

Evaluation of hospital buildings in the light of their future development in Bangladesh

DR. RAFIQUL HUSSAIN

Abstract

Evaluation has become an integral part of the design process of buildings in many countries. Especially in the case of complex establishments like hospitals it is imperative that these be evaluated to determine whether they serve their purpose. Evaluation allows a periodical examination and assessment to be made and helps to keep records of successes and failures. Hospitals being very utilitarian buildings these information can be used as resource material for improving designs in the future. But the importance of evaluation is hardly recognized by the authorities in this country. Thus it has never played any role in the programming and design of hospitals. This article attempts to identify the various advantages of evaluation and how this may be conducted in the case of hospitals in Bangladesh.

Introduction

Although studies on different aspects of health care services have been done in Bangladesh, very little attention has been paid to the evaluation of hospitals or other health facilities. It seems the authorities considered the job done once the hospital was built and commissioned. This has in fact robbed us of the opportunity to test what has been done, so that lessons could be learnt. Since the independence of the country a number of new hospitals have been built, some old ones expanded and renovated as a part of an overall plan of developing the physical

infrastructure of the health care services. But these developments were carried out in a very arbitrary way, because even till now there exist no clear guidelines on hospital standards. The planning commission did set up a sub-committee in 1979 to recommend space and functional standards for hospitals. The recommendations were put forward in 1980, but these were not based on any study and thus had inherent deficiencies (1). Guidelines can only be developed on the basis of adequate information which may be acquired in two ways. One of these is by following standards and methods adapted in other countries. The second way is to develop an information base through the evaluation of our own facilities. Because of the difference in population characteristics, disease pattern and the severe resource constraints it is essential that Bangladesh should recourse to the second way, although it would be more time taking. We may hope that by evaluating our existing hospitals the information base will be realistic and complete. Kekailenen, R. among others have expressed the view that hospital design should be based on research and analysed knowledge (2). One of the ways to acquire this knowledge is by studying the existing hospitals in their functional and physical context.

Benifits of evaluation

The cycle of programming, designing, building and commissioning any project is completed by evaluating (3). The information gathered through such an action may then become the basis for improving the use of the existing buildings as well as a foundation for providing better facilities in the future. Evaluating existing hospital buildings will serve as a designer-user feedback mechanism for hospital building programme in the future. Evaluation can therefore become a decision making tool, a learning tool and a contribution to the knowledge bank on hospitals. According to Postill, J., monitoring the results from a building once it is completed, enlarged or renovated, should be an essential and intrinsic part of health facility development (4).

The objective of any evaluation is to draw lessons from real life situations. It records both the good and the bad features of existing buildings. It identifies many important functional characteristics and how the building responds to these and at the same time helps to reflect popular tastes and habits.

The lessons to be learnt from the early successes and failures are necessary because of the inherent complexities of hospitals buildings. Green J., and Moss, R., are of the opinion that,

".....so far as complexity is concerned it is hard to imagine a single building type which involves such a closely interwoven pattern of functions and activities as does a hospital, nor one where the activities depend so closely upon one another" (5).

Post Occupancy Evaluation

The term generally used for the evaluation of a building in used is Post Occupancy Evaluation or POE in short. It notes how a building performs, how the occupants behave within it, whether the users are happy with the environment and so on. Whether the executed layout helps in increasing the efficiency of a particular area or whether it inhibits in any way the activities that need to be performed. POE of hospital buildings is essential to understand the user response which is a vital criterion to judge the suitability of layouts and other aspects.

POE "..... is a process of measurement, comparison and interpretation which should influence the planning and design of new buildings through its impact upon briefing and building guidance, and should also improve the functioning of existing buildings" (6).

According to Ogodnik, T.M., POEs have two major purposes: (7)

- (1) Immediate feedback from a given project;
- (2) Development of information for future designs;

This is especially useful when contemplating the use of prototype plans for a specific building use. A prototype should first be tested to see how it performs before repeating it. No matter how thorough a study was done before the design many shortcomings can only be identified after a prototype is completed, commissioned and then evaluated. Aziz, M. E. B.A., expresses the view that a large number of buildings of a particular design should not be built until the first one has been evaluated, otherwise mistakes are likely to proliferate (8) Whereas in this country a large number of prototype Upazila Health Complexes and Union Health and Family Welfare Centres have been built without testing the prototypes.

Levels of Evaluation

Evaluation of hospital buildings may be done at the following levels:

- (a) Whole hospital building/buildings ;
- (b) Selective evaluation of a particular department/departments; and
- (c) Selective evaluation of a particular aspect/aspects

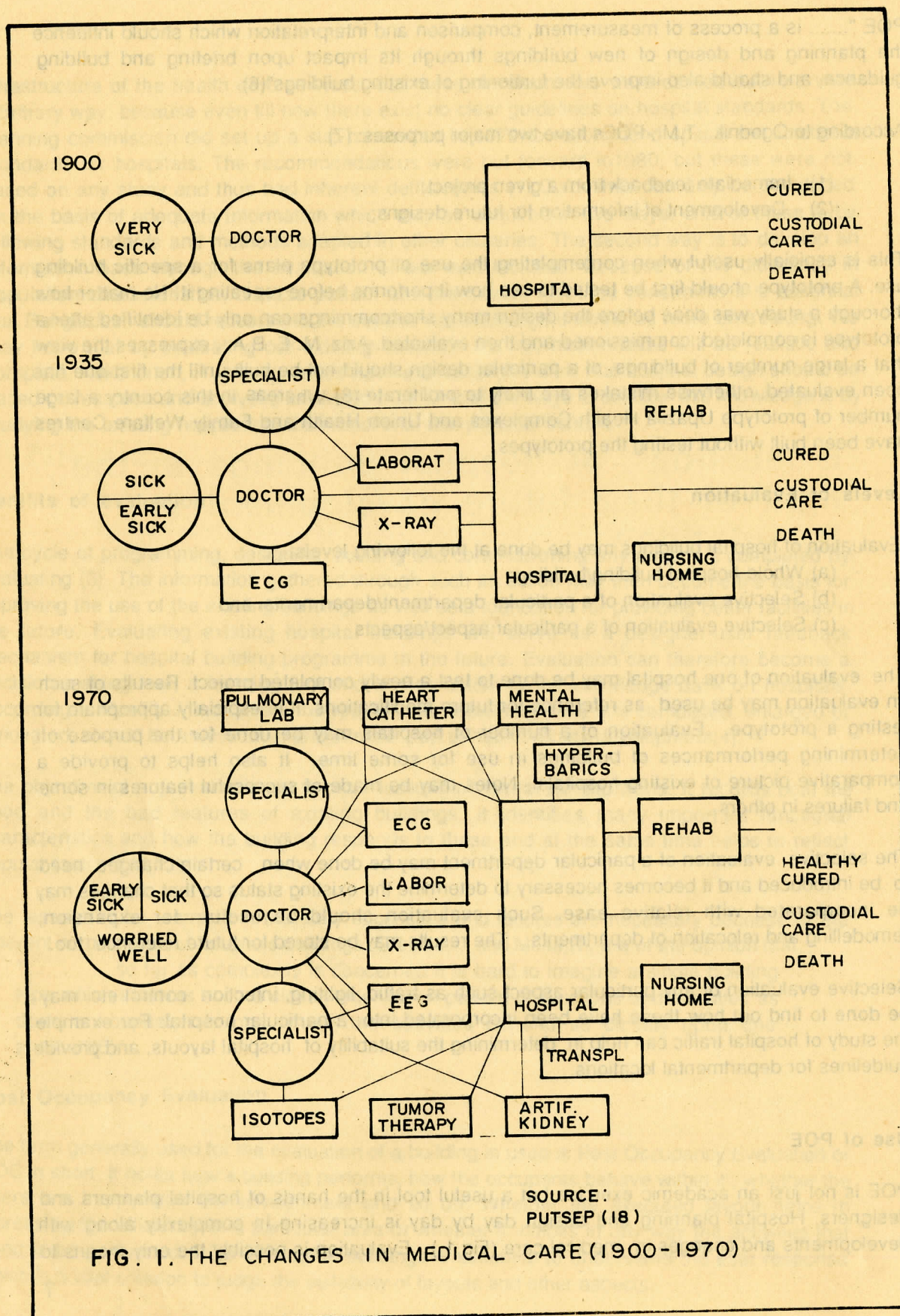
The evaluation of one hospital may be done to test a newly completed project. Results of such an evaluation may be used as reference for future modifications. It is especially appropriate for testing a prototype. Evaluation of a number of hospitals may be done for the purpose of determining performances of buildings in use for some time. It also helps to provide a comparative picture of existing hospitals. Notes may be made of successful features in some and failures in others.

The selective evaluation of a particular department may be done when certain changes need to be introduced and it becomes necessary to determine the existing status so that changes may be incorporated with relative ease. Such evaluation should be useful for expansion, remodelling and relocation of departments. The results may be stored for future reference too.

Selective evaluation of any particular aspect such as traffic, lighting, infection control etc. may be done to find out how these have been incorporated into a particular hospital. For example the study of hospital traffic can help in determining the suitability of hospital layouts, and provide guidelines for departmental locations.

Use of POE

POE is not just an academic exercise but a useful tool in the hands of hospital planners and designers. Hospital planning and design day by day is increasing in complexity along with developments and changes in medical care (Fig.1). Evaluation is possibly the only means to



keep track of these changes. Sometimes POE is purpose oriented, and at other times it is not. In the case of the former the feedback is immediately put to use, whereas in the case of the latter, the information is stored.

One of the wellknown examples of hospital design based on POE has been the Greenwich Hospital in London, U.K. one of the important findings observed from four case studies before the design was undertaken, was the seasonal variation in the occupancy of beds according to speciality. This study resulted in the high degree of flexibility that was incorporated in the final ward layout for the new hospital (Fig. 2). In 1980 a research team in Kenya conducted extensive studies in the functioning of a particular out patient department(9). This led to the reorganization of the layout of such apparently simple areas such as injection rooms, consulting rooms and dressing rooms.

Recently, the World Health Organization (WHO) carried out a series of country based case studies of health facilities in a selected number of developing countries. These were devised as to be of immediate benefit to the countries concerned (10). It may therefore be recognized that POE is an important step in the process of planning and design of hospitals, and the only way to ensure that each new hospital is more successful than the earlier ones.

Long term benefits

Besides the immediate use, properly conducted research and evaluation will have positive long term benefits. It should help provide guidelines for application to hospital buildings in general, which are as essential for Bangladesh as they are for other countries. These should be based on the available resources and technology, culture, climate and other regional peculiarities. In fact this is hardly ever recognized and Trew, R., writing about health facilities planning in developing countries mentions that "the result is that many health facilities are inappropriate to the conditions in which they must function"(11).

Research and evaluation also help to reveal hidden facts about certain conditions which are either ignored or never considered. For example, the evaluation of 1977 of three wards design spacing more than a century-at the St. Thomas "Hospital in London, U.K. revealed information which surprised many. There appeared to be a marked preference of the patients for the antique Nightingale wards over the wards of more recent design(12). Without evaluation people might go on doing things without realizing the need for a change. According to Cammock G.C., who conducted an evaluation of consulting room suites utilization, architects and doctors become conditioned to think that a particular standard is right, simply because that standard may have existed for a long period. Both may be reluctant to change their habits or thoughts of work(13).

Regular evaluation will help introduce the element of dynamism in the approach to hospital planning and design. Changing needs and requirements cannot be understood by pursuing a static design policy based on obsolete and out dated design criteria. The changing world of medicine and health care, and the growing awareness among people is bound to result in a changing pattern of needs which must be recognized, and the only way this can be done is by continually reviewing what is done.

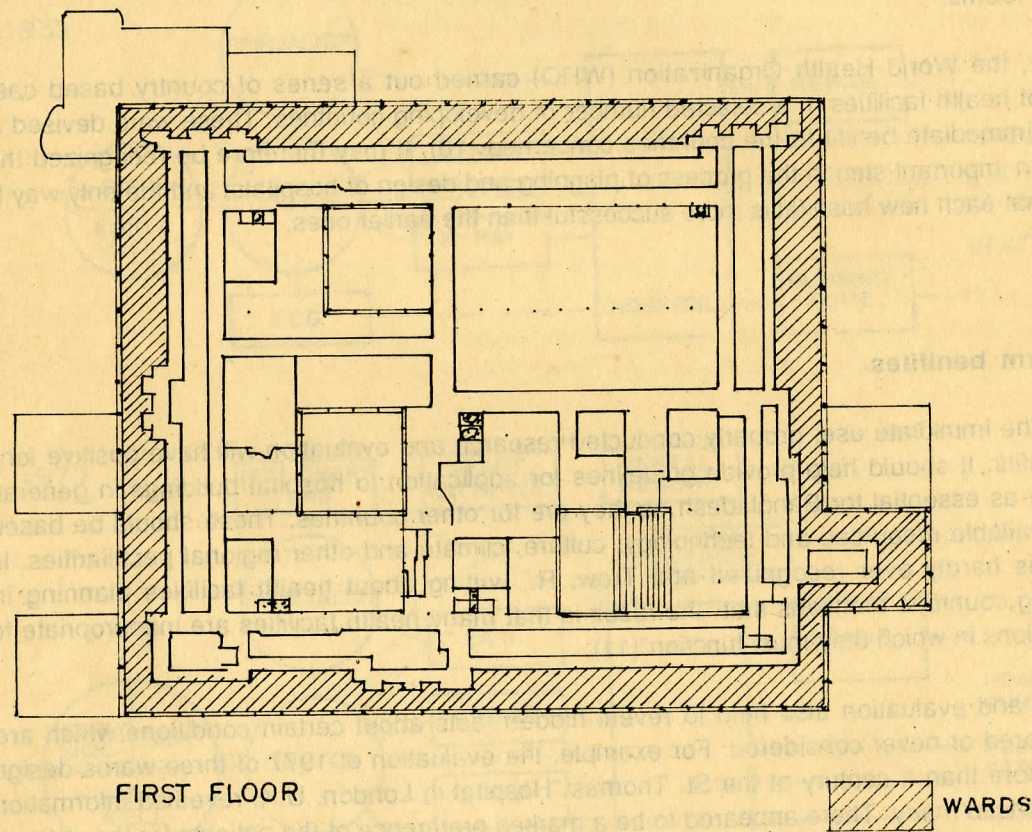


FIG. 2 GREEN WICH HOSPITAL, LONDON

Conclusion

Bangladesh has 0.3 beds for every 1000 person (14) compared to 2.8 beds in government hospitals alone in Sri Lanka (15) and between 6 to 12 bed in many of the industrialized countries (16). Which means that compared even to a similar developing country there is an urgent need for more hospital beds in the country. Thus new hospitals will have to be built alongwith a simultaneous expansion of existing facilities. But there is not enough information to aid hospital planners, resulting in costly mistakes. A study by Rahman, S., of the newly built multistorey wing of the Institute of Post Graduate Medicine and Research (IPGMR) Hospital Dhaka, revealed inherent weaknesses in the ward layouts and the operating department (17).

It is therefore imperative that the authorities initiate a programme to develop an adequate information base through a critical study of existing hospitals. This may than be expected to have a direct and determining influence on the future programming and designing of hospitals.

Such a study should comprise two steps. Firstly, a field investigation of a selected number of hospitals through which all the relevant data could be collected; secondly, measuring, comparing and interpreting the information in a way so that, there emerges a clear picture of the status of those facilities, their success and failures.

It is hoped that information on space utilization, building layout, flexibility, health care policies and procedures, staff utilization, supply and disposal methods, maintenance of buildings and equipment among others could be useful in the formulation of hospital building programmes and design strategies for the future.

References:

- (1) HUSSAIN, R., The planning and design of district Hospitals in Bangladesh. An Alternative Approach. Doctoral Dissertation, Faculty of Applied Sciences, Catholique University of Lovain, Belgium, 1988, pp.32-34.
- (2) KEKAILINEN, R., Hospital elemention from the architects view point World Hospitals, vol. 21 No. 4, Nov, 1985, pp.62-64
- (3) DELRUE, J., & MIKHO, E., Rationalization of planning and construction of medical care facilities indeveloping countries, KLECZKOWSKI, B. M., & PIBOULEAU, R. (eds), Planning and design of health care facilities in Developing areas, vol. 1, WHO, Geveva, 1976, pp. 53-112.
- (4) POSTIL, J., physical and functional evaluation of existing facilities, KLECZKOWSKI, B. M. & PIBOULEAU, R. (eds), Approaches to planning and design of Health care Facilities in Developing Areas, vol. III WHO, GENEVA, 1983, PP. 277-294.
- (5) GREEN, J., & MOSS, R., Hospitals Research and Briefing Problems, King Edwards Hospitals Fund, London, 1971.
- (6) RAWLINSON, C., Health Buildings Evaluation Manual, Medical Architecture Research Unit, Polytechnic of North London, Nov. 1983.
- (7) OGODNIK, T.M., The Use of space programming and post occupancy evaluation, World Hospitals, Vol.21 No.4, Nov.1985, pp.58-62.

- (8) AZIZ, M.E, B.A., Type plans for small health care facilities: the Sudanese approach, KLECZKOWSKI, B.M. & PIBOULEAU, R. (eds) Approaches to planning and Design Health Care of Facilities in Developing Areas, Vol IV, 1983, pp.21-44.
- (9) NIMPONO, K., Clinic Building Research in Kenya, s.e. , 1980.
- (10) KLECZKOWSKI, B.M., Planning, building and operation of health care facilities in the perspective of the development of primary health care : some views based on case studies. KLECZKOWSKI, B.M., & PIBOULEAU, R. (eds), Approaches to Planning and Design of Health Facilities in Developing Areas, Vol.IV, WHO, Geneva, 1983, pp.3-20.
- (11) TREW, R., Health and Hospitals Facilities in developing countries, Keynote Speech-2nd Planery Session, Seventh Regional Conference of the International Hospital Federation, Manila, Nov. 1978.
- (12) NIGHTINGALE, M., Buildings update: Hospitals Part II, Architects' Journal, 28 July 1982 pp. 47-56.
- (13) CAMMOCK, G.C., Utilization of consulting suites in health centres, Report to the DHSS, U.K., M.A. R. U., 3/77, The Polytechnic of North London, 1977.
- (14) Statistical Pocket Book of Bangladesh, 1986, Bureau of Statistics Government of Bangladesh.
- (15) Statistical Pocket Book of Sri Lanka, 1985, Government of Sri Lanka.
- (16) OECD, Public Expenditure in Health under Economic Restraints, Health Accounting in OECD countries, Paris, 1984, mentioned in PFAFF, M. & NAGEL, F., Consequences for hospitals resulting from demographic, social and morbidity changes: A European Perspective, International Journal of Health Planning and Management, Vol. 1, No. 5, Oct-Dec. 1986.
- (17) RAHMAN, S. , Health facilities planning and design: Priorities of the profession and urgency of local needs, presented in the Seminar on Architecture and the Role of Architects in Southern Asia, sponsored by the Aga Khan Award for Architecture, held in Dhaka, Dec. 1985.
- (18) PUTSEP, E., Modern Hospital : International Planning Practices, Lloyd-Luke, London, 1979.