

Over diagnosis or changing disease definitions? Transforming diagnosis in Laboratory medicine

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Background

The dependence to medical technology in medical diagnosis result in identifying more and more 'disease states', leaving aside the search for disease, the original purpose of medical diagnosis. This is demonstrated based on an ethnography of diagnosis in a modern clinic tracking two patients who suffered from fever and associated illness. This is examined within the context of Philosophers and sociologists' interpretation of disease.

Philosopher's interpretation:

Boorse (1976) define disease based on statistical normality, which falls in the **naturalistic** stream and is perceived as a value-neutral concept and therefore scientific. For **Normativists** like Engelhardt, Jr. (1976), "Disease... will identify an explanation of a set of observables, a syndrome or *disease state*, by reference to laws of pathophysiology or psychopathology. Ananth (2008) offers an evolutionary concept of health that combines evolutionary concept of function and an **evolutionary** concept of homeostasis. Evolutionary concept of homeostasis takes into account both the environment (organism homeostasis) and the intercellular homeostasis of the body and considers both in interaction with each other and dynamic.

Characteristics of diagnosis

- Diagnosis is a naturally occurring ordinary activity.
- The signs and symptoms of disease in a clinical setting are mediated through and by the experiences and training of physicians. The investigation facilities available to the patient and the setting of the clinic wherein the physicians are the products of specific and local medical cultures that are always in flux (Abraham 1995: 24).
- Diagnosis, one of the major components of medical care, transforms by category (illness) into a medical category (disease).
- Diagnosis is a process of identifying and classifying phenomena in terms of cause and effect. Hence formulating general laws where diagnosis is central.
- The 'specificity' of medicine is established by the systematic explanations of phenomena in terms of cause and effect. Hence formulating general laws where diagnosis is central.
- In medicine, laws appear in the conceptualizations of phenomena—some to attribute and those others which are attributed to the most common, disorder and outcome... The aim of these endeavours is to formulate predictive forms of knowledge so that facts about the body in general and individual clinical histories in particular can be employed to predict the trajectories that illness will make (Barnon, C. 1999: 185).

Sociologist's interpretation

Disease was understood by sociologists through the category of **Illness** (Parsons 1951), which was broadly defined as any activity, personal, interpersonal and cultural reactions of human to disease or discomfort whereas disease was defined as a malfunctioning or mal-adaptation of biologic and psycho-physiologic processes in the individual (Mechanic 1969)

The recent turn in **cultural studies** define Disease as that which is socially produced and medical practice as socially organized ordinary activities. Hence "diseases are doctors' subjective, culturally-bound assessment of the reality of their patients' illness, based on a mixture of empirical observations and theoretical, inter-subjective, negotiated and ideological knowledge of the actors involved. It is the doctors' knowledge and interpretation (**thought style**) largely shaped by the medical training that equip him/her to sense, understand and interpret the life events of a patient in a peculiar way that the doctor also find intelligible to the actors with whom he/she interacts " (young 1982: 379-380)

Features of Laboratory medicine

The prominence of laboratory tests and sophisticated medical technology in contemporary medical work resulted in redefining diagnosis as more of a variation of numerical values than as a somatic distress, a characteristic feature of laboratory medicine (Jewson 1976; Atkinson 1995)

"In a thought style that places increasing emphasis on the rational (and thus predictive) character of medical science- to put in an admittedly crude but accurate way, the contemporary culture of medical science- numbers and names take on powerful significance." (McCullough (1981))

Thus, medicine, with a highly rational and quantitative character, calls for a directed readiness for identifying the more significant resulting in a distinctive set of observations. (Casper, M and Morrison 2010) "...the laboratory test provides a series of readings...when seen as operational definitions of the reality of the patient, must have priority over the doctors personal impression of the patient as a person and the doctor's clinical impressions of the patient as a patient. The latter are parts of trans-science...sometimes dismissively termed as "bedside manners". The former allow for control and prediction and therefore seen as the heart of the science of medicine." [Vishwanathan (1997:105)]

Kochumol's Case

Kochumol, aged 29-yrs, mother of two children, sought treatment at private hospital with fever, chills, vomiting, cough and pain while urinating. She had a short consultation as the physician found her very weak and then prescribed for routine blood and urine tests and asked to get admitted. At the time of admission, the laboratory test results showed lower value for platelet count (49,000/cu. mm). The report shows the presence of albumin and pus cells in the urine. It was found that after a week, the sickness got subsided and only platelet count was examined every day until the day (12th day) she was discharged from the hospital. The symptoms of the patient subsided after a week of admission and the platelet count was 100,000/cu. mm then, but the patient was discharged only after four more days when the platelet count reached 1,79,000/cu. mm. At the time of patient's discharge from the hospital the physician described the disease as "it was starting of dengue fever and now she is Ok". During the first follow-up, which was ten days after discharge, laboratory investigations was prescribed and the value of Erythrocyte Sedimentation Rate (ESR) was found to be higher (120mm/hr). The physician then asked the patient to repeat the earlier medicine. Later in the subsequent follow-up after a month, blood test was carried out again and the value for ESR was found to be normal. The official diagnosis mentioned in the medical record was suspected viral fever with reduced platelet count.

Shiny's experience with ESR

Shiny, 32 yrs, educated and mother of twin children aged 3 yrs, has sought treatment at a private sector primary level hospital for fever, headache, cough and body pain. The Physician examined the patient and recorded temperature which was 102 F and prescribed medicines for three days. On her second visit to the hospital, which was after three days, the doctor inquired about her health and she said that she is having severe headache and pain on the sides of her nose. The doctor again checked her temperature and was found it to be at 100 F. The doctor then prescribed for routine laboratory tests and prescribed medicines for three more days. Shiny on her third visit said she was feeling better and fine. Doctor on further examination found that the body temperature was normal (98.7 F) and then checked the results of laboratory investigations carried out earlier. According to the doctor, the Erythrocyte Sedimentation Rate (ESR) value was slightly higher and referred the patient to a specialist.

Later, on discussing with Shiny at her home it was found that she has consulted a physician further in a speciality hospital and was prescribed vitamin tablets and some tonic by the physician saying that there is "shortage of blood". The former doctor at the primary level hospital explained the diagnosis as fever and headache with raised ESR, thereby failing to offer a 'final diagnosis' of a particular disease. The greater importance given to ESR in the diagnosis despite Shiny having normal temperature and was feeling better in the latter visit is significant. This shows how even in simple illnesses, an abnormal value of laboratory tests is of great concern and gets dominated in the process of diagnosis irrespective of the somatic status of the patient.

Reduced platelet count and uncertainty

Dr.: "it is the starting of Dengue fever...it is impossible for the practicing physician to discharge a patient unless the platelet count becomes normal". The above quotes highlight the importance of Platelet count in Kochumol's case.

Platelet count of 1.5 lac to 4 lac is treated as normal for human beings as per the medical literature. Once reduction of platelet count was identified as an abnormality and seen to have associated with Dengue fever, blood transfusion is the medical intervention followed. Based on the discussion with several physicians in various hospitals of the state, it was found that during mid-nineties any patient whose platelet count was less than 1 lac was subjected to transfusion. Later, when it was found from clinical experience that patients survived even without transfusion at levels of 75,000, the criteria was lowered to 60,000, then to 40,000 and subsequently to 25,000.

Ambiguity in diagnosis exist whether the case is of Dengue fever or simple viral fever?

Diagnosis as per medical record is "Viral Fever with reduced platelet count", which is neither a final diagnosis nor is a symptom. But is a 'Disease State' resulted due to medical uncertainty.

Fox (2000) identifies the various realms at which **medical uncertainty** is inherent and how it complicates and curtails the ability of physicians to prevent, diagnose, and treat disease, illness and injury thereby question the efficacy of physicians' practice.

Thermometer or ESR

Dr: "temperature is no longer dependable as different patients show different patterns and at times antipyretics, if taken before consultation, will distort the picture"

Patients: "as the same thermometer is used to record temperature for different patients, there is a feeling of stigma as well as fear of microbes transmitting from one patient to other as those who are coming to the hospital are all patients (micro carriers)".

As patient satisfaction being the current motto of private hospitals, the use of thermometer is sidelined by projecting the above mentioned scientific explanations like non reliability and risk of infections in the forefront.

According to physicians', an abnormal value of ESR implies presence of infection. Thus there are several instances where rise in body temperature, used as an indicator of infection is getting substituted by ESR, a seemingly more objective unbiased value (number) which is irrespective of patient's characteristics and that lie beyond the patient's domain.

Thermometers are in the process of vanishing from the out-patient departments of hospitals whereas physicians resort to raised ESR values as a way to attribute presence of an infection.

Several patients consult doctors for the first time with their investigative reports that show abnormal values for ESR. The astonishing part is that most of them have carried out the tests from private laboratories without any doctor's prescription.

Interpretations

The reliance on lower values of platelet count and the raised value of ESR for diagnosis are the abnormalities in the cases presented where the former is influenced by the threat of an epidemic and the latter is a reflection of an over-medicalised society.

This shift from examining body temperature using thermometer to that on ESR in clinical work has to be seen as a reflection of the changing nature of medicine, where the purview of medicine gets shifted from the physician in the hospital to the investigator in the laboratory—more specifically to the numeric values produced in the lab.

This Jewson (1976) identifies as a shift from **hospital medicine to laboratory medicine**. Here the microscopic particles (specimen) replace the person-hood of the patient, where it is the former who aids in the medical knowledge production.

Additionally, it has to be seen as a case of appropriating medical knowledge according to the changing nature of medicine, rather than the other way round as generally expected

Here too the purpose of diagnosis is to offer **disease states**, a complex mix of symptoms, laboratory results and sometimes a prognosis during situations where diseases fail to get diagnosed. The implications is that even trivial laboratory parameters that gives an impression of the state of human physiology gets powerful over the symptoms and thus legitimise itself generating a more scientific outlook to disease states and therefore to medicine.

Conclusion

Medicine in its process of claiming for scientific nature depends more and more on medical technologies in the process of diagnosis, which will create more **disease states**, a new form of diagnostic category which is a combination of signs, symptoms and the physiological states, usually articulated using laboratory parameters.

Implications:

This may halt the search for a final diagnosis, thus resulting in **increased medical uncertainty** with respect to final diagnosis.

More and more '**disease states**' becomes the norms for medical practice leading to medicalisation of society, which according to Conrad (2007) transforms human conditions into treatable disorders.

This movement of medicine and its diagnostic categories like 'disease states' and 'diseases' towards more scientific, technical values is at the cost of compromising its inherent capacity to become **more humane of the sciences**.

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Diagnosis

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