

Classification of Diseases in Rajasthan

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Abstract: *Conceptual analytic development about the classification of the disease take placed in the ancient times with the understanding and awareness of health environment among the people and societies in different parts of the world. In ancient times, health and illness were interpreted in a cosmological and anthropological perspective. Disease classification perspective was dominated by magical and religious beliefs which was an integral part of ancient cultures and civilizations during that period.*

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Introduction

“Nothing on the earth is more international than disease, Health and Disease have no political or geographical boundaries,” said by Paul Russel. Disease in any part of the world is a constant threat to other parts.

History is replete with examples of the spread of pestilences - particularly of plague and cholera, along trade routes. In order to protect against infection by detection and isolation of incoming travellers, in the 14th century, a procedure known as “quarantine” was introduced in Europe to protect against the importation of plague. Ships, crews, travellers and cargoes, suspected of harbouring infection, were detained for a 40-day period. The underlying idea was that the passage of time would give dormant disease to manifest itself or die out. Quarantine soon became an established practice in many countries and different countries adopted different quarantine procedures. In this way, it was the origin of international health work. There is wide variation among countries in the criteria and standards adopted for diagnosis of diseases and their notification, making it difficult to compare national statistics. A system of classification was needed whereby diseases could be grouped according to certain common characteristics, that would facilitate the statistical study of disease phenomena. Over the years, from time to time many approaches were tried to classify diseases.

Henry Siegerist, the medical historian has stated that every culture had developed a system of medicine diseases classification and its own medical history but that was as one aspect of the history of culture on that time. Dubos goes one step further and says that ancient medicine was the mother of sciences and played a large role in the integration of early cultures. Classification of diseases in the history of different parts of the world prevailed according to their time scale with existing cultural and development of the civilization, such traditional systems of diseases classification have their own inheritance and uniqueness e.g. Indian Medicine, Chinese, Egyptian Medicine etc. It is very interesting to mention here that Indian medicine and its diseases classification system is oldest one in the world among all traditional systems in this aspect and is being described here in brief as mentioned below.

The Indian systems of medicine and classification of diseases including Unani-Tibb and Homeopathy are very much alive in India even today. In fact, they have become part of Indian culture, and they continue to be an important source of medical relief to the rural population.

John Graunt in the 17th century in his study of Bills of Mortality, arranged disease in an alphabetical order. Later on, a more scientific approach was adopted in classifying diseases according to certain characteristics of the disease or injuries such as (a) the part of the body affected (b) the aetiologic agent (c) the kind of morbid change produced by the disease, and (d) the kind of disturbance of function produced by the disease or injury. Thus there are many axes of classification, and the particular axis selected will depend on the interest of the investigator.

The international classification of diseases. All the above criteria formed the basis of the international classification of disease produced by WHO and accepted for national and international use. Since its inception, international classification of disease has been revised about once every 10 years; the latest revision, the 9th revision, came into effect on January 1, 1979. Earlier, the scope of international classification of disease was expanded in the sixth revision in 1948 to cover morbidity from illness and injury. The international classification of disease also provides a basis that can be adopted for use in other fields e.g. dentistry, oncology and ophthalmology.

Classification of Diseases :

The international classification of disease is arranged in 17 Dominant divisions and a hierarchical arrangement of subdivisions (rubrics) within each.

The main classified disease :

- I. Infectious and parasitic disease
- II. Neoplasma
- III. Endocrine, nutritional and metabolic diseases, and immunity disorders
- IV. Diseases of the blood - forming organs
- V. Mental disorders
- VI. Diseases of the nervous system and sense organs
- VII. Diseases of the circulatory system
- VII. Diseases of the respiratory system

- IX. Diseases of the digestive system
- X. Disease of the genitourinary system
- XI. Complications of pregnancy, childbirth, and the puerperium
- XII. Diseases of the skin and subcutaneous tissue
- XIII. Diseases of the musculoskeletal system and connective tissue
- XIV. Congenital anomalies
- XV. Certain conditions originating in the perinatal period
- XVI. Symptoms, signs and ill-defined conditions
- XVII. Injury and poisoning.

There are two supplementary classification, the E-code for classification external causes of injury and poisoning, and the V code for classifying reasons for contact with medical care and other factors influencing health status. The international classification of disease consists of 2 volumes. Volume 1 contains the disease classification, and volume II is an alphabetical index of diseases.

Besides, these all above mentioned traditional and international classifications of the world diseases, from time to time many medical scientists, environmentalists and medical geographers presented also the classifications of diseases with their respective groups of diseases. Some workers classified the diseases, on the basis of geographical spread and area (e.g. Endemic), the basis of human body parts (e.g. Heart diseases), human body system (e.g. diseases of Respiratory system), pathogens i.e. pathological classification, epidemic i.e. epidemiological classification, some on environmental conditions and ecological conditions, etc.

A meaningful attempt has been made here by the author for the implementation of the important world's classification of major diseases for the interpretation of the kind of diseases in the 'health environment' of residing population of Rajasthan during the course of last three years period. In the world according WHO, Geneva in 1987 there are 159 kind of diseases in which 145 belong to the group of 'All kind of Diseases' except Accidental cases, and 14 kind of world diseases belong to the group of the Diseases of Accidental cases. It is also adopted by our country and published by ICMR, New Delhi.

Further in this context, the General Hospital, Rajasthan in (2010) there are 186 kind of diseases to the group of "All Kind of Diseases" except Accidental cases including communicable and non-communicable Diseases. Actually, the list of General Hospital, Rajasthan has 48 Groups of All kind of Diseases.

The main classified Groups :

- I- Intestinal infections diseases
- II- Tuberculosis
- III- Other Bacterial Diseases
- IV- Viral Diseases
- V- Rickettsiosis and other Arthropod Borne Diseases
- VI- Venereal Diseases
- VII- Other Infection and Parasitic Diseases
- VIII- Malignant Neoplasm of Lipid
- IX- Malignant neoplasm of digestive organs and peritoneum
- X- Malignant Neoplasm of Respiratory and Intrathoracic Organs
- XI- Malignant Neoplasm of Bone, Connective Tissue, Skin and Breast
- XII- Malignant Neoplasm of Genitourinary Organs
- XIII- Malignant Neoplasm of Other and Unspecified Sites

- XIV- Malignant Neoplasm of Lymphatic and Haemopoietic Tissue
- XV- Benign Neoplasm
- XVI- Carcinoma in Situ
- XVII- Other and unspecified neoplasm
- XVIII- Endocrine and metabolic Diseases. Immunity Disorders
- XIX- Nutritional Deficiencies
- XX- Diseases of Blood and Blood Forming Organ
- XXI- Mental Disorders
- XXII- Diseases of the Nervous system
- XXIII- Disorders of the Eye and Adnexa
- XXIV- Diseases of the Ear and Mastoid Process
- XXV- Rheumatic fever and rheumatic Heart Diseases
- XXVI- Hypertensive Diseases
- XXVII- Ischaemic Heart Diseases
- XXVIII- Diseases of Pulmonary circulation and other forms of heart diseases
- XXIX- Cerebrovascular diseases
- XXX- Other diseases of circulatory system
- XXXI- Diseases of the upper respiratory tract
- XXXII- Other diseases of the respiratory system
- XXXIII- Diseases of the oral cavity, salivary glands and jaws
- XXXIV- Diseases of the other parts of digestive system
- XXXV- Diseases of Urinary system
- XXXVI- Diseases of the Male genital organs
- XXXVII- Diseases of Female genital organs
- XXXVIII- Abortion
- XXXIX- Direct obstetric causes
- XL- Indirect obstetric causes
- XLI- Normal Delivery
- XLII- Diseases of skin and Subcutaneous tissue
- XLIII- Diseases of the musculoskeletal system and connective tissue
- XLIV- Congenital anomalies
- XLV- Certain conditions originating in the perinatal period
- XLVI- Signs, Symptoms and ill Defined conditions
- XLVII- Fractures
- XLVIII- Other injuries, early complications of trauma

Implementation of world classifications for study area is a unique presentation of this Book, perhaps it is the first attempt of its own kind ever made by anybody else particularly at regional level study which includes the implementation of four significant world classifications of major disease viz;

1. Dr. K. Park's Epidemiological classification of world diseases in 1995
2. Classification of world diseases proposed by Department of Epidemiology of Central Institute for Post - Graduate Medical Training in Moscow in 1974
3. R.A. Stallon's Classification of the prevailing diseases in 1971
4. J.M. May's Ecological classification of world diseases in 1958.

Implementation of Classification :

Earlier paragraphs of this chapter under introduction covers the illustration of the historical descriptive account of the various classification of world diseases at International level, National level, Regional level and district level according to the studies done upto now by the doctors in medical science, scientists as well as environmentalists in both sides i.e. within the country and country abroad. Country abroad includes the studies done by Foreign workers and within the country includes the studies

done by Indian workers in this aspect i.e. classification of world diseases point of view.

By keeping this view the author has made an attempt in this direction to implement some of the appropriate classifications of world diseases which are suitable for application for the area under study i.e. Rajasthan. On the basis of nature of collection of diseases data and informations as obtained from various reliable sources, it appears that there are three types of classifications of world diseases which are the most suitable for applicable and coincide by their patterns with the nature of the geo-environmental and geo-cultural conditions of the area under study. Following classification of world diseases are implemented have significance for the area under study and are being illustrated in the forthcoming paragraphs of this chapter :

1. Park's Classification
2. Institutional Classification
3. Stallon's Classification
4. May's Classification

Further in this context, the descriptive account of the 'implementation aspect of the world diseases classification' for the area under study i.e. Rajasthan here includes the following headlines of aspect interpretation like; the names of major groups of world diseases and their sub-groups, the names of predominant kind of diseases with their groups and sub-groups, the concentration of number of occurrence of incidences for the area under study which covers both parts i.e. outdoor and indoor patients, the percentage of the incidences under their prescribed groups and sub-groups, etc. In this way, the present chapter deals with the classification of diseases and their distribution of incidences by adopting the above mentioned some appropriate classifications which are suitable as well as applicable for the present study and coincides with the nature of area under investigation from their implementation point of view.

Park's classification :

Dr. K. Park (1995), in his book 'Preventive and Social Medicine' gave an Epidemiological classification of the human diseases on this planet. This classification in other words is more or less a pathological classification which covers all kinds of the prevailing diseases in the world of human beings.

In this classification he broadly divided all kinds of diseases into two parts :

- A. Communicable Diseases
- B. Non-Communicable Diseases

Further in this context he divided communicable diseases into five major groups viz;

- i Respiratory Infections
- ii Intestinal Infections
- iii Arthropod Born Infections
- iv Zoonosis
- v Surface Infections.

In Non-Communicable diseases part he included certain kind of diseases which have their Non-Communicable nature.

Although Park in total deals about 53 kinds of diseases in all by covering both the parts of communicable and non

communicable diseases but it is very interesting to mention here that out of 53 diseases the area under study i.e. Rajasthan covers 33 kinds of diseases which makes about two-third of the total diseases as prescribed by him. The collection of formations of prevailing diseases of Rajasthan is based on the nature of the data supplied by the Department of Health District HQ., Rajasthan. Out of prescribed 44 communicable diseases, the area under study covers 27 kind of these diseases, and out of 9 non-communicable diseases the area under study covers 6 diseases in all. Thus, here the author is illustrating the aspect of number of kind of diseases and their distribution of incidences i.e. outdoor as well as indoor patients is based on the prescribed lists obtained from the Ministry of Health, Govt. of Rajasthan, from its Head quarter (C.M.H.O.). Naturally, these lists are approved by Indian Council of Medical Research, New Delhi which practically follows the International pattern of world classification of diseases. Our country as per Indian Council of Medical Research, New Delhi has adopted such kind of informations and already gave instructions to follow them to each and every state of our country. It includes a list of 186 kinds of diseases, in the part first- 171 total kind of diseases are placed except the remaining fifteen kinds of diseases which make part second- a group of Accidental cases.

The implementation of Park's Epidemiological classification for the area under study, the exercise revealed some interesting observations are being mentioned here. As far as the aspect of outdoor patients is concerned, out of all kind of diseases communicable disease covers about two-third diseases in Rajasthan where as among total kind of non-communicable diseases it covers one-third part, respectively. Further in this context it is very interesting to state here that, in the part of indoor patients aspect the position is reverse i.e. one-third belongs to the communicable disease and two-third for non-communicable diseases.

Communicable part is further divided into five major group of diseases are as illustrated here individually.

I. Respiratory infections group of diseases, it ranks at first place by covering 43.4 percent of the total communicable diseases

II- Intestinal Infections diseases group is placed on third by covering 22.2 percent

III- Group of Arthropod born diseases communicable diseases

IV- Group of Zoonosis kind of diseases covers high percentage i.e. 31.6 percent total of the prevailing communicable diseases and it ranks at second place in Rajasthan

V- Group of Surface Infections has lowest percentage i.e. 0.7 percent total kinds of communicable diseases. Table-1.1. shows the percentage of the above mentioned five groups or communicable disease with their total figure of all kinds of individual diseases both the parts i.e. communicable and non-communicable diseases. Among the groups of communicable diseases one can observe through out more percentage of outdoor patients in comparison to the high percentage of indoor patients in non communicable disease in Rajasthan. The communicable disease part covers 64.2 percent of outdoor but 35.8 percent of indoor patients with reference to the total number of incidences as covered by all kind of diseases in Rajasthan.

Table-1.1. Incidences/Epidemiological Classification in Rajasthan

S.No.	Disease and Groups	Incidences (in percentage)		Total Percentage
		Outdoor Patients	Indoor Patients	
(A.)	Communicable Diseases	64.2 %	35.8 %	
I.	Respiratory Infections	25.3 %	18.1 %	43.4 %
1.	Small pox			
2.	Chicken pox			
3.	Measles			
4.	Influenza			
5.	Whooping Cough			
6.	Meningococcal meningitis			
7.	Tuberculosis			
8.	Pneumonia			
II	Intestinal Infections	16.3 %	5.9 %	22.2 %
1.	Poliomyelitis			
2.	Viral hepatitis			
3.	Cholera			
4.	Typhoid Fever			
5.	Food Poisoning			
6.	Amoebiasis			
III	Arthropod Infections	1.8 %	0.4 %	2.2 %
1.	Malaria			
2.	Filriasis			
IV	Zoonosis	20.4 %	11.2 %	31.6 %
1.	Rabies			
2.	Phlogue			
3.	Rickettiosis			
(B.)	Non-Communicable Diseases	37.6 %	65.7 %	
I	Surface Infections	0.4 %	0.3 %	0.7 %
1.	Trichoma			
2.	Tetanus			
3.	Lepresy			
4.	Hypertension			
5.	Rheumatic Heart Diseases			
6.	Diabetes			
7.	Blindness			
8.	Accidents			
9.	Heat stroke			
Total Percentage		100 %	100 %	100 %

Department of Epidemiology of Central Institute for Post Graduate Medical Training (1974) gave a classification of major diseases based on the 'Localization' of causative Agent in Host. In this way the Institute divided all kind of diseases into three major of groups :

- A. Deficiency Diseases
- B. Communicable Diseases
- C. Non-Communicable Diseases

Here far our study part is concerned Table-1.2. shows the distribution of disease of these three major groups and their percentage of number of incidences as per the classification prescribed by the Central Institute of Epidemiology, Moscow implemented for the area under study i.e. Rajasthan. Further in this regard one can observe that the group of Communicable disease ranks at first place (54.3 percent), is followed by Non-Communicable disease (31.1 percent) and lowest by Deficiency diseases i.e. 14.5 percent as far as the percentage of outdoor patients is concerned where as it is not like so in the part of indoor patients as Non-Communicable diseases ranks at first place by covering 64.1 percent, followed by Communicable diseases (31.1 percent), and lowest percentage is covered by deficiency diseases i.e. 4.8 percent, respectively, as obviously shown in mentioned Table-1.2.

Table : 1.2. Incidences as per Classification proposed by Deptt. of Epidemiology, Central Institute for Postgraduate Medical Training Moscow, for Rajasthan

S.No.	Major Groups of Diseases	Percentage of Incidences	
		Outdoor Patients	Indoor Patients
A.	Deficiency Diseases	14.5 %	4.8 %
B.	Communicable Diseases	54.3 %	31.1 %
C.	Non-communicable Diseases	31.2 %	64.1 %
	Total Percentage	100 %	100 %

Stallon's Classification :

In 1971 R.A. Stallons proposed a classification of the prevailing diseases in nature in his book 'Environmental Ecology and Epidemiology' in which he divided all kind of world disease into two parts :

- A. Diseases Based on Environmental Conditions
- B. Diseases Based on Nutritional Conditions

The part-A is further divided into seven groups of diseases like Air born diseases, Water born diseases, Vegetation, Insolation, Surface, Minerals and, Animals of rather to say Animal born diseases. Further in this aspect, it is very interesting to mention here that among all kind of diseases, Air born diseases ranks at first place by covering 32.5 percent outdoor and 31.2 percent indoor patients total of Rajasthan, which is followed by Vegetation infection concerning diseases (it is probably due to predominant agricultural occupation of the people for the area under study), then after at third rank Animal born diseases are placed which is followed by Water born diseases. The diseases concerning to the Minerals, Insolation and of Surface infections have comparatively low percentage i.e. 6.0 percent, 5.3 percent, and 0.4 percent respectively. This all is mentioned in details in Table-1.3.

As far non-communicable diseases part is concerned one can find a very interesting observation that comparatively the percentage of number of outdoor patients is through out lesser than the percentage of indoor patients which is quite controversial with reference to the percentage of outdoor and indoor patients for part of communicable diseases. The group wise percentage of number of patients out of total number of patients for the area under study, is also mentioned in details in the above mentioned Table-1.1. The table clearly shows that the group-I ranks at first place which is followed by group-V has its fifth place from the percentage of number of outdoor as well as indoor patients for the district as a whole which includes both parts i.e. communicable and non-communicable diseases. The non-communicable disease part covers 37.6 percent of outdoor but 65.7 percent of indoor patients with reference to the total number of incidences as covered by all kind of diseases in Rajasthan.

Institutional Classification :

Table :1.3. Incidences as per Classification based on Environmental Conditions of Rajasthan

Incidences	A. Diseases Groups on Environmental Conditions							B. Diseases Groups on Nutritional Conditions			
	Air Born	Water Born	Vegetation	Insulation	Surface	Mineral	Animals	Due to Food Deficiency	Unbalanced Food	Food Poisoning	Total percent
A. Outdoor Patients (in %)	32.5	11.8	19.4	5.3	0.4	6	15.6	7	0.8	2.4	100
B. Indoor Patients (in %)	31.2	9	3.2	0.8	0.5	40	14.6	4.1	4.2	0.6	100

The part-B of diseases based on Nutritional conditions covers 10.2 percent of the total number of outdoor patients and 8.9 percent of indoor patients of all kinds of prevailing diseases in Rajasthan as a whole. It is further divided into three group viz; 1. Due to food deficiency (7.0 percent outdoor and 4.1 percent indoor patient) and ranks at first place among the diseases based on Nutritional Conditions, 2. Due to Food Excessiveness or rather to say from imbalanced over diet covers 0.8 percent outdoor and 4.2 percent indoor patients, and 3. Due to Food Poisoning and Toxicity which includes 2.4 percent of outdoor and 0.6 percent of indoor patients, respectively.

In brief, one can say that out of total number of patients caused by all kind of diseases in Rajasthan part-A which is based on Environmental conditions covers 90.8 percent of outdoor patients and 94.6 percent of indoor patients where as part-B which is based on Nutritional Conditions covers 9.2 percent of outdoor and only 5.4 percent of indoor patients. This all is mentioned in details in Table-1.4, respectively.

S.No.	Incidences	Environmental Conditions	Nutritional Conditions
A.	Outdoor Patients (in percent)	90.8 %	9.2 %
B.	Indoor Patients (in percent)	94.6 %	5.4 %

Table : 1.4. Incidences/Environmental and Nutritional Conditions

May’s Classification :

In 1958 J. M. May in his book ‘The Ecology of Human Diseases’ presented an Ecological classification of human diseases in the world, in which he divided human diseases into four major groups viz;

- A. Water Born
- B. Air Born
- C. Vectorial
- D. Nutritional Diseases.

Table : 1.5. Incidences as per Ecological Classification

S.No.	Incidences	Water Born	Air Born	Vectorial	Nutritional	Total
1.	Outdoor Patients (in percent)	32.5 %	11.8 %	45.5 %	10.2 %	100 %
2.	Indoor Patients (in percent)	31.2 %	10 %	50.1 %	8.9 %	100 %

Table-1.5 gives a detail interpretation of these four major groups with their number incidences i.e. outdoor and indoor patients in Rajasthan. In other words the Table illustrates the distribution of diseases and their number of patients as per implementation of May’s Ecological classification for the area under study i.e. Rajasthan. As far as medical geographers’ perception of the study is concerned, this classification is an ‘ideal classification,’ for the reason it is indeed based on the Eco-geographical conditions of the area under study by including its various elements.

Table-1.5. shows the details regarding the above mentioned aspects by covering four major groups of the diseases and, the group-wise names of the dominant diseases as well as the percentage of number of distribution of outdoor and indoor patients with reference to the study area i.e. Rajasthan as a whole. Although the Table also covers the details of the kind of diseases as far each group is concerned but here we are summarising its significant aspects of the study which are mentioned below.

The disease like Cholera, Typhoid, Amoebiasis etc. of world wide occurrence fall in the group of Water born diseases, mostly water born diseases are related with Intestinal Infections. Out of the all kinds of diseases in Rajasthan, water born diseases group covers alone 32.5 percent outdoor patients and 31.2 percent of indoor patients. By thus, water born diseases group has second place in Rajasthan from distribution of number of patients point of view.

The group of Air born diseases has third place in Rajasthan among all kind of diseases which makes 11.8 percent of out door and 10 percent of indoor patients i.e. total of Rajasthan. This group covers many diseases of wide occurrence like- Smallpox, Chickenpox, Influenza, Tuberculosis, Pneumonia, Asthma, Whooping Cough, Heat and Sun Stroke (Locally known as Loo). It revealed on the basis of observations that it is the largest group of Rajasthan as far the distributional aspect of the patients the patients is concerned. It is very interesting to mention here that, through out the world, specially in the developing countries like India, the conclusion of the earlier studies of diseases done upto new in several parts of the countries in the world revealed that, 'In most of the parts of the world, water born diseases have more percentage of occurrence in comparison to the parts of occurrence of the Air born diseases' but the present study of Rajasthan observations shows just reverse to this that the district experiences more Air born diseases in comparison to the lesser water born diseases (Table-1.5). Most of the Air born diseases are related with Respiratory infections and the area under study has high number of incidences of certain diseases like - Tuberculosis, Asthma, Influenza and, Heat and Sun Stroke (Loo), etc.

As far as the Vectorial diseases group is concerned actually, such kind of diseases are 'animal born diseases, and it is placed at first rank by covering highest percentage of 45.5 percent outdoor and nearly half of the total indoor patients (i.e. 50.1 percent) of the district as a whole. It is due to the fact that the district covers certain kind of diseases with high number of patients like - Malaria, Skin diseases (e.g. Scabies), Surface diseases (e.g. Titanus), Bite cases (e.g. Snake bite), etc.

Table-1.5 also shows the fourth group of Nutritional diseases which covers 10.2 percent outdoor and 8.9 percent indoor patients of Rajasthan total all kind of diseases by their number of occurrence and distribution of incidences.

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