State of Biostatistics in Medical Education and Research in Pakistan

Zahid Mahmood (Department.of Statistics, University of Karachi, Karachi.)

Introduction

Recent change in medical and health education and research strategy has demanded inclusion of statistics as a core course in the field. Previously, at global level, cure of diseases and inventions of medicines through case studies was a health strategy. However, WHO in seventies changed the strategy to prevention ratherthan cure. For initiating preventive measures basic knowledge about interrelationship between diseases and various personal characters, social characters and way of life coupled with environmental changes in the form of pollution and hazards have to be ascertained. Establishment of such a relationship is not an algebraic formulation of models. Therefore, researches carried out in one part of the world are not applicable in other parts. Hence, social studies coupled with health, disease, morbidity and mortality have to be undertaken on a scientific manner, so that the results obtained can be usefully implemented and statistical significance be established.

Medical Education

Pakistan inherited the British system of medical education as prevailing in 1947. At that time Pakistan had only 2 medical colleges (K.E.M.C. atLahore and D.M.C atKamchi). Now we have about 22 medical and dental colleges and two medical universities spreading over all the provinces of the countiy. In addition to these medical colleges and universities there are numerous postgraduate medical institutions operating in Pakistan. Syllabus and courses of studies followed in these medical colleges/institutions are not oriented towards critical analysis, research and evaluation involving statistical methodology.

At MBBS level throughout Pakistan, there is one paper on 'Community-Medicine', which also includes a portion on Basic Statistics. The students who take admission in MBBS have no background of mathematics, as such consider statistical portion of the syllabus as a burden. Similarly teaching is also imparted by non-professionals. Thus the course is unable to generate interest among students. Most of medical graduates go to services and profession, requiring little use of statistical knowledge. Those of the graduates seeking interest in higher education, research and teaching, usually confront with the extensive use of statistical methods, their interpretation and logic. The presentday research articles on medical sciences incorporate extensive use of statistics. The medical planners and decision makers also feel disturbed about not knowing statistical tools and their importance.

Realizing the gap of knowledge of statistics in medical graduates, WHO organized a seminar in Karachi in 1978 to frame courses of statistics for medical colleges. The emphasis of WHO was on health statistics rather than biostatistics. However, the findings of the seminar were not implemented. To acquaint, the medical professionals and researchers with statistical reasoning and use, WHO and International Agency for Research on Cancer, Lyon (JARC) organised two International courses on cancer epidemiology with special emphasis on cancer statistics. The last one was heldin Karachi in 1983. About 30 senior medical professionals attended the course.

Following the suit, the College of Physicians and Surgeons Pakistan (CPSP) in collaboration with Department of Statistics, University of Karachi organised short courses on bio-statistics. Each course was attended by senior Surgeons, Physicians, Consultants and junior doctors. Two of these courses were held at Peshawar and one at Multan, which were partly financed by WHO. Similar courses were

arranged at Aga. Khan University Hospital, Dow Medical College and JPMC. In these courses, besides exposing the participants to the basic statistical tools, sampling and statistical logic, a number of professional articles published in international journals were discussed in which use of statistics is made in diagnosing, treatment and evaluation of state of affairs of diseases.

Medical Research

Medical scientists in Pakistan followed the system of case histoiy and case studies. Reporting of diseases coupled with their methods of cure, was thought to be an end of medical research. In 1968, few enterprising researchers of JPMC and Civil Hospital, Karachi, thought to undertake large scale studies on some of the diseases, through the U.S. PL-480 programme. This was the time when in Pakistan, medical researchers got extremely interested to incorporate statistics and statisticians in their studies. Both medical scientists and statisticians were exposed to each other for the first time in Pakistan. The interaction of statisticians and doctors proved so fascinating for both that since then cooperation between the two is continuing.

The Department of Statistics, University of Karachi, has participated in a number of researches of International level. Some of the projects in the medical field which were completed with the cooperation of Department of Statistics,

1. Study of prevalence of oral carcinoma in Karachi.

2. Rehabilitation of schizophrenia patients in Karachi.

3. Study of burns cases in Karachi.

To coordinate and help the medical researchers PMRC is playing its own important role. PMRC offices all over Pakistan have the facilities of biostatisticians for the help of medical researchers in their research activities. However, the level of these biostatisticians is limited and they need an exposure at International level.

Bio-Statistics

Requirements and needs of planners in health sector consist of different types of series of statistics on various health indicators. The information available in this respect is very limited. A system of official reporting is in operation in Pakistan. The Ministry of Health, Labour and Social Welfare publishes a monthly report entitled "Morbidity and Mortality Statistics" since 1963. From 1974it has been made quarterly. However, nowadays it has become very irregular. The "Morbidity and Mortality Statistics" publishes data on number of cases of in-door patients and out-door patients attended at 28 Central Government hospitals and medical health centers and clinics run under control of Federal Government. Similarly, Provincial Bureaus of Statistics incorporate similar data pertaining to their respective provincial government hospitals and clinics in their Annual Development Statistics. The efforts of both, Ministry of Health and provincial bureaus of statistics in publishing these data have little use. The data can neitherbe used for planning ordecision making norcanbe treated as an indicator of health. The major portion of health care is given in private sector which is totally neglected in preparation of these statistical series and statistics.

In 1982-83, Federal Bureau of Statistics inpursuance of National Statistical Council, conducted first "National Health Survey" in Pakistan. The objective of the survey was to fill the data gap in morbidity and mortality statistics. The question naire used in the survey included questions about diseases and other related social, demographic and housingvariables. A list of 50 common diseases was provided to the investigators which was taken from "International Classification of Diseases, 1955-Revised Vol. I" In the investigation, however, no medical professional was involved. Therefore, classification of diseases can be questioned for their authenticity and accuracy.

Tho objectives of the NHS were:

1. To determine the prevalence of sickness in the population.

2. To estimate the extent and nature of disease.

3. To estimate the curative measures taken by a sick person.

4. To estimate the expenses incurred on treatment.

5. To ascertaintheimpactofenvironmentonhealthconditions.

The survey covered about 11000 house-holds. One-fourth of the sample was covered in each quarterly round to minimise the seasonal effects. The sample spreads all over Pakistan except Malakand Division and FATA. The sample households were divided with proportional allocation in each of the four provinces with urban, rural break-up. Each city/town was divided into equal size Enumeration Block (E.B.)containing about 200-250 households. In rural areas list of villages/mouzas/dehs were taken from 1972 census of population and used as sampling units. Samples were selected using probability sampling method (NHS-1982-83).

The NHS evaluated some of the interesting indicators. The overall morbidity rate was found as 17 1.2/1000, with urban 143.1 and rural 182.3 differential. In Sind, it stood as 150.0, 136.1 and 162.1 respectively. While differentiating with sex, interesting result was obtained that in urban areas it is high for female and in rural areas it is high for males. Age specific morbidity rates show a u-shaped curve with lowest rate for the age group 10-24. Many more additional indicators have been evaluated, (for details see NHS - 1982-83). However, inthe absence of any othercomparable statistics and indicators, they cannot be compared or evaluated for authenticity and trend. The medical professionals had a very critical view on NHS results. Hence the second round of NHS was planned with the collaboration of PMRC. The results of this round are yet to be known.

Conclusions

The study and applications of Bio-Statistics in Pakistan is slightly late. It requires drastic improvements in all the three sectors. On the basis of above discussion the following recommendations are presented for implementation:

1. Teaching of Biostatisties in medical colleges be strengthened. At least one paper of 100 marks and 3 hours duration be introduced inMBBS courses.

2. Efforts of CPSP may continue in organising short courses onbio-statistics.

3. All postgraduate diploma courses in health sciences should include a paper on bio-statistics and reseaith methodology.

4. In research sector more collaboration between medical scientists and statisticians be made.

5. Series of medical data published by Provincial Bureaus of Statistics and Ministry of Health, Government of Pakistan, be either improved to include all types of hospitals/dispensaries, and private practitioners or otherwise, this fruitless excercise be discontinued.

6. N.H.S. should be an annual feature. However, medical doctors and professionals be included in the survey team to identify the diseases.

References

1. Govt. of Pakistan, "National Health Survey 1982-83" F.B.S. Karachi, Statistics Division, 1986.

2. Govt. of Sind, Development Statistics of Sind. S.B.S. Karachi, Planning and Development Department. 1993.

3. Govt. of Pakistan, 'Morbidity and Mortality Statistics" Min of Lab. Man. Health and Pop. Islamabad, Planning, Bio-statistics section, 1974.

4. Jafarey, N.A. 'The oral carcinoma research project'. J.P.M.C. Karachi, 1976.

5. Pak. Med. Res. Council 'Malignant tumors monograph No.2, Karachi, P.M.R.C., 1982.

6. Mahmood, Z. 'Incidence of cancer of the oral cavity and Pharynx in Pakistan' Vol. 25, No.4, Lahore, Pak. J. Mcd. Rcs., 1986.

7. Mahmood, Z. 'Smoking and Chewing Habits of the people ofKarachi, 1981'. J. Pak. Med. Assoc., 1982,32:34-37.

8. Mahmood, Z. 'Uses and Abuses of Statistics inMedical Research in Pakistan', J. Pak. Med Assoc, • 1990;40:270-271.
9. Sheikh, I. 'Morbidity pattern ofPakistan 1982-83' proceedings Fourth Statistics seminar, Karachi. University ofKarachi,, 1986.