ibid: 10). In other words the role of physician in case of fever was more of care
than of cure as fever itself is seen as a bodily process for gaining balance. Later Galenic
fever theory, similar to his general theory of disease and treatment which relied more on
explanation unsupported by proof was accepted as the most valid basis of practice until
the twelfth century (Bynum and Nutton 1981: viii, Cartwright 1977). During the second
half of the sixteenth century it was the Paracelsians, who contradicted the Galenists,
Arabists and Aristotelians but were also the forerunners in many of the subsequent
approaches not only in his contributions towards the understanding of fever but also
medicine as a whole (ibid.).

Sixteenth century fever theory was important mainly on two grounds. Firstly the
Paracelsian theory of disease, which identifies pathologic poisons and predisposition as
causative factors for any disease and secondly the contribution of Michael Servetus
(1553) on the theory of pulmonary circulation of blood contradicting Galen’s ebb and
flow movement (Cartwright 1977: 17). Consequently, it was generally agreed by the
sixteenth century that the nature of fever lay in the “heat contrary to nature” or had
something to do with the heat experienced by the patient (Lonie 1981: 20). In other
words, the major focus during this period was on the definition of fever with respect to its
well-accepted quality, ‘heat’, where two types that were opposed to each other were
identified, viz. febrile and innate heats. The culmination of the idea of circulation of
blood as well as the heat aspect of fever becomes obvious from Avicenna’s definition:

1 The theory of diseases Galen accepted was by accepting both the humoral theory of the Greeks and the
Graeco-Roman theory of the pneuma. The former consider Blood, Phlegm, Yellow bile and Black bile as
the four humours whose imbalance can lead to disease and for the latter, pneuma, a vital principle carried
by the nerves wherein the origin of the disease is considered as supernatural with a natural cause. For more
details, see Cartwright, F. F (1977).

2 The terms febrile, preternatural, unnatural and extraneous heat were used interchangeably and is seen as in
opposition to natural or animal heat. Also one should recall that heat was regarded as a substance, which
was capable of division into different genera and species. This view followed naturally from a cosmology,
which regarded heat or the hot as one of the four elements of which all things, both animate and inanimate,
are composed where three substances, viz. spirits, humours and flesh jointly compose the substance of
innate heat. For details, see Lonie, Iain M (1981).
Fever is extraneous heat, kindled in the heart, from which it is diffused to the whole body through the arteries and veins, by means of the spirit and blood, reaching a heat in the body itself which is sufficient to injure the natural functions (ibid. 21).

Later Averroes, owing to Galen comments: “Fever occurs through the conversion of innate heat to the fiery”, gave an alternate formulation that fever was not merely an extraneous heat but a unity composed of natural and extraneous heat. It is in fact these disparities that set the terms for all subsequent discussions on the relationship between preternatural heat and natural heat (ibid.). In both these explanations, it has to be noted that the understanding that heat produces fever and not the other way round, along with the centrality of heart in the production of heat were the two important features during this period.

3.1.1 Classification of Fevers
During this period, many tried to explain the nature of fevers in terms of the nature of heat produced but failed. However, based on the substances involved in heat production three genera of fever, ephemeral, putrid or humoral and hectic were identified (ibid.). Besides, the distinction of fevers based on its presentation is obvious from the case of intermittent fevers. Here, the distinction was based on the observation that there was a precise regularity or intermittent, which was independent of age, constitution, diet and all other variables (ibid.). In other words, the shift in the attempt to understand fevers based on its cause (heat) to that based on effect (presentation) has to be seen as a major shift towards what is possible. This is evident from Fernel, whose fever theory later led to an explicit connection with anatomy. He states “the contenta of the body (spirits, humours and excrements) were never the subject of disease, but only its causes: diseases themselves were to be located in the parts of the body, and symptoms in the functions” (c.f. ibid. 32). Later, introducing the analogy of the concept of combustion to explain body heat, the theory that fevers are caused due to putrefaction (imbalance) of humours got attacked. This is because as ‘heat’ is identified as the important cause of fever it was thought that burning (of something) produces heat and as putrefaction is related to dead

3 Since three substances, spirits, humours and flesh jointly compose the substance of innate heat, they respectively produce three genera of fever, ephemeral, putrid or humoral and hectic.
and being a feature of cold body got ruled out (ibid.). Thus the features of fever theory during that period according to Lonie (1981: 41) was:

... the febrile heat is not specifically different from natural heat, but is an effect of the accelerated motion of the heart and arteries, this motion being provoked by a variety of causes, and its purpose being to separate and expel noxious substances from the blood.

Thus a close examination of the sixteenth century understanding of fever helps identify three different features. Firstly the distinction between febrile and natural heats as the basis for explanation was a common feature throughout the century though their reasons and purposes vary. Secondly prior to Harvey who propounded his theory of circulation of blood and its relation to the heart one can find mention about heart and circulation of blood in most of the theories on fever. Lastly but more importantly as Lonie (1981: 43) puts it “febrile heat was a substantial entity and a causal agent, not the consequence of physiological changes”.

3.1.2 Understanding Fevers for what? A Seventeenth Century Problematic

The topic of fever was more of description on what is happening based on experience than of explaining its characteristics during the seventeenth century. In other words, it was the heart that was the starting point of fever, and body heat being central, was viewed as an outcome of some processes (fermentation) in blood. During the sixteenth century, the whole discussion around the nature and characteristics of fever seemed to be more for the purpose of gaining knowledge than for practical purpose that has little to do with the treatment per se. But in the seventeenth century, the discussion of fevers was more towards prescribing the way medicine should be practised. This was also because many different views regarding treatment were struggling for legitimacy and orthodoxy (Bates 1981). It is in this context that the contribution of Thomas Willis becomes significant. Though his doctrine was not much different from earlier theories of fermentation in blood and the primacy of heart, he also emphasised new ways of understanding the traditional

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4 During the sixteenth and seventeenth century the term fermentation, putrefaction and effervescence are the terms used by different scholars whose meaning attributed remain similar. Many scholars explain the processes in the blood during fever using the term putrefaction of humours during early period and later fermentation or effervescence. This is obvious from the sixteenth and seventeenth century description of fevers dealt by Lonie (1981) and Bates, D.G (1981).
treatment of fevers. His concern was not which treatment was valid and what not, but whatever treatment was given should be given with a full understanding of its operations on the body (ibid.). This becomes evident from Willis’ writing cited by Bates as “a medicine rashly administered is but casting a die for a man’s life” (ibid: 59). This paved the way for the use of both traditional medicines as well as new ones like chemical remedies provided their use had been rationalised, one of the major issues fought among the Galenists and Paracelsians (Cartwright 1977: 17).

The shift of the focus of fever doctrine towards everyday experiences of scholars mutually changed the knowledge as well as the condition. This is revealed by the fact that the North Europeans and the British who were the major contributors of fever literature had experienced centuries of plague, at least two centuries of Smallpox, typhus, typhoid and dysentery by the seventeenth century (Bates 1981). Another important aspect of fevers dealt by Willis as well as by Fernel earlier was ‘rashes’, again a clinical feature. But there was not much distinction in the way both dealt with rashes, as it was seen as signs of ‘degree of virulence’ in most of the continued fevers (ibid: 66). In other words, rashes were seen as marks of severity. This is to say that though differences between rashes were never a serious concern, seventeenth century authors increasingly wrote about Smallpox and measles as if they were distinct diseases (ibid.). As for Bates (1981) this is an illustration of how the changing disease environment may have played a major role in the development of thought about fevers. Thus seventeenth century understanding about fever was looked at as a translation of pre-eminently physiological disease to a clinical description (ibid.). Going further, this is seen as a reflection of the acceptance of ‘Baconian fashion’, using Bates terminology (ibid. 69), whose culmination is seen in Thomas Sydenham, who argued that the symptoms for similar diseases (species) remain the same for different persons (Reiser 1978: 9).

3.1.3 Practising Physicians’ Knowledge on Fevers: An Eighteenth Century Characteristic
During the last decades of the seventeenth century extending towards the early eighteenth century, the domination of practising physicians and their theories over the pre-existing intellectual institutions of medical expertise were observed (Cunningham 1981, Geyer-
Kordesch 1981). This could be possibly due to the upper hand of practising physicians on their ability to demonstrate the efficacy through treatment. Thus the principles of treatment prevalent were questioned on the grounds that owes to Sydenham’s method of experimental basis that envisages: “the cure was found by confronting disease by skilled trial and error, rather than by working from within a theoretical understanding of physiology and pathology” (Cunningham 1981: 77). Three practising physicians were known for their contribution to fever theory during this period—Andrew Brown in Edinburgh following Sydenham’s path, Cornelis Boentkoe in Holland and Georg Ernst Stahl in Germany. Some commonalities can be identified in their approach as all of them were practising physicians and their theories on fevers were always tested with their daily practise of medicine. In other words, the physiology as well as fever pathology per se became secondary whereas disease descriptions based on its prognosis and theory rooted in efficacy of cure was the major focus. These physicians agreed on the opinion that nature has its own way of responding to any disease and the task of the physician being either to assist or to facilitate this process depending on the stages of intervention (Cunningham 1981, Geyer-Kordesch 1981).

3.1.4 Classification of Fevers: The Primary Task during Early Nineteenth Century

Later during eighteenth century, Sauvages and Cullen following Sydenham were engaged in the classification of diseases into classes, order and genera (Reiser 1978: 9-10). Cullen though recognised late, became well known during the early nineteenth century for his work on fevers. Cullen divided fevers into periodic and continued and the latter was further sub-divided into Synocha, Typhus and Synochus (Smith, D.C. 1981: 122). The distinction for Cullen, as Smith opines is same as that of inflammatory, nervous and the third a mixed type neither purely inflammatory nor purely nervous (ibid.). Cullen’s understanding of fevers and its connection to nerves were seen as an achievement of an open-minded physician who is keen in treatment. Following Sydenham, observing patterns in order to categorise fevers was a feature of seventeenth century physicians as

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5 Fevers during Galenic times were found to occur due to four causes, viz. predisposing, external, antecedent, and immediate. Accordingly, treatment also comprised of bleeding, vomiting, inciders (a medicine believed to have sharp particles which would cut up and allow the offending fluid viscous) and sweating. For more details see Cunningham, A (1981).
they were engaged in identifying epidemic patterns of similar kind and associating it with the atmosphere (ibid.). Cullen has learned from many of his forerunners and is more of a rationalist. Smith’s, (1981: 132) interpretation of Cullen’s view of reasoning makes this evident:

A physician used experience and reasoning in combination, the one supporting the other. Armed with analogies and the best understanding of physiological and pathological processes the physician approached the bedside. He must always be aware of the limits of his theory as the... system is entirely defective (emphasis added).

Cullen furthered his study of fevers beyond classification and moved on to the stages of fever, viz. debility, chill and heat, the first stage being in some sense the cause of the subsequent events (Bynum 1981). These stages defined fever both as a disease as well as a symptom when found in conjunction with other disorders. This was reflected in his practice of medicine on fever where he elaborates:

... Fever is a disease to be diagnosed by quizzing the patient about his feelings; by observing him for indications of shivering, sweating, and other manifestations of temperature change; and by carefully noting the sequence in which these events occur” (c.f. ibid. 138).

At this juncture, it is interesting to note that despite the importance of body temperature in fever description, Cullen dismissed the role of the thermometer to measure body heat as the ‘experience of the patient do not correlate very well with the numbers registered on the thermometer’ (ibid. 138). Scholars consider the minimal use of thermometer by eighteenth century doctors as more due to conceptual reasons rather than technological ones (ibid., Reiser 1978: 110-120).

Moving on to the causes, Cullen identified proximate and remote; external and internal, predisposing and exciting, encompassing then existent theories on causes thereby linking it to the physiological events of fever directly or indirectly (Bynum 1981). This complex explanation of fever as compared to the earlier ones was reflected in his therapeutic practice also. He took into consideration a range of factors before deciding on any treatment reflected in his consideration of climate, variety of fever, type of patients and the stages of illness (ibid.). The understanding of fever as nature’s response to restore
healthy equilibrium, and doctor’s role being conceived as only to assist nature, was of less importance to Cullen. This is because he considered only the initial stages of fever as ‘natural’ and that too needed to be countered medically as it would lead to debility or weakness (ibid. 139-140). To sum up, Cullen’s classification of fevers was based more on the clinical course rather than on aetiology that comprised a range of factors. He was also cautious of the difficulty in distinction between fevers and therefore the diagnosis of fever was implicitly based on exclusion (ibid.), which is even true of current practice.

Cullen’s remarkable contribution in identifying predisposing and exciting causes⁶ as well as the significant role the doctor has to play in therapeutics influenced the need for isolation and special care for fever patients. The above understanding of transmission of fevers as well as significant cases reported from jails, ships, cotton spinning factories as well as in agricultural fields generated the idea of cleanliness, an obsession for fresh air as a means of prevention (Pickstone 1992, Bynum 1981). These factors together contributed to the setting up of ‘fever wards’ in the pre-existent general hospitals and later to fever hospitals during the late eighteenth century (Bynum 1981: 146).

3.1.5 Morgagni and ‘Pathological Anatomy’

It was during late eighteenth century that Morgagni (1761) observed pathological lesions in diseased bodies by opening up the corpses that eventually became a method for disease identification (Reiser 1978:16, Foucault 1975). The general impact of medicine of this morbid anatomy was the shift from verbal-oriented diagnosis to an observation-oriented⁷ one (Reiser 1978). Foucault (1975:181) interprets Morgagni’s treatise on fevers as:

...an analysis of fevers based only on their symptoms, with no attempt at localisation, became not only possible but necessary: in order to provide the different forms of fever with a structure, organic volume had to be replaced by a space of division occupied only by signs and what they signify.

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⁶ Under-nutrition and anxiety were considered predisposing causes whereas re-breathing expired air was seen as the major exciting cause. Also the latter cause got strengthened by the frequent reporting of fevers from jails and ships leading to isolation of patients as a prerequisite for fever care. see also Pickstone. John (1992) and Bynum (1981).

⁷ Up till the end of eighteenth century observation was mainly confined to the pulse as well as weakness of the patient and so on. Later this got shifted to observations (literal sense) that look into the body (gaze). See also Jewson (1976) for clear distinction and Reiser (1978) for difference in patient examination during these two periods.
This expression of Morgagni was to show how fevers was an exception to other diseases when it was found that bodily lesions, considered to be the feature of all diseases, may not necessarily always be found in all kinds of fevers. This also resulted in seeking the possibility of understanding fevers based on symptoms, seen as the effects, that ultimately trace back to the bodily spaces (Foucault 1975: 182). This ultimately resulted in the shifting of the classification of fevers that was merely based on clinical symptoms to that based on symptoms and morbid-anatomy thereby institutionalising dissections in the hospitals as the means for better understanding. This Pickstone (1992: 141) elaborates:

Surgeons were keen to dissect; in the services, as in civilian medical schools, mastery of the corpse was becoming a hallmark of the investigative doctor; the geography of the corpse was coming to rival the taxonomic spaces of nosologies, as the major means of 'placing' a disease.

Jewson (1976) calls this a shift from 'bedside medicine' to 'hospital medicine' thereby changing the role of early 'practitioner' to a 'clinician'.

Inspired by Morgagni's pathological anatomy that identified geographical divisions within the body and its organs, Bichat, a French physician, extended the analysis to the tissue level (Foucault 1975: 128-130). For Bichat 'between the systems and tissues the organs appear as simple functional folds', entirely relative both in their roles and disorders (ibid.). In other words, the focus has changed from organ pathology to tissue pathology. This new approach not only resulted in new categorisation of diseases based on lesions but also raised specific questions on the very concept of disease in general and fevers in particular. Firstly, whether the lesion is the original tri-dimensional form of disease or it is only the first visible manifestation of a hidden process. Secondly, is it necessary for all diseases to have a lesional correlative within the body? (ibid.) The first question was not adequately addressed until Broussais whose contribution will be dealt with later. Bichat addressed the second question (similar to the exception of fevers because of the absence of a lesion mentioned earlier) by treating certain kinds of fevers and nervous affections as non-lesional diseases as there can be fevers without local lesions (essential) as well as with local lesions (sympathetic) (ibid.).
Moving on to the first question, Broussais explains the process of lesion during diseases taking the case of fever and inflammation (lesion) as:

... a phenomenon involving two pathological layers at different levels and with different chronologies: first an attack on the functions, then an attack on the texture. Inflammation has a physiological reality that may anticipate anatomical disorganisation, which makes it perceptible to the eyes (ibid: 186).

In other words, the functional disorders become primary and allow one to perceive the lesion, i.e. ‘to make the observation of symptoms speak the very language of pathological anatomy’ (ibid: 187). This is similar to theory-ladedness in observation where one can see only those things about which one is aware about and the ways of seeing depends on the nature and kind of awareness (underlying theory). Thus the contribution of Broussais re-discovered the role of symptomatology that got sidelined during Bichat as for the former it appears that the symptomatology (knowledge about symptoms) only can make possible the visibility of the lesions. Going further, Broussais argued that the absence of lesions is nothing but the ignorance of those who look for, ignorance in terms of inadequate questioning (symptoms) (ibid.). These efforts led to the disappearance of the being concept of disease as the new concept situates disease in space before it exists for sight further leading to defining a physiology of the morbid phenomenon rather as a normal and pathological anatomy (ibid. 188). The causal aspect of diseases that has been a dominant area of inquiry since the seventeenth century was dismissed by Broussais by attributing ‘the local space, the seat of the disease as also the causal space’ (ibid.). To elaborate, the earlier notion of disease as a separate entity with lesion as its genesis got replaced by the new understanding, where the functional disorder (local space) of the system pre-supposes not only the presence of a disease but also explains and predicts the nature and cause of it that gets validated by the lesion. Moreover, the medicine of diseases ceased to exist, thereby opening the way to a medicine of pathological reactions, a structure of experience that dominated the nineteenth and to a certain extent, the twentieth century (ibid.). In other words, it is this search for the physiology of the morbid phenomenon, later known as pathology, that has generated a need to unravel the ‘normal physiology’ as an opposition to the former. This is what Canguilhem (1991: 42) argues owing to Broussais and therefore to Comte that ‘... pathological phenomena found in
possibilities for discovering new causative organisms, be it a microbe or a virus, thereby new diseases. Further extending the explanation on the ontology of diseases offered by Broussais that later got elaborated by Bernard resulted in the specialisation of experimental pathology, based on which medical treatment was performed (Canguilhem 1991: 58-64). Further, Virchow's cell theory proposed in 1858 not only replaced Bichat's theory on tissues as the building blocks of the body but also opened up a new technique for diagnosis, viz. the laboratory (Cartwright 1977). It is highly possible that these understandings of diseases might have resulted in the treatment of the non-infectious diseases despite the causal factors being multiple as well as for infectious diseases without the identification of a causal factor. It could be the extension of the above premises that provides the medicine of the contemporary period aided by medical technology a power to define disease categories in technological terms. Thus, after tracing the history of fevers in the West, the history of fevers in the Indian subcontinent during the nineteenth and twentieth centuries will be examined in which the former set the context for the latter.

3.2 History of Fevers in the Indian Subcontinent

Fevers have always been a common ailment in India. As mentioned before, several theories about fever existed in the West during the nineteenth century whose repercussions can be seen in the very understanding and conceptualisation of fever in the Indian sub-continent. Moreover according to Rosenberg (1989: 14) in order to understand the framing of disease:

...[one] need to know more about the individual experience of disease in time and place, the influence of culture on definitions of disease and of disease in creation of culture, and the role of the state in defining and responding to disease ... understand the organisation of medical profession and institutional medical care as in part a response to particular patterns of disease incidence.

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8 For infectious diseases the search for causative agent resulted in the identification of a microbe in the case of Cholera, Dengue fever, Leptospirosis, tuberculosis, avian flu virus and so on. The list goes on unending and the reality becomes clearer only on detailed study on the context of those discoveries of microbes similar to Latour's (1988) study on Pasteurization of France. For non-infectious disease the search is not for microbes but for the abnormality in the physiology whose search is armed by the available medical technology that redefines the abnormality and therefore define diseases in technological terms be it hypertension, diabetes and so on. In other words, the two kinds of disease definitions operate in different logic despite the fact that the logic of disease management shows some similarities.
Thus, nineteenth century India under the British rule also acted as an experimental ground for the British for the then prevalent theory of contagion and tropical diseases. This is because as per the contagion theory, it was understood that those living in tropical climates as well as the unhygienic living conditions together contribute to the process of putrefaction thereby leading to morbidity (Naraindas 1996). Despite this notion, the British during the initial years of nineteenth century believed that they could get adapted to the Indian environment, especially the climate. Later, during the epidemic of Cholera, the above belief got shattered thereafter identifying the Indian conditions as unhygienic and reservoirs of dirt and disease (Harrison 1994: 48). Moreover, Indian medical systems like Ayurveda and Unani until mid-nineteenth century shared with Western medicine common notions of disease causation as a complex system of exciting and predisposing causes and rarely made reference to divine intervention though moral conduct was considered an important factor (ibid.). It is in this context that the fevers in India during nineteenth century will be examined.

Cholera was the major epidemic during the first half of the nineteenth century whereas it was fevers especially Malaria that was the major threat during the later half. This was proved by the reports of Bombay Presidency in 1856 which show around 40 percent of total deaths during the five year period was due to fevers alone (Jaggi 2000: 151). It has to be noted that until Laveran’s discovery of the Malaria parasite it was thought even by the Europeans that it was caused by ‘miasma’, arising from rotten vegetable matter (Harrison 1994, Jaggi 2000). The other fevers prevalent during this period were Kala-Azar, known by different names, viz. kala-jwar, jwar-vikar, burdwan fever etc. and typhoid fever also known as enteric fever. Earlier, during the 1850s, several classification of fevers were prevalent of which intermittent and remittent were the broad clinical categories with similar causes but with different degrees of the same kind of derangement (Jaggi 2000: 151). The essential difference between the two was that in the former there was complete cessation, whereas in the latter there was only an abatement of fever (ibid.). Malaria belonged to the latter category whose differential diagnosis was made based on seasonal consideration or the possibility of the individual’s previous exposure to malarious influences (ibid.).
There was also a third category, the idiopathic fevers also called as ephemeral, common, continued and so on, produced by change in temperature, violent exercise, excitement of mind, excess in heating and imperfect excretion (ibid.). Similar to the case of Cholera (Singh 2001) there was staunch contradiction in the theories of causation and treatment in case of Malaria too (Kumar 1998). Regarding fevers it appears that not only was the theory on causation different but also the categories that were used were predominantly Malaria centric. The fact that during mid 1800s both Kala-Azar and Typhoid fever were considered a type of Malaria with exceptions and also the black water fever controversy during 1897 substantiates the above argument (Harrison 1994, Jaggi 2000). This becomes more obvious as stated in the editorial of the Indian Medical Gazette, 1872 on the aspect of fevers:

There is no fact connected with the medical history of India more freely conceded by the most advanced thinkers in this country and indeed by any of those at home who take an interest in the matter, that the obscurity which surrounds many forms of Indian fevers. ... Of all the causes, which have tended to obscure them, none appears to us to have been so powerful for evil as the too frequent use of the term Malaria. In every attempt at scientific diagnosis we are met by the old bugbear Malaria as either the cause of fever or it has imprinted its mark so indelibly that the original characters of the complaint are lost.


Despite these, there were two methods of preventing the disease: the drainage or avoidance of swampy areas, and the prophylactics provided by various Cinchona preparations, most commonly quinine. Laveran's identification of the Malaria parasite in the blood of Malaria patients and later Ross's work that established the Anopheles mosquito as the vector of Malaria together with the controversy of black water fever controversy resulted in the Malaria control programme predominantly comprising of mosquito eradication, anti-larval measures, sanitation measures like cleaning of drainage and avoidance of water collections owing to the earlier sanitary tradition (Harrison 1994). Similar was the case with Kala-Azar, another disease that was confused earlier with

9 'Black water fever' or 'haemoglobinuria' was an illness during the mid-18th century whose symptoms showed similarity to that of Malaria and also turned the victim's urine dark red or black due to the toxins released into the blood stream. The London school headed by Manson considered this as a disease sui generis, whereas for another major group including Robert Koch, it was a form of quinine poisoning. This has prevented a significant population in India from taking quinine as a treatment for Malaria. For more details see Harrison (1994).
Malaria until its causative agent was found in 1904 and later its transmission route. But this time, the focus was predominantly on the treatment of affected cases rather than on the sanitation aspects. This change in focus could be due to the greater efficacy of treatment-based control measures as compared to the sanitary-based control measures carried out earlier, which were not successful as expected.

The case of typhoid fever then known as enteric fever was also identical with that of Malaria where there was strong objection to the discovery of a single micro-organism as the cause of the disease. Joseph Fayrer, the leading figure during this time criticises this attempt as:

The cause will probably not be revealed to anyone who searches with narrowed views. There is a great tendency in these days to trace all disease to a specific exterior cause, but we must not lose sight of the possibility of poisons auto-genetically developed ... or of altered conditions of innervate.


For Fayrer, germ theory was in itself inadequate to explain the cause of any disease, as more general environmental conditions were found more important than the germ. The sanitary commissioner with the government of India expressed his conviction that specific germ theory was inapplicable to the history of enteric fever in India. This resulted in propagating sanitary measures as the major means for the control of enteric fever even after the discovery of the typhosis bacillus in 1884, thereafter known as typhoid fever and even after its confirmation (Harrison 1994: 56-58). This becomes obvious from the opinion of the then sanitary commissioner with the Indian government, W. R. Rice: “practically all bacteriologists agree[d] that bacillus [was] ... a necessary factor in the causation of the disease, the question of how it was conveyed was still unresolved” (c.f. Harrison 1994: 57.).

The history of fevers in the Indian subcontinent during the nineteenth century raises certain issues. First, there was not a uniform theory prevalent about the cause or the categories of fevers prevalent during this period that was equally true in England too. The dominance of Malaria during this period might have led to many other fevers going unrecognised. Second, the germ theory of diseases faced staunch objections from the then
prevalent sanitary commissioners as well as among the Indian Medical Services leading to majority of the interventions during this period being ultimately targeted at sanitary activities. This could possibly be due to the then dominant paradigm of disease causation as well as the popular notion of practical application and practical work as being more important than the ambiguously understood microbial invasion leading to diseases. This dominance in the sanitary movement lasted till the early decades of the twentieth century. Another important feature of the twentieth century was that fevers were no longer ‘seen’ (exist) as a disease but only as a symptom for a range of diseases like Malaria, Typhoid, Kala-azar, Viral fever and so on, whose reason could be the discovery of germs and thereafter the establishment of the germ theory. Thus, twentieth century history of fevers is in fact the history of the discovery of causative organs of those diseases with symptom of fever, which is continued even today.

3.3 History of Public Health in Travancore

Public Health in Travancore can be traced back from the nineteenth century based on the diseases prevalent in the then princely state and the interventions carried out by various institutions. Smallpox and Cholera were the two major diseases that created a lot of havoc in Travancore and their intensity was in its peak during the late nineteenth century (Vinayachandran 2001: 49-54). However, Smallpox vaccination has been in use in the state since 1813 thereby initiating the preventive approach within public health (ibid.). Initially, there was public dissent towards the use of vaccine due to the accumulation of puss at the vaccine site and the subsequent scar left at the site (ibid.). This problem was tackled thereafter leading to the establishment of a vaccine department in 1865-66 which later got developed several times with increased number of staff and sub-departments (ibid.). It was reported that by the year 1935, around 71 percent of the population was vaccinated in the region which along with the reduction in the Smallpox cases resulted in greater acceptance of the public health activities (ibid., Panicker and Soman 1984: 50).

10 Kerala before its formation consists of the princely states of Travancore, Cochin and Malabar. The state of Travancore covered the contemporary southern and central districts of Thiruvananthapuram, Kollam, Alappuzha, Pathanamthitta and parts of Kottayam.
Epidemics of Cholera were reported during the years 1819, 1822, 1837-38 and later in 1870, 1881, 1883 and 1892 (Kooiman 1991). Of these, the latter two epidemics took several lives especially in northern Travancore (Vinayachandran 2001: 72-76). This ultimately led to the establishment of the sanitary department in 1895 despite the fact that fatality due to Cholera was greater during the period after the establishment of the department (ibid.). The vaccine department that was in the process of development also came under the sanitary department with a sanitary commissioner in charge of both these activities. The major functions of the department was vaccination and sanitation, the latter comprised of ensuring safe drinking water by digging new wells, cleaning of old wells together with chlorination when required and introduction of public health acts especially for plague and food adulteration (ibid. 43-45). The above set of activities also resulted in the acceptance of public health as a separate field distinct from medicine, which reached its peak during the Second World War.

3.3.1 International Interventions in Public Health
The state of Travancore had plans to modernise public health department since 1927 (ibid.) During the same period, the Rockefeller Foundation and the League of Nations was engaged in the field of public health activities worldwide and Travancore was identified as one of the possible destinations (ibid.). This along with the state of Travancore’s official requisition to modernise the existing public health activities resulted in the submission of a report by Dr W.P. Jackocks, the then representative of the Foundation who later became the adviser of the public health department between 1929-33 (Kawashima 1998, ibid.) Surveillance of hookworm infestation and its treatment and health education was the major recommendations of Rockefeller Foundation that subsequently resulted in the identification of 93 percent of the population infested with hookworm in the state and thereafter implementing Hookworm Eradication Programme in the state (ibid., Panicker and Soman 1984: 34). It has to be noted that the Rockefeller Sanitary Commission for the eradication of hookworm disease was founded in 1909 in USA whose concern was later extended to the rest of the world including Travancore (Kawashima 1998:122-123). Additionally, there were recommendations from the health organisation of the League of Nations to select people from Travancore and send them
for training at Johns Hopkins, Baltimore and Harvard universities so as to make them capable for organising health services (Vinayachandran 2001:45). Thus, in September 1933, a new public health department was set up in which hookworm control was highlighted as the initial success story (ibid.). The above interventions is critiqued by some scholars as “the outcome of the concern towards the public health of the people in developing countries, a concern of the ‘neo-colonialism’ or the ‘informal empire’ which supplied raw materials to the developed world and also provided consumers for Western commodities” (Kawashima 1998:123).

3.3.2 Medical Care in Travancore

It was by the end of the nineteenth century that Western medicine gained acceptance among the public thereby increasing the provisioning for various health institutions at different levels. There were government level initiatives to establish new hospitals for Leprosy and mental illness with the state having the authority and also to promote private practice in rural areas (Vinayachandran 2001: 22-35). In addition to this, health institutions were also set up by medical missions like London Mission Society (LMS) (1838) as well as the Salvation Army (1885) (ibid. 85-95). It was in 1868 that an Ayurvedic physician was appointed by the state in the civil hospital whose main duty was to identify the benefits of Ayurvedic medicines and to include it in the treatment regime (ibid. 72-76). However, the secondary status given to Ayurveda was changed by the end of nineteenth century thereby initiating a movement for revitalisation that ultimately led to the setting up of the Ayurvedic departments in 1917-18 (Panicker, K.N. 1992, Kawashima 1998). Along with this, modern medicine was also supported by the government of Travancore, which was reflected in the rise in the number of medical care institutions set up during the period. There were only nine government medical institutions in the state of Travancore in 1863-64 which grew to 27 hospitals and 26 dispensaries during 1915 and finally 32 and 55 respectively in 1939 together with 21 private health institutions financially supported by the government (Kawashima 1998: 117, Vinayachandran 2001: 30-35). Besides, there were provisions for free distribution of medicines as and when required through government machinery of which the distribution
of quinine and chlorodine during 1896 for Malaria through post offices was first such instance (ibid.).

After the success story of Smallpox and hookworm as well as the sanitary measures carried out, it was only in 1935-36 that Cholera reappeared in the state resulting in the death of around 6000 people (Vinayachandran 2001). Malaria was also reported in epidemic proportions during the same period from the state. For Cholera, the interventions were chlorination of water source together with vaccine distribution for Cholera, whereas for Malaria it was surveillance centres whose major purpose was to distribute the drug, quinine (ibid.). It is worth mentioning here that it was in 1931 that a new division started in the then existing public health department for studying Malaria and Filaria whose experts were from the tropical medicine school of Calcutta (ibid. 78). Later in the next year mosquito control measures were initiated in the state with the financial support of the Rockefeller Foundation as mosquito was identified as the common vector for both Malaria and Filaria (ibid.). After the epidemic of Malaria in 1935-36, a separate division for the control of Malaria was set up that has considerably checked the disease incidence (Panicker and Soman 1984).

3.3.3 Fevers in Travancore

It is obvious that Smallpox and Cholera were the diseases that were reported in epidemic proportions in the state during the second half of the nineteenth century and proceeded towards the early twentieth century. This could be due to the fact that Plague, which was also an epidemic in other parts of India during this period, was not reported from the state as well as the familiarity with these diseases leading to easy identification (Panicker and Soman 1984). It is an accepted fact that there was a steady decline of Smallpox and Cholera in the state whose pace was rapid in case of the latter especially after 1920-21 (ibid.). The reports on the causes of death by the medical and public health departments of the administration of Travancore since the 1900s identified fevers as a major category along with the earlier mentioned Cholera and Smallpox. Of the total deaths, around thirty percent was attributed to fever till the 1940s (Panicker and Soman 1984: 34). Since then, there has been a steady decline in death due to fever, which is attributed by scholars to
the decline in Malaria cases (ibid.). Another disease that was prevalent in the state with fever as symptoms was typhoid fever, then known as enteric fever. It was reported that T.A.B Vaccine was distributed through the public health laboratory, Thiruvananthapuram during the 1940s but the vaccine got acceptance among the public only very slowly (Vinayachandran 2001).

3.3.4 Fever Care in Twentieth Century Kerala

A brief outline on how fevers were dealt in Kerala society during mid-twentieth century can throw some light on the transformation of fever and fever care that has come across in the recent period. During the nineteenth century, the benefits of Western medicine were felt in the state of Travancore, but this too was restricted only to the family of the King and the public was dependent more on the local practitioners who practised local remedies (Vinayachandran 2001). It is obvious that the local practitioners themselves were not a homogeneous group as they ranged from the present Ayurveds to Naturopaths and other traditions. During mid-nineteenth century, the order of preference of treatment was home remedies, local remedies and lastly modern medicine (ibid.). It was reported that many of the treatments carried out by various systems of medicine were based on the symptoms and were effective despite the fact that the understanding of the root cause was unknown (ibid.). During the early twentieth century, several systems of medicine prevailed of which modern medicine was the last option.

Later, the establishment of the public health department that provided treatment for Malaria, vaccine for Cholera and other sanitary measures might have popularised modern medicine in the state. However, the worldwide acceptance of modern medicine as being effective in tackling problems faced during the World War periods fuelled the domination of modern medicine in several places (Cartwright 1977). Despite this dominance of modern medicine by the mid-twentieth century, a range of home remedies was reported to have used to manage fevers. They include the intake of black coffee mixed with pepper and _chukku_, taking _kanji_ and _kurumulakurasam_11 and a range of other preparations.

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11 _Chukku_ is dried ginger, _Kanji_ is a mixture of rice and water prepared while making rice without draining the water. _Kurumulakurasam_ is a preparation with tamarind, salt, tomato, pepper and mustard, a favourite dish among south Indians. During fever the quantity of pepper will be increased slightly.
(Ramachandran 2000). Only if this failed did the patients move on to local practitioners and finally to the allopathic system. In other words, it is obvious that fever was an illness that was managed effectively in homes in Kerala during the 1960s and 70s. It has to be noted that the fact that Kerala state was free of Malaria till mid 1960s also led to the situation where fever was never a threat (as it did not lead to death) for the people until the middle of the 1990s when it struck hard as an epidemic.

3.4 Disease Profile of Contemporary Kerala
The morbidity profile of Kerala will help to situate the current discourses on fevers in the state. As mentioned before, deaths due to fevers also declined due to the decline of Malaria in the state by the 1970s. However, there are also diseases like Typhoid fever, earlier known as enteric fever and Measles that can present symptoms of fever along with a range of illnesses like *Viral fevers, upper and lower respiratory tract infections, simple cough and runny nose*, generally classified as *fevers* (Panicker and Soman 1984; Kunjhikannan and Aravindan 2000: 15).

*Typhoid fever* has been prevalent and identified since late nineteenth century in the state. The number of Typhoid cases reaching various hospitals during 1982 was around 25-30 cases for every 1000 admissions (Panicker and Soman 1984). The community prevalence shows a slight increase in the prevalence during the ten year period with 0.28 per thousand to 0.65 per thousand population during 1987 and 1996-98 period respectively (Kunjhikannan and Aravindan 2000). *Measles* also showed a decline from 36 -50 per 1000 cases seeking treatment at the hospital during 1964-70 to a community prevalence of 0.36 per 1000 in 1987 to a further low of 0.22 per 1000 people during 1996 (ibid.).

The third group of fevers comprising of *Viral fevers* and others has always been a major category in the morbidity profile of Kerala (Krishnaswami 2004, Kannan et al. 1991, Kunjhikannan and Aravindan 2000). The community prevalence of these fevers during 1987 was 118.5 per 1000 population, which declined to 67.95 percent by the year 1996. In both these periods fevers constitute more than 50 percent of the total illness reported from the community (Kannan et al. 1991, Kunjhikannan and Aravindan 2000).
Malaria, one of the important diseases which has fever as its major symptom will be dealt here separately because of its uniqueness in its progression in the state of Kerala. Despite earlier reports of Malaria and its treatment, it was only in 1935-36 that the first epidemic of Malaria was reported from south Travancore that extended towards the north. Quinine distribution under the leadership of the durbar physician (physician in charge of the treatment of the family of the King) joined by other physicians, was the major intervention (Vinayachandran 2001). Later, Malaria relief committees under the Travancore medical association and then a separate department was started for the study of Malaria and Filaria with assistance from the school of tropical medicine, Calcutta (ibid.). The major work carried out was a survey on spleen enlargement and quinine distribution to those affected. Majority of the cases was reported from the highland areas of Travancore and Malabar region (ibid., Panicker and Soman 1984). Thus scholars have argued that deaths due to fevers that were reduced by the effective control of Malaria which was started by the state much before the national control programme initiated by the country in 1953 (Panicker and Soman 1984). This ultimately resulted in declaring the state of Kerala as Malaria free by the year 1965 with the assumption that only imported cases were reported from the state. However, since 1969 focal outbreaks were reported from various parts of the state though majority was imported cases (Remadevi and Dass 1999). Since the 1990s, there has been a gradual increase in the number of indigenous cases of Malaria in the state contributing to 33 percent of the total Malaria cases reported from the state by the year 1996 (ibid.).

3.5 Epidemic Fevers
The remaining are the epidemic fevers that created havoc in the state by the middle of 1990s not only by causing fatality but also because of these diseases being new and unfamiliar to the common people. They are Japanese Encephalitis reported during 1996-98; Leptospirosis, popularly known as rat fever, which doctors claim to have treated since the 1980s, reported in epidemic proportions since 1998 and continuing till the present though the death due to this disease has reduced since 2002. Subsequently Dengue fever showed its face in 2001 with its peak during 2003 and gradually declined from the next year when Viral fever became the new culprit, which attained its peak in
2005 and 2006. The culmination was in the epidemic of **Chikungunya fever** in July 2006 when there was a huge controversy on the disease per se and the cause of death during the period. The nature and characteristics of these diseases (epidemics) show that fever is the most important symptom for all these diseases and all except Leptospirosis are viral infections. It is at this juncture that the researcher wishes to examine the discourse on fever in Kerala society during the epidemic period using multi-site ethnography. As part of tracing fever, it was found that the government of Kerala established *fever clinics* in 2004 as a response to tackle these epidemics. Additionally, an in-depth examination of *panimaranangal*, meaning fever leading to death, a new category that first became popular in the media and later became common usage to explain deaths which had fever as one of the symptoms, will be attempted. Before going into the ethnography, a brief account on the prevalence, nature and characteristics of the diseases mentioned above and their complexities with special reference to the state of Kerala will be attempted.

### Table 3.1: Number of cases and deaths reported due to various diseases between 1996 and 2006.

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Japanese Encephalitis</td>
<td>cases</td>
<td>106</td>
<td>61</td>
<td>199</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>deaths</td>
<td>32</td>
<td>7</td>
<td>14</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Leptospirosis</td>
<td>cases</td>
<td>-</td>
<td>-</td>
<td>342</td>
<td>763</td>
<td>1174</td>
<td>2582</td>
<td>2928</td>
<td>2162</td>
<td>2356</td>
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<td>1691</td>
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<tr>
<td></td>
<td>deaths</td>
<td>-</td>
<td>-</td>
<td>64</td>
<td>65</td>
<td>87</td>
<td>129</td>
<td>199</td>
<td>97</td>
<td>220</td>
<td>101</td>
<td>98</td>
</tr>
<tr>
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<td>cases</td>
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<td>14</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>74</td>
<td>163</td>
<td>3861</td>
<td>1622</td>
<td>2162</td>
<td>1028</td>
</tr>
<tr>
<td></td>
<td>deaths</td>
<td>-</td>
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<td>0</td>
<td>0</td>
<td>35</td>
<td>19</td>
<td>8</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Viral fever</td>
<td>cases</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<td>-</td>
<td>1549</td>
<td>1292</td>
<td>2145</td>
<td>16,55,329</td>
<td>74</td>
</tr>
<tr>
<td></td>
<td>deaths</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>51</td>
<td>132</td>
<td>132</td>
<td>70,482</td>
<td>81</td>
</tr>
<tr>
<td>Suspected Chikungunya (July to Nov)</td>
<td>cases</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>70,482</td>
</tr>
<tr>
<td></td>
<td>deaths</td>
<td>-</td>
<td>-</td>
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<td>-</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>81</td>
</tr>
<tr>
<td>Total</td>
<td>cases</td>
<td>106</td>
<td>75</td>
<td>541</td>
<td>763</td>
<td>1174</td>
<td>2656</td>
<td>3091</td>
<td>7572</td>
<td>5270</td>
<td>4539</td>
<td>17,28,459</td>
</tr>
<tr>
<td></td>
<td>deaths</td>
<td>32</td>
<td>11</td>
<td>78</td>
<td>65</td>
<td>87</td>
<td>129</td>
<td>200</td>
<td>132</td>
<td>290</td>
<td>241</td>
<td>258</td>
</tr>
</tbody>
</table>

*Source: Directorate of Health Services, Thiruvananthapuram*¹²

**Japanese Encephalitis** (JE), identified newly in the state was reported in epidemic proportions during 1996, '97 and '98 with 32, 7 and 14 deaths respectively (Table 3.1). After that, till 2005, there was no significant number of cases of JE reported in the state.

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¹² Data Collected from the statistics division of the Directorate of Health Services, Thiruvananthapuram.
The remaining fevers viz., Leptospirosis, Dengue fever and Viral fever will be examined in detail as these are the three fevers identified as contemporary epidemics since 1998 that also triggered the establishment of fever clinics in the state.

In Kerala, though the causative agent of Leptospirosis was identified for the first time in 1987 using laboratory tests, doctors’ claim that they have treated cases of Leptospirosis since 1982 (personal discussions). In the state of Kerala, no unified diagnostic procedure is followed for the disease till now. Diagnosis of Leptospirosis is the major problem as the disease mimics the symptoms of other disease like Dengue, Japanese Encephalitis, Malaria and even Typhoid. This led to the dependence on laboratory tests of which only a few tests are available for direct detection of the bacteria and of which many are not used widely. The tests that are widely used only reveal the physiological disturbance of the patient during the onset of the disease that aid in making a suspected diagnosis and thereby guiding treatment. The most widely used include routine blood and urine tests also known as biochemical tests. In medical colleges the situation is no different as they use clinical symptoms with Enzyme Linked Immuno Sorbent Assay (ELISA) as well as clinical symptoms with the set of biochemical tests mentioned above. In some of the private hospitals in Kochi district as well as in the medical college of Kozhikode district, the disease is identified at the molecular level using Microscopic Agglutination Test.

Leptospirosis is a disease found in humans, which if not treated can become fatal. It is known by different names viz. Weil’s disease, mud fever, trench fever, rice-field fever, cane cutter’s fever, swineherd’s disease etc. The different names reveal the fact that the disease was initially associated with occupational groups. The disease is transmitted among humans by domestic animals and also wild animals of which rats are the major carriers. The infected animals excrete the bacteria through their urine. This contaminates the environment viz. water, soil, vegetation. Humans contract the infection through contact with the contaminated environment. Penicillin and Doxycycline are the drugs of choice for the treatment of Leptospirosis. For more details, see Sehgal et. al. (1991) and also Faine, Solly (1996).

Based on the discussion with laboratory staff of private hospitals and medical college hospital laboratories, it was found that for any disease with fever as the symptom Routine blood and urine test that comprise of the following are prescribed. In urine, albumin and bile pigment is looked for. In blood, Erythrocyte Sedimentation Rate (ESR), White Blood Cell (WBC) count [Total and differential count (TLC, DLC)], Platelet Count, Urea level, Serum Bilirubin, Serum Amylase and Creatinine Phospho Kinase (CPK). None of these indicate the direct presence or absence of any bacteria or virus, rather this is an indication of the physiological functioning of human organs (systems), viz. liver, and kidney and therefore also known as liver function and kidney function tests. These tests are carried out usually to aid the nature and kind of treatment rendered.
(MAT)$^{15}$, a comparatively more sensitive test according to physicians. The efficacy and the sensitivity of the laboratory tests is still a debatable issue, which is beyond the scope of this chapter. Additionally, it is an astonishing fact that many of the institutions especially certain medical colleges and big private hospitals don’t even notify$^{16}$ Leptospirosis. In medical college hospitals, treatment is rendered either at the urology department or at the general medicine department resulting in failure of having consolidated data on the disease prevalence. However, Leptospirosis being a seasonal disease usually prevalent in waterlogged areas among agricultural labourers, some physicians also claim that a 12-point indicator based on clinical presentations alone can diagnose the disease with significant accuracy.

**Dengue fever**, another vector-borne viral infection has been there in India since the first case was reported from Vellore in 1956. Several outbreaks have been reported in Delhi of which the one in 1996 was the severe one (Addlakha 2001). In the state of Kerala, Dengue fever was reported in 1997 and from 2001 onwards the area has been reporting regular cases which reached its peak in 2003 as per reports. As mentioned earlier, lack of uniform disease definition has been a major issue in the case of this disease also. In most of the private hospitals, platelet count, one of the indicators$^{17}$ of Dengue fever is used as a diagnostic test, which is highly criticised at different levels. In public institutions, especially those at the level of community health centres and above, Immunoglobulin (IgG and IgM)$^{18}$ tests are followed for diagnosing Dengue fever. The pathologist of one of the district public health laboratory opines that: “Immunoglobulin positivity alone in

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$^{15}$MAT or Microscopic Agglutination Test is a test in which a small volume of live Leptospiral culture is mixed with a volume of known dilution of the patient’s serum. Agglutination is recorded following observation by dark field microscopy. For more details, see Faine, Solly (1996): 413.

$^{16}$Certain diseases if treated in the hospital are expected to be reported to the district medical authorities as part of the surveillance effort. Inclusion of diseases into the category of notifiable diseases is based on the prevalence of certain diseases in epidemic proportions in order to have an effective investigation system.

$^{17}$Platelet count in blood can be reduced in the case of Dengue fever but this doesn’t mean that all platelet count reduction can be due to Dengue fever. This is because physicians even admit that there are certain drugs that can reduce platelet count especially steroids as well as in specific cases of anaemia. For more details see *The Hindu* dated 18th October 2006.

$^{18}$IgM and IgG (Immunoglobulin) are two kinds of antibodies that are expected to be prevalent in the blood serum or plasma of Dengue patients due to the immune response of the body after the 5th day and two weeks respectively after the onset of the symptoms. Detecting the presence of these antibodies using chemical techniques remains as one of the diagnostic procedures for Dengue fever.
the absence of symptoms specific to Dengue can even be a negative case of Dengue as it
can also imply that the person has resisted the virus attack.” The whole issue of varied
diagnosis followed for Dengue fever became significant during the Dengue epidemic
where a tremendous rise in the number of reported cases occurred in the year 2003 and
declined drastically in the year 2004 after which Dengue was never reported in epidemic
proportions. This, according to one of the District Medical Officer’s (DMO) opinion was:
“cases reported from private hospitals were also included in the year 2003 which was
stopped in the year 2004 as there were several false positives reported from private
hospitals as they use platelet count alone for the diagnosis of Dengue fever”. The above
possibility of over-reporting of Dengue fever due to whatever reasons get re-asserted
when one examines the recent report of Dengue bulletin of the WHO that gives the
results of the blood samples examined from Kerala state. It has to be noted that during the
year 1997, of the 116 cases examined from Kottayam district only 14 cases were
confirmed serologically. During 2001, 70 probable cases were identified out of 877
reported from the four districts famous for rubber plantations (Kalra and Prasittisuk
2004). Similar trends were also found during the investigation of the cases of 2003 when
it showed only 34 percent serologically positive cases out of the 1627 suspected cases
tested (www.whoindia.org/EN/setion.3/section262/section.34-733.htm, 2005). In
addition to this during fieldwork, it was found that there were several cases suspected as
Dengue at the clinical level, which were later found negative during laboratory
investigations. As there is similarity in the interventions for cure of Dengue fever as well
as Viral fever, it is highly possible that many Viral fevers can get cured with the
diagnosis of Dengue fever, a comparatively marketable event for private hospitals. This
is because of the notion among the public that Dengue fever is a new disease with greater
fatality than Viral fever.

**Viral fever** is a disease category comprising a range of illnesses caused by various
viruses. They include Dengue fever, Chikungunya fever, Yellow fever, and several
others. According to medical literature, “Most undiagnosed acute febrile infectious
diseases are probably viral and remain undiagnosed because diagnostic methods are
unavailable or cumbersome” (Petersdorf 1974: 57). In clinical practice, it could be this
probability that translates the diagnosis of Viral fever as that based on the exclusion principle. This, as a physician, who is the head of the infectious diseases unit in one of the medical colleges in Kerala elaborates:

...a patient with fever will be asked questions and depending on the specific symptoms, lab tests will be prescribed as and when required for diagnosing Typhoid, Malaria, Measles, Chicken pox and Leptospirosis. Once these diseases are ruled out, it is assumed that the patient is suffering from infections since it is believed that the majority of infections are caused by Virus, the fever is classified as Viral fever.

He also shared his experience about the treatment modalities for Viral fever as:

...For Viral fevers, the principle of treatment is 'symptomatic treatment’, where rather than eliminating the cause of the illness (in the case of bacterial diseases), medicine that can reduce symptoms will be prescribed and in due course the body will resist the disease.

Certain issues arise in the above situation: first it appears that it is a convenient and easy job to reach a diagnosis of Viral fever in a place where Malaria is no longer endemic, and Measles and Chicken pox can be easily identified by the nature of rashes. Thus the possibility of rushing to a Viral fever diagnosis for a range of illnesses without reaching a valid diagnosis is very high. This possibility become strengthened when one examines the cases reported during the epidemic years for the state which showed a tremendous rise in Viral fever cases in the year 2005 and 2006 (Table 3.1). It has to be noted that in the state of Kerala, only in the year 2004 did Viral fever started getting reported as a notifiable disease. The issue becomes too complex when one of the physicians opines that the intervention remains same whether it is Viral fever or Dengue fever and it is the concern of the epidemiologist to distinguish between each and not his/hers (Clinician).

3.6 Reporting of/ for what? Some issues on reporting Fevers

The above description on various diseases and their nature and characteristics within the state of Kerala unravels the fact that the reporting system like that for many other diseases is insufficient as there can be lacunae in reporting, which ultimately lead to under-reporting of some and over-reporting of others. This could be partly due to the organisational factors within a public reporting system generally identified as structural constraints (Banerji 1984). Supplementary to this and more important is the varied diagnostic procedures used by different hospitals for same diseases resulting in varied
disease (case) definitions. This raises two issues: first, the absence of a uniform disease definition in various hospitals thereby resulting in the attribution of a disease to a patient in one hospital can get nullified by another and vice versa. This becomes more complex when there are several diseases with fever as the major symptom where significant difference hardly exists in the kind of care rendered for all viral diseases. Another aspect that becomes crucial is the purpose of diagnosis within the medical practice itself. This is because in the contemporary practice of medicine it was found that a huge chunk of patients got cured of their illness despite physicians not reaching a valid diagnosis. A valid diagnosis here implies the usual pattern that certain illnesses (cases) after being examined by the physician ideally ought to fit into the pre-existing disease categories. The inadequacy in diagnosis was obvious when the researcher found that only 14 percent of the patients followed up in the study (150) had final valid diagnosis, 22 percent had only a suspected diagnosis whereas the major chunk (64 percent) were categorised only upto the symptom level. The question that then arises is, do we need a diagnosis upto the disease level or till the symptom level? The former kind can aid epidemiologists, policy makers as well as for treatment purposes whereas the latter followed widely in the current context is considered sufficient enough for treatment. This is in the light of the claim among some physicians who when interviewed opined that clinical diagnosis without the aid of laboratory tests is reliable enough and sufficient for rendering care in specific diseases.

3.7 Response of Public Health Professionals to the Epidemics

As mentioned earlier, several cases of the above mentioned diseases as well as deaths due to it were reported every year from various places of the state which set the scenario for the establishment of fever clinics. There were several meetings held among the ministers, public health professionals and other members from the government health services which ultimately resulted in public health interventions of which the establishment of fever clinics were only one. The researcher has confined his review to the minutes of the meetings held between 2002-2004 since in May 2004, the state government declared officially the establishment of fever clinics. As per the minutes and other documents, it was found that until 2002, the major problem among fevers was Leptospirosis except the
outbreak of encephalitis during 1996-98. However, a few cases of Dengue were also reported in the state during 2002 resulted in the declaration of Dengue and Japanese Encephalitis (J.E) as notifiable diseases along with Leptospirosis that was already in the group since 1998.\(^\text{19}\) In another meeting chaired by the Chief Minister during February 2003 on *Intersectoral Approach and Prevention and Control of Leptospirosis and other Communicable Diseases*, it was decided to allot to each District Medical Officers (DMO) an amount of Rs. 10 Lac each for the prevention and management of communicable diseases along with 2 Lac each for government medical colleges. The interventions broadly comprised of procedures followed for diagnosis (provisioning of test kits) and reporting of cases (mechanism of disease reporting) from various public and private hospitals, vector control measures based on sanitation and larvicidal measures along with Information, Education and Communication (IEC).\(^\text{20}\) In the meeting on 29\(^{th}\) July, Viral fever was also identified in epidemic proportions especially in northern districts of Kannur and Kasargod.

A series of eight meetings of the newly formed state-level Crisis Management Committee (CMC) held from 11\(^{th}\) to 29\(^{th}\) July 2003 called for the formation of a *district-level Crisis Management Committee* with the district collector as the head with its functioning extended to the ward-level. This was in the backdrop of the rise in the number of Dengue cases reported from the state. The recommendations were on prompt reporting of diseases especially from the private hospitals using postcards following the specific format whose responsibility was assigned to the DMOs of each district to consolidate data from the private hospitals and thereafter sending it to the Directorate of Health Services (DHS). There were several discussions on the feasibility of postcard system and the scope for shifting to telephone or fax system for disease reporting and finally it was decided that a gradual shifting to telephone and/or fax would be feasible once the infrastructure facilities are ensured.

\(^{19}\) Based on the minutes of the meeting on *state level core group on prevention of Leptospirosis in the state* held on 12\(^{th}\) July 2002 with the Director of health services as the chairman in which additional Director of public health, Director of medical education and others participated.

\(^{20}\) Minutes of the meeting on *Intersectoral approach and prevention and control of Leptospirosis and other communicable diseases*, held on 3\(^{rd}\) February 2003 with the Chief Minister as the president.
Another aspect was on the decision to distribute diagnostic kits received from the WHO to all districts and/or public health labs situated at the district level. Moreover, a preliminary epidemiological investigation report on the outbreak of Leptospirosis and Dengue fever that had occurred during July 2003 was submitted in October 2003 whose recommendation was to start Fever clinics in Medical Colleges, District Hospitals, Community Health Centres (CHCs) and Primary Health Centres (PHCs). It was during this period that camps were organised and fever clinics were started at different areas mostly attached with the prevalent health centres and occasionally separate. This was based on the quantum of cases reported from various places. The first of its kind was started on 25th June 2003 at Vithura in Thiruvanthapuram district when a five-year-old boy died in the area. The clinic was to function from 8 am to 5 pm and it was decided to provide sufficient medicines and necessary funds to be allocated by the hospital development committee (*The Hindu*, 25th June 2003). Later, as the epidemic was on its peak several fever clinics (for some places it was monitoring cell) were started in various public health institutions ranging from Community Health Centres to District Hospitals. The major task of this was to identify fever cases and manage it effectively and reporting cases promptly to the district authorities.

By the year 2004 onwards the meetings of the public health experts to evaluate the situation in the state came to be known as the *meeting on communicable diseases* and the first of its kind was held on 3rd February 2004 with the principal secretary of health as the chairman. Based on the earlier mentioned report on the investigation of the epidemic, a Protocol for syndrome of fever was prepared on how to manage fever cases whose major focus was on disease reporting, diagnosis and management. The document is divided into two parts: the first part deals with the case definition and its need for surveillance and how to investigate an epidemic. The second part is entirely on specific

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21 Minutes of the state level Crisis Management Committee on Communicable Disease meetings held between 11th July to 29th July 2003.  
22 This is based on the preliminary report of the epidemiological investigation of an outbreak of Leptospirosis and Dengue in Kerala, 1-5 July 2003.
management protocols for Dengue fevers, Japanese Encephalitis and Leptospirosis, the then prevalent epidemics, with a passing remark on Malaria. This ten-page report later got finalised and remains as the only official document on fever case definition and its prevention during the epidemic of 2003.

A brief textual analysis of the document reveals how some of the core issues related to fever are addressed. The mention of fever as a syndrome in the document indicates the transformation of fever, that was perceived as symptoms of various diseases to that of a bodily condition characterised by certain signs and symptoms similar to Acquired Immune Deficiency Syndrome (AIDS), Down’s Syndrome, Guillain-Barre Syndrome etc. In other words fever is assigned a position somewhere between symptoms and diseases if symptoms and disease can be seen as the two ends of a continuum. The document further consider fever as due to infection and measurement of temperature is considered cardinal by adequately elaborating on the technique used and the need to be cautious while measuring temperature. After the section on introduction, the report elaborates on how surveillance needs to be carried out where cases are classified as Suspected, Probable and Confirmed. The first is based only on clinical signs, the second on clinical signs and either supportive serology or epidemiologically linked with a confirmed case while the third should satisfy clinical description as well as laboratory confirmation. Then the document gives guidelines on the reporting procedures and format to be followed and finally measures for prevention and control of an outbreak. The major focus of the prevention and control measures include vector control, viz. mosquitoes in case of Dengue, Japanese Encephalitis and Malaria and rodents in case of Leptospirosis along with health education to observe healthy and hygienic practices. The second part of the document is about the clinical and laboratory criteria for diagnosis and management of Dengue fever, Japanese Encephalitis and Leptospirosis. A sweeping section on Malaria

23 Protocol for Syndrome of Fever, draft document prepared by the Directorate of Medical Education, Government of Kerala with the intention that it will guide 'fever management' through surveillance and treatment protocols.

24 A supportive serology is that after showing compatibility with the clinical description and if the blood tests show positive antibody test for respective diseases, then it is treated as a probable case. Also, if clinical compatibility is found along with being epidemiologically linked, meaning the possibility that the patient had exposure with any other known source of the disease, be it a person or otherwise, then also the patient is treated as a probable case.
also indicates the acceptance of its possibility as a disease that can strike in epidemic proportions. The whole of the second section is in fact a reminder to the physicians on the protocol to be followed in case of fevers in the context of epidemic. The document reveals the confusion on the definition of fever at one level and the difficulty in having a uniform disease definition for at least the few diseases specified. Besides, the recommendations are similar to any other diseases where vector control and environmental sanitation along with prompt treatment are the possible measures propagated without examining the larger factors that lead to environmental pollution and therefore rise in vector population. However, it is a common feature that during epidemics, problems like waste disposal, lack of diagnosis during fevers at the hospitals, inadequate doctors in the hospital as well as inadequate hospital waste management and several others is raised by the public and the media (The Hindu, The Indian Express, June 2003). This was identified by scholars as a regular feature that it is during epidemics that several problems and crises prevalent in the society that directly or indirectly have bearing on the epidemic is raised by the public (Shah 1994, Addlakha 2001).

3.8 Media and the Public
It is at this juncture that the role of media becomes significant. During monsoon as well as immediately after the rainy season, reports on panimaranangal (meaning deaths due to fever), a new category appeared in local newspapers only by the late 1990s. This category was used by the media to indicate those deaths that occured with fever as one of the symptoms. This along with the various Television channels as well as local magazines highlighting the need to be cautious about fever and the precautions to be taken in case of fevers together created a notion about fevers as problematic and something to be feared. In order to understand the category of panimaranangal, one of the cases reported in the newspaper was followed up. It was the case of a 14-year-old girl, whose death occurred suddenly after the illness. According to her parents, there was no history of fever for 2-3 days and the death was due to a heart attack. The doctor who treated the patient depicted the incident as follows:

...(t)he patient came to me three hours before complications and I couldn’t make a final diagnosis within that. She came with complaints of vomiting and on physical examination, I found a rise in heart beat and slight fever. Later, because
of the poor physique of the patient, I prescribed IV fluid and she was kept under
observation. After half an hour, the patient felt okay and started talking and took
some water and rice. After a while, the patient was transferred to the ward when
her relatives asked for discharge. By the time they were about to leave for home,
the patient again vomited and also got hiccups. In the meantime routine blood
tests were carried out and showed slightly raised Serum Bilirubin (2.04) and later
her temperature rose. Therefore Paracetamol was given. I asked the patient’s
relatives to shift to a big hospital, but the patient died on her way.

The moment news on *panimaranangal* gets reported in the media, the reader gets an
impression that it could be either due to Viral fever, Leptospirosis, or Dengue fever, the
three known *epidemics* in the state. The above threat about fevers was also obvious from
the experiences at the outpatient departments of various hospitals, where the major
purpose of fever patients coming to the hospital was to ensure that their fever was not
Dengue, Leptospirosis or due to Jaundice, the latter being an all-time threat. Additionally,
as the study provided opportunities for the researcher to engage with fever patients at
various hospitals, a peculiar pattern was observed among the patients. When the patients
are seen during the first time at the hospital, the usual opinion is that “as there are several
epidemic fevers, who knows what this could be?” Later once the researcher reaches their
homes for follow up after the patients got cured from the fever they say, “oh, it was a
simple *jaladoshapani* (meaning cold fever).” This again shows the varied understanding
of the same event at two different stages of illness where the threat of fevers is obvious
during the initial stage.

In addition to the above, some report on deaths due to fever that appeared in the
newspapers during the epidemic also reveal the uncertainty prevalent during an epidemic:

Arjun, a fourth standard student of the Sarvodya Vidyalaya, Nalanchira, had been
admitted to the SAT Hospital on Monday following symptoms of Dengue fever.
He died of ‘bleeding and shock’ this morning (Wednesday) while under treatment
in the ICU. The hospital Superintendent, K. Rajamohan said Arjun, son of a staff
nurse of the hospital and a resident of Burma Road, Kumarapuram, had “clinical
Dengue as there was bleeding”. The boy, who had been attending school,
developed fever on Friday evening and was taken to the hospital. Following this,
he was under treatment at home. He was rushed to the hospital yesterday after he
showed symptoms of Dengue fever.

*(The Hindu, 28th June 2003)*
An MCH official said that two youth from Nedumangad had been hospitalised in a critical state with high fever. One, who was 22 years old, died within hardly 10 minutes of being admitted to the hospital, while the other, who was 18 years old, succumbed after battling for life for three hours in the ICU. The third patient, a 19-year-old girl from Sreevarahom area in the city, died while under emergency care in the Medical Intensive Care Unit (MICU). She had arrived with tell-tale signs of an end-stage Dengue attack. Clinicians, however, were reluctant to classify the infective cause of the deaths, as serological confirmation could not be obtained in any of the cases. Doctors said the two youth from Nedumangad appeared to have suffered from severe broncho-pneumonia and had difficulty in breathing.

(The Hindu, 20th June 2003)

Even a death reported today in Kollam has been formally described by the health authorities as "suspected rat fever". The fact that the medical authorities' cannot identify what precisely caused a person's death, especially in a tense situation in which an epidemic is raging, only exposes the total inefficiency on the part of the health authorities in dealing with the situation.

(Indian Express, 28th June 2003)

As is clear from the above, diagnosis becomes very difficult especially in cases of death. The terms usually used in case of epidemics to describe the disease are suspected, clinical signs, etc that was also demonstrated by Addlakha (2001) during the Dengue epidemic in Delhi. This kind of terminology according to Fox (1957) is used by the medical fraternity to cover the uncertainty and ambiguity regarding a disease that a physician gets socialised during his/her medical training itself. It is these terms that are carried forward by media many a times in the same form as there is a notion that those dealing with medicine have to be dealt in its pure form attributing a scientific character. This kind of reporting by the media not only leads to confusion but also catalyses the threat prevalent in the society during crisis situations like epidemics.

3.9 Interventions of Institutions

It was interesting to examine how certain institutions that represent the dominant system and other systems of medicine intervened in the above discourse on fevers. This was examined based on the newspaper reports during the epidemic periods as well as the minutes of the state level Crisis Management Committee meeting held during August
2003. There was a clear conflict between the Indian Medical Association (IMA) representing the Allopathic system and Organisation of Government Homoeo Medical Officers Kerala (OGHMOK) representing the Homoeopathic system on the prevalent epidemic as well as the treatment offered. The IMA in the wake of an epidemic carried out a survey among 1040 high school students and a street sample of 528 people from Thiruvananthapuram city to study the extent of the epidemic and the efficacy of Homoeopathic medicines. The study concluded that the prevalence of fever was much higher than usual and was attributed to Dengue fever whose reasons were attributed to ineffective vector control measures and misplaced reliance on preventive drugs. The study further argued that those who took Homoeopathic medicines were reported to develop fever as well as side-effects thereby questioning the efficacy of Homoeopathic medicine in preventing the epidemic (The Indian Express, 14th July 2003).

In response to this the Organisation of Government Homoeo Medical Officers Kerala (OGHMOK) urged the State Government to undertake a comprehensive probe into the death of 170 people, reportedly due to Dengue fever. Addressing a press conference on 20th June, Dr V. A. Nassirudheen, president of the OGHMOK expressed doubts over the fact that all those people were affected by Dengue fever. Dr Nassirudheen rebutted the allegations that Homoeopathy medicines were not effective in curing people affected with Viral and Dengue fever. He asserted that only Homoeopathy could offer medicines to prevent the fever, which had been raging in the state for the last couple of months (The Indian Express 25th July 2003). This conflict situation was also obvious from the state-level Crisis Management Committee meeting held on 13th August 2003. The committee recommended the need to carry out a scientific study on the effect of the preventive medicines of Homoeopathy and Ayurveda based on which a final conclusion could be reached. This has not been done so far as the department of Homoeopathy demanded more financial inputs along with the fact that the need for such a study attained less

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25 Minutes of the state level crisis management committee on communicable disease meetings held on 13th August 2003, 6th recommendation.
importance in the subsequent meetings. This is a situation that raises the questions of evidence and efficiency, which according to Naraindas (2006: 2658):

"... are central to the interplay between biomedical and other medical traditions, since objective tests and measures in biomedicine are accepted as the only legitimate 'evidence' of cure, but these do not necessarily accord either with the premises of these other traditions or with patient's subjective perceptions of well-being".

This is to argue that at a time when various systems of medicine interact, it is highly possible that the media as well as other public health professional bodies will abide by the dominant system and its knowledge, here biomedicine. The tilt of the media is obvious from the uncritical description of events using the terms and categories of biomedicine. The government officials' inclination is evident from the sidelining of the need for a study on the preventive drugs of other systems thereby endorsing the findings of the IMA, the organisation of the dominant system.

3.10 Igniters for the Establishment of Fever Clinics

At the political front also, certain developments took place. Due to re-shuffling of ministers, the then health minister was replaced with a new one who took charge on 11th February 2004. The former minister had faced some allegations on a plan to lease out government medical college campuses for private companies during his tenure that left behind a negative mark for the minister (The Hindu 29th June 2003). During the early tenure of the newly appointed health minister, cases of Malaria were reported from Valiathura fishing community at Thiruvananthapuram. This area has always been one of the highly endemic areas for Malaria in the state and cases have been regularly reported since 1997 every year (Remadevi and Dass 1999). In 2004 until February, around 51 cases were reported from the area creating fear among the public (The Hindu 26th Feb. 2004).

Another incident during the same period was an epidemic of hepatitis reported from Arpookara region, situated on the premises of the Kottayam Medical College, one of the medical colleges in the State. These two incidents fuelled the pre-existent threat of fevers

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26 Minutes of the state level crisis management committee on communicable disease meetings held on 20th August 2003.
in the state despite lesser number of Dengue cases being reported in 2004 as compared to the previous year. The latter epidemic of Jaundice raised several issues regarding biomedical waste management as well as the drainage facility of Kottayam medical college hospital. This reached its extreme when an outbreak of infective hepatitis was reported from the men’s hostel of Kottayam medical college where 23 cases were identified resulted in the death of one of the medical students in the hostel. In fact these two incidents, the first from the capital city in February 2004 and the second from a land of media and trade, in April 2004 intensified the then dormant public demand for concrete action for the control of epidemics. Besides, the committee in its meeting on 23rd April reviewed both the reports of the two incidents as well as that of other diseases like Leptospirosis and Dengue fever. Additionally, taking into consideration the greater number of cases reported during the months of June and July in the year 2003, there was an expectation of a possible Dengue outbreak during the year 2004.

Thus it was on 24th May 2004 that the health ministry made the official declaration to establish fever clinics, as a state-wide intervention to tackle the epidemic. The characteristics and functioning were not different from that of the earlier clinics but was extended for the whole state for the first time with the following directives. (1) There will be an infectious diseases cell functioning in every district. (2) The DMOs will have to give daily reports on Viral fever and other infectious diseases through the cell. (3) A fever-register will be maintained in all hospitals. (4) All DMOs will be sanctioned Rs 8 lacs each for organising control activities to check Viral fever. (5) Each district would also be given Rs 74,000 each for the control of Dengue fever and Japanese encephalitis.

3.11 Fever Clinic and its functioning/ in Actuality
As mentioned previously, fever clinics were already functional in some places where it was started earlier during the epidemic of 2003. Besides, the functioning of fever clinic

27 Based on the minutes of the meetings on communicable diseases held at the DHS, Thiruvananthapuram on 23rd April 2004.
28 Minutes of the meetings on communicable diseases held on 24th May 2004 with health minister as the convenor, also see The Hindu dated 25th May 2004.
was not different from that of the outpatient medical care delivered in public health facilities. Thus the health professionals did not find any difference with their earlier duties as the only additional characteristic of fever clinic as compared to the pre-existing medical care was maintaining of fever-register and reporting to the authorities. The former was ruled out as impossibility, right from its inception in many centres based on doctors' usual complaint of overcrowding in public hospitals. Not only does fever-register demand adequate time for patient care but also a valid diagnosis, which many a time does not happen especially with patients coming with fever. Despite the fact that fever-registers are not maintained by majority of the hospitals—both public and private, the major indicator of the functioning of fever clinic became that of the reporting of fevers to the authorities. Here is a situation where a concrete definition of fever is lacking and diagnosis becomes an unattainable goal. However, it is obvious that varied notions on fever ranging from runny nose to recurrent sneezing, to jaundice to body pain are prevalent among patients as well as hospital staff including nurses and other paramedical staff. In this situation, to reach a consensus on the nature and therefore the quantum of fever cases reaching the hospitals become impossible. Despite these, numbers were generated from the primary health centres, community health centres as well as from the district hospitals that were reported to the District Medical Officers (DMOs) and ultimately to the state-level directorate that ultimately became the data source with which health planning took place.

A close observation of the processes through which these numbers were generated in the fever clinics reveals the real situation. In the absence of fever register, the number of cases are estimated based on a rough estimate and subsequent consensus reached by the duty nurse, attendees of the hospital and occasionally with the doctor who is in charge of the outpatient department. This, for some hospitals, is based on the number of patients who were given injections, with the presumption that those who were given injections were serious cases and possibly had Viral fevers. In short, there was no clear-cut definition followed while reporting and it is based on wild presumption. As mentioned earlier, runny nose, recurrent sneezing, body pain etc. that are understood as fever at times also get interchangeably reported as Viral fever. In this case, the categorisation of
Viral fevers occurring in reality fail to follow the categories as mentioned in the medical literature. Additionally, it is highly possible that the criticism generated on diagnostic tests and therefore the possibility of false positives of Dengue fever reported during 2003 might have resulted in cautious reporting of Dengue cases afterwards. This caution with the reporting of Dengue fever might have resulted in over-reporting of Viral fevers, which became the new culprit. It is worth mentioning here that at any point of time, Viral fevers constitute a major chunk in the disease profile reported from the state (Kunjhikannan and Aravindan 2000). Despite this, the increased focus on Viral fevers reflected in its categorisation under the notifiable disease category in 2004 also resulted in the huge increase in the number of deaths reported due to Viral fever in the state during the year 2004 thereby leaving Dengue aside. The Viral fevers during the year 2003 were not felt as an epidemic probably due to the fact that fatality due to these was almost negligible or not noticed in the midst of highly fatal Dengue and Leptospirosis (Table 3.1). The importance of Viral fever in the year 2004 becomes obvious from the following newspaper report on the establishment of fever clinic:

Steps have been taken for the effective control of Viral fever and other infectious diseases in the State. At a meeting convened by the Health Minister, Kadavoor Sivadasan, on Monday, it was decided to start Viral fever clinics at all district, taluk hospitals and major community health centres from tomorrow.

(The Hindu, 24th May 2004)

The increased focus and therefore threat of Viral fever reached its peak in 2005 when the cases reported as well as deaths due to the disease reached double the number that of the previous year. This continued till the middle of 2006 when Chikungunya fever was identified as a new threat in the state when reports claimed that there were around 70,000 cases and that 81 deaths had occurred in Kerala that were suspected to be due to Chikungunya fever during the period June to November 2006.

3.12 Conclusion

The present chapter is an attempt to examine the discourses on fevers that manifested in epidemic proportions in the state of Kerala in the second half of 1990s, using ethnography of the events that happened during the period. While tracing the events it was found that fever clinics, a new medical establishment was established by the government of Kerala throughout the state as a response to the epidemics. Historical
discourses on fevers in the West especially those of the eighteenth and nineteenth century that have their bearing on the contemporary understanding of medicine in general and fevers in particular, were covered. This historical understanding remained as a pre-text to understand the discourses on fever in the Indian subcontinent and therefore in the state of Kerala.

Fevers in the early period were guided by the humoral theory reflected in the importance of bile in the causation of fever. The role of heat as an indication of fever is a feature that has been observed in almost all periods. During the sixteenth century, the notion of fevers was guided more by the then popular theory on the circulation of blood whereby fevers were seen as the cause, contrary to the earlier notion that viewed fever as the consequence of physiological changes. In the seventeenth century, fevers were classified based on the practical requirements of treatment and the distinction among fevers were made based on the then guiding principle of systematic observation and analysis, the feature of enlightenment. This attained its peak in the eighteenth century when the practising physicians not only had the upper hand in the descriptions on fever but also were capable of treating the diseased. It was in the same period that the classification of fevers based on order, genera and species and clinical descriptions as well as those based on causes were prevalent. But, more accepted was the latter one.

During the early nineteenth century, the understanding of diseases was guided by the pathological anatomy of Morgagni, later carried forward by Bichat at the level of tissues. Broussais redefined this notion about diseases with his new explanation on the relationship between bodily lesions and symptoms (functional disorder). This becomes crucial, as it was fevers that were a category during this period that was a paradox to the then prevalent theory of diseases, pathological anatomy. Broussais dealt specifically with the case of fevers and then extended it to other diseases that was carried forward by Bernard, which remains the basis for the physiology and pathology that are cardinal in contemporary medicine. Another feature during the late nineteenth and early twentieth century was the theory of causation of fever. This resulted in the identification of the triad—the weather, the poison, forming within the body of the organism and the
'miasma', formed outside the body of the organism as a result of decaying matter. It was this theory of miasma that offered space for the dominant germ theory of Robert Koch that subsequently got widely accepted.

Inspired by the miasma theory, the climate was considered the important cause of the disease with the poor environment contributing to it. Thus sanitation was the only major measure carried out to control diseases in general which later was replaced by vector control measures specific to Malaria. Here, it has to be noted that despite the establishment of germ theory there were several objections on control measures that concentrated only on destroying the germ as the role of sanitation was considered primary. It was a feature during this period that there was overemphasis on Malaria that might have led to other fevers going unrecognised. This, along with the characteristics of the germ theory might have resulted in the twentieth century history of fevers as the history of the discovery of causative organs of those diseases with fever as its symptom, which is continued even today.

The public health scenario of Travancore during the nineteenth century was traced back to understand the then prevalent notions of public health, which indicates that it was more dependent on the kind and nature of diseases prevalent at that time, viz. Smallpox and Cholera. Later, international organisations like the Rockefeller Foundation, the League of Nations and Mission Societies all had a significant role in the formation of the public health department and medical care in the state. This demonstrates that the state of Kerala and its public health was largely based on the type of diseases prevalent and the then dominant discourses on health, medicine and medical care. However, despite the dominance of modern medicine, there were local and indigenous practices prevalent and practised for different diseases especially for fevers that had influenced the notion about diseases.

It is the above background of fevers in the West, in India and finally in the state of Kerala that helps us to understand the contemporary discourses on fevers in the state. As mentioned earlier it was in the middle of the 1990s that fevers were understood as
epidemics because of their increased prevalence as well as the fatality reported due to specific diseases. Of the several diseases that was reported with fever as symptoms, Leptospirosis, Dengue fever, Viral fevers and finally Chikungunya were those that struck hard and are believed to have resulted in several deaths. This is despite the fact that Japanese Encephalitis and Malaria was identified in certain pockets and during specific seasons. While examining these epidemics in detail, it was found that there exist different understandings among the public health professionals, the media, the common public, medical fraternity and so on that ultimately resulted in the havoc. Going further, these understandings were largely guided by their purpose of interaction with the illness. For the public health professionals the purpose was for programme planning. For the media, it was the sensational headlines and that which can create news, whereas for the physician the purpose was to cure those affected. For the public, it was to get rid of both the illness and the threat due to the epidemics. Above all, the nature and characteristics of the disease itself is complex as for all the epidemic diseases, fever was the major symptom and except Leptospirosis all others being viral in origin, follow almost similar medical interventions.

A detailed analysis of the reporting system prevalent in the state reveals not only the inadequacy of an efficient reporting system but also the fact that for a range of fevers it was found that patients were cured without a final valid diagnosis. This is due to the fact that many of the health facilities fail to follow a strict definition for fevers as well as for those diseases with fever as a symptom and more importantly, the need for distinction between the two. This ultimately resulted in the possibility of over-reporting of fevers per se and under-reporting of diseases with fever as the major symptom that was obvious during the fever epidemics.

For the public health professionals, the epidemics of fever was similar to other epidemics where regular monitoring, surveillance and early diagnosis and treatment were the advice offered. This was obvious from the protocol brought out during the epidemic that has devoted an entire section on how to categorise a disease and how to manage it clinically. This was flawed because of the insensitivity of the planners towards the real state of
affairs of the health facilities functioning in the state that were not in a position to follow those features recommended by the protocol. Besides, the usual programs of sanitation, health education and more importantly the establishment of fever clinics were the interventions put forth. The former two failed to address the larger issues of environmental factors that result in pollution and the social conditions with which people are subjected to.

The media fuelled the above scenario by introducing a new category of deaths, viz. *panimaranangal*, meaning death due to fevers. This, along with the warning as well as Information, Education and Communication (IEC) campaigns by the media increased the havoc on fevers as an epidemic category that needs to be feared. This is in contrast to the notion of fevers prevalent in the state during the early decades of the 1960s and the 1980s when fevers were seen as a normal illness that was part of life and generally got cured at home. Another feature observed in the reporting of media was that at some point, they followed the biomedical notion of diseases by using its categories thereby creating more uncertainty as well as threat in the community. On the contrary, there were instances when it was found that those deaths whose cause could not be established by the physician was also reported by the media as fever deaths furthering the fear of fevers.

The fever clinics, a new medical institution that was established in the state were started partly as a public health response to the epidemic but more importantly as a political response to the epidemics. It is obvious that inadequate planning was a feature while establishing fever clinics reflected in the setbacks. The inadequacy was obvious at different levels: First, the lack of a clear definition on disease categorisation as well as an effective system for monitoring fail to provide a real understanding of the extent of the problem. Moreover, the two events that ignited the processes of the establishment of fever clinics did not have much to do with the then prevalent epidemics of fever. Second, fever clinics were restricted only to public hospitals in a state with significant utilisation of private health services, specially for fevers, indicates how during epidemics, a system that is highly dependent on private health services lacks co-ordination. Third, the fever clinics in its function is not different from the pre-existing outpatient clinics in
government hospitals that already face several shortcomings like cuts in funds, lack of adequate staff, overcrowding and so on. Failing to address these issues cannot carry forward any new initiative within the public health services, which was proved true later by the failure of this initiative. Lastly, the power of a medical institution to *name* or categorise an illness reveals how diagnosis of a disease has implications not only in rendering cure but also in having the power to influence the worldview of individual patients as well as the society. This raises precise questions both on the provisioning of medical care and the culture of medical practice, which will be examined in the subsequent chapters.
living organisms are nothing more than quantitative variations, greater or lesser according to corresponding physiological phenomena."

3.1.6 Late Nineteenth and Early Twentieth Century Transpiration on Fever

As mentioned before during mid-nineteenth century Bichat's category of non-lesional diseases categorised fevers and nervous disorders together (Foucault 1975: 175-76). Additionally, Broussais' approach was inadequate in addressing the issue on the ultimate origin (cause) of diseases, especially epidemics thereby upholding the earlier doctrine that fevers are caused by a poison (Naraindas 1996: 8). This eventuated the need for distinguishing fevers and nervous disorders that resulted in identifying the law of periodicity and contagious character as the features specific only to fevers (ibid.). The consequence of this was two-fold; firstly, the re-establishment of the earlier theory of contagion thereby attributing a kind of fever poison, the more general cause, which could be an outcome of weather, overcrowding, filth etc. that also explains the epidemic character (ibid.). Secondly, concerning therapeutics, the older therapy of allowing the fever to make its exit was practised as symptoms were not to be treated as the cause of fever. This is because owing to Broussais, unlike other diseases where symptoms signifies a lesion, for fevers this may not always be true (ibid.). The situation was more or less similar in London also where the physicians at the London fever hospital though accepting Broussais' doctrine on inflammation also identified exhalations of the fevered bodies as the major means of propagation (Pickstone 1992). For them, these exhalations were not specific poisons 'but as direct analogues of marsh miasma- as poisons arising from the decomposition of animal matter', as Pickstone explains as the 'heart of the Chadwickian movement' (ibid. 144).

These prevalent understandings of diseases at the causal level provided space for the contagion or miasmatic theory of Chadwick (hygienists) that ultimately set the stage for Pasteur's germ theory and also the followers of Pasteur viz. Robert Koch, Pettenkoffer and so on (Cartwright 1977: 135-137). Here it is highly possible that those diseases that belong to the categories of fever as well as other infectious diseases appear to follow initially the miasmatic theory and later the germ theory. This opens up infinite