
Medicine: Science with a difference

What is a common man's perception about science? Science gives a true explanation to natural phenomena, helps us to use forces existing in nature to our advantage, is precise to the minute details and capable of predicting things in advance. Laplace (1749-1827), the French physicist said "Given accurate positions and velocities of all particles of the universe and sufficient calculational power, it would be possible to determine the entire course of the history". Such a statement was possible as a result of the success of Newtonian Mechanics, and it strengthened the general belief that anything scientific will follow certain rules and will lend itself to calculations. Albert Einstein (1879 - 1955, Noble prize 1921) said something very similar "God does not play dice". Everything under the sun is bound by a chain of cause and effect.

But modern physics has found exceptions to this concept. We know that all molecules are made of atoms which, in turn, contain nuclei and electrons. When scientists first studied the behavior of electrons and nuclei, they tried to interpret their experimental findings in terms of classical Newtonian motions, but such attempts eventually failed. Max Planck (1858-1947, Nobel prize 1918) originated quantum theory to explain this paradox.

Niels Bohr (1885-1962, Nobel prize - 1922) said against

Einstein's comment - "you need not tell God, what to do" and confessed humorously "prediction is difficult, especially of the future". Be that as it may, determinism has been and still is basis of all scientific knowledge.

If one looks at the science of Medicine, in the background of what has been said above, medicine does not look very scientific by any stretch of imagination. Way back in 1991 (BMJ 1991, 303: 1505-68) Prof W J Firth published a rather unusual article for a medical journal - "Chaos - predicting the unpredictable", with a comment that "a human being is immeasurably more complex than any demonstrably chaotic system". Hence doctors will always talk in terms of probabilities and possibilities, and will never be certain about the outcome of an illness. Predictability is a character of linear mathematics, but the world, unfortunately is non-linear. It is interesting to know that stock analyst Nasim Taleb has written a book "Fooled by randomness: the hidden role of chance in life and the markets". His main contention is that for success - intelligence and capability is less important, chance factor is the main player.

At least apparently, there is so much of randomness everywhere that predictions more often than not, are likely to be proved wrong, it is not only true for medicine, it is true for many other aspects of our daily life.

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