

PHYSIOLOGICAL APPROACH OF IBN SĪNĀ
TOWARDS THE SCIENCE OF BEHAVIOUR

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Ibn Sīnā, the versatile genius of the 10th century was the first physician who keenly observed the relation between the emotions and the constitution of the human body. The constitution in Arabic Medicine is established in terms of humours, temperaments and elements, and the personalities have been distinguished according to the predominance of the humour. This basic idea was accepted and elaborated by the great 19th century physiologist I.P. Pavlov (1849-1936). On the basis of two main qualities—excitation and inhibition—he distinguished four basic types of higher activities and compared these activities with four temperaments in the following four types of nervous responses :

- (i) Strong type with predominance of excitation (bilious),
- (ii) Strong type with predominance of inhibition (phlegmatic),
- (iii) Strong type with balanced process of excitation and inhibition (sanguine),
- (iv) Weak type with weak excitation and inhibition (melancholic).

This description of Pavlov is nothing but the reflection of Ibn Sīnā's observations in respect of body-mind relationship. This sort of study is evident in his famous work *al-Adwiyat al-Qalbīyah*.

Emotions like joy, sorrow, rage, and love play an important part in the life of an individual. Normally all mental processes are accompanied by certain emotions. The human organism is continuously acted upon by numerous and various stimuli, both external and internal. Ibn Sīnā has skillfully described the emotions and various psychic states showing the effects of breath or soul (by which he actually means blood) and other dominant humours in his *Kitābul al-Adwiyat al-Qalbīyah*. In the view of Ibn Sīnā, greater the quantity of breath (soul), greater is the intensity of delight. Further, if the breath (blood) is in a state of moderation in respect of its consistency and temperament and if it is luminous, it becomes very capable of delight and exhilaration. On the other hand, if the breath (blood) is scanty (as in invalids and old people) or it is very thick and coarse in substance as in melancholic temperaments or it is very thin, in all such cases there is a strong tendency towards depression, sadness and grief. Thus a subject of healthy blood has a greater

tendency to receive the impress of delight on a slight evocation. The tendencies of joy and sadness vary from person to person according to their temperaments. For example, in melancholic persons the vividness of the imagination of depressing things itself causes them to appear sad and this is also the part of their nature. Not only do the quantitative and qualitative conditions of the blood become the cause of delight and sadness but also the psychic causes, which create the tendency of joy and sadness in the blood. They do so by modifying the temperamental substrate or by rectifying or by increasing its quantity. On the other hand, an agent of opposite sign will tend to induce depression. Where there is frequency of sad events it gives rise to weakness of natural power, thickness and coarseness in the breath.

Ibn Sīnā says that clean, moderately consistent and plentiful blood produces bright and fine breath which is prone to delight, while if such blood is very hot, it is prone to swift dispersion and produces rage. On the other hand, if such a pure blood is thin and cold it causes weakness in the heart and produces timidity. If the thick blood is very hot, the tendency towards persistent sadness and anger is greatly created. If the blood is bilious, anger sets in rapidly and goes off at the same speed. The person whose blood is thick but not turbid, and greatly inclined towards coldness, is neither joyful nor very much irritable but to some extent is timid. He is also dull and introvert.

Ibn Sīnā had vividly perceived the relationship of emotional reactions to physical diseases and had recognised that emotional states can produce physical symptoms and that mental illnesses are related to physical functions. Thus he had a clear conception that the human body functions as a total unit, not as a conglomerate of parts. The 'logy' of behaviour which was so recognised by Ibn Sīnā fell in the hands of Christians, and as other sciences had suffered, the church dogma also effectively smothered any probing into the behaviour of man. In spite of limitations, he had, with his inquisitive nature and keen observation fully realised the interdependence of mind and body. He was however not aware of the complex mechanism of autonomic nervous activity, because systematic inquiry could not progress without the information gathered through anatomy, chemistry and physiology. Still in mid-20th century matters were referred to the philosophies expounded by Ibn Sīnā.

The stress and strain of modern civilization has brought on much trouble to human beings. The rat race, ambition, restlessness, anxiety, neurosis and depression have opened the avenues for tranquillizers, drugs and hypnotics.

The individual in his moment-to-moment living has constantly to adapt to his environment. The air we inhale, the food we take, variations of weathers, loss of the near and the dear, unemployment or any other threats to survival require an adjustment in circulation, heart rate, blood pressure, digestion and other visceral,

glandular and muscular activities. Control of these activities is found in the autonomic nervous system with its polar division—sympathetic and parasympathetic. Stimulation of sympathetic system, whether by external stimuli or under the varied pathogenic states of the body, brings constriction of the blood vessels, acceleration of heart rate, reduction in the tone of smooth muscles, and inhibition of glandular secretions. Stimulation of parasympathetic nerves does just the opposite. Though Ibn Sīnā is not correct in assuming the heart as the centre of all psychic and emotional activities, he is very sensible in attaching importance to heart which is the source of supply of breath (blood) to the brain and other organs. Because, the efficiency of heart and its breath, which is the source of life to each and every cell of the body, definitely affects the psychic states. He therefore lays much stress on the condition of blood and the source of its supply. This sort of study and observations were for the first time recorded by Ibn Sīnā, because even today we acknowledge that the heart muscle has the property of inherent rhythmicity besides its subjection to nervous control.

On the one hand the complex behaviour of man and the multifarious stimuli in the environment give rise to various emotional disturbances, and on the other the different pathogenic states and diseases stimulate or inhibit the cardiac function and psychic order. Neither the over- and undesired stimulation or nervine and cardiac activity nor very high inhibition is normal. An equilibrium between stimulation and inhibition is required for a balanced healthy body-mind component.

In the present society an individual is heavily under stress and suffers from a chain of complexes and anxieties which ultimately lead to maniac depressions, nervous break-down and functional disorders of heart. Whether there is euphoria, undue elation or anxiety and neurotic states, a battery of tranquillizers is prescribed or there is depression, stimulants are advised.

The tranquillizers and analgesics which the Western medicine has to offer make the patient addict and dependent, leaving behind a great many side effects. The most common side effects of the so-called tranquillizers, which are termed nowadays as psychotropic drugs, are drowsiness, dryness of mouth, weakness, constipation, vertigo, skin rashes, liver damage and jaundice, hypoplasmic anaemia, anorexia, headache, postural hypotension, nausea, ataxia, blurring of vision, and insomnia.

The drugs which are used as cerebral and psychomotor stimulants in emotional disorders characterized by depression are also not free from the disturbing side and toxic effects. Anorexia, nausea, insomnia, anxiety states, agitation, hallucination, convulsion, giddiness, headache, palpitation, blurred vision, ataxia, fatigue, skin rashes and tremor are frequently seen.

The drugs used under the category of exhilarants like alcoholic drinks and cannabis are actually the carriers of remote depressant effects and induce damage almost to the entire system in one way or the other in varying degrees.

Cardiac glycosides like that of digitalis and squill when used as cardiac tonic and stimulant do leave side and toxic effects like anorexia, nausea/vomiting, diarrhoea, pain in abdomen, headache, insomnia, irritability, drowsiness, confusion, delirium, blurred vision, skin rashes, bradycardia, ectopic beats and several types of cardiac irregularities.

The conception of elatives/exhilarants and cardiac as well as nerve tonics is unique in Arabic medicine. No 'pathy' in the world can produce any such therapy which could offer relief from all sorts of depressive states or from psychoneurotic conditions and keep the cardiac function in order without leaving behind any toxic and side effect. Ibn Sīnā has exclusively described such drugs in his famous book *al-Adwiyat al-Qalbiyah*. The drugs used for the purpose are crude natural herbs or of mineral and animal origin and are extremely safe exhilarants and tonics for the heart and brain. This sort of medication which is termed as *Mufarrehat* and *Muqawwiat* gives a sense of well-being, confident attitude, pleasant elation, mental correlation, sound behaviour and delight without any intoxication and addiction. All such medications not only produce a balanced activity of the heart giving a fine equilibrium between stimulation and inhibition, they also tone up the nerves and autonomic nervous mechanism. While describing such drugs Ibn Sīnā in his *al-Adwiyat al-Qalbiyah* says that *Mufarreh* drug either luminifies the soul (that is blood) or hinders its rapid dispersion or imparts heat to the blood or brings coldness to it and this provides better temperament. Sometimes it tones up with its fragrance and sweet taste. For example, pearls (*marvareed*) and silk cocoon (*abresham*) supply the brilliance and luminosity to the breath. Embelic myrobalan (*halaila*) and coral (*marjan*) concentrate the breath and prevent it from dissipating rapidly; doricium (*daroonaj*) modifies the temperament of the breath by giving heat to it; camphor and rose water do so by imparting cold. Sweet aromatic herbs strengthen the breath and thus act as *Mufarrehat*. We know today that all volatile aromatic containing herbs and preparations thereof stimulate reflex salivation and warmth in the stomach and thus in turn stimulate the heart and central nervous system. Unlike alcoholic beverages the fragrant herbs only stimulate the cerebrum and do not induce depression as an after effect. The depressive state caused by the black bile or melanin is removed by borage (*gaozuban*) and lapis lazuli (*lajward*). Not always can the *Mufarreh* action of the drug be pharmacologically explained; hence we can only ascribe the specific action to that particular drug.

The explanation given by Ibn Sīnā in respect of human emotions and behaviour and their possible modification by drugs in the light of physiological variance seems

apparently to reflect a bit of philosophic trend but on a closer and objective evaluation its practical utility particularly in the present-day chaos of too much medical knowledge seems pleasantly acceptable.

To end, I would like you to share the views of Carra de vaux, "The more we investigate the enormous literary output of the Arabian empire the more we become aware of their sincerity. We should offer our salutation to these great personalities of that day whose works and lives were equally encyclopaedic."

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