

Mental Health Delivery System by Mental Hospitals in India

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Abstract

The nature and scope of 36 mental hospitals in India were studied based on the data pertaining to 1983. The average bed strength was 526 beds while the average bed occupancy was 472 patients. On an average three patients were treated per bed per year. Half of the beds were occupied by chronic patients. Psychotics formed 91% of all discharged patients. The death rate among in-patients seemed to be higher than that of the general population. The follow-up attendance was about five times more than the new patients. Salary to the staff accounted for half of the total expenditure. The treatment outcome was better for higher unit cost, higher rate of turnover, more out-patient attendance and less bed occupancy. The trend in mental health delivery was encouraging during 1977 - 1983. Eight clusters of hospitals were identified based on certain key indicators.

Key words -

**Mental hospital,
Outcome,
Cluster**

Sufficient data on mental hospitals are lacking in India. Channabasavanna et al [1] reported such data for the in-patient treatment covering 25 mental hospitals classified under four different groups. The present authors felt the need for updating such data on more number of hospitals and on more parameters specially in the context of community psychiatric movement in India. The present report is based on data collected from 36 mental hospitals in India, both in-patient and out-patient, with the objectives of

- (i) describing their nature and scope,
- (ii) developing suitable national indices on the services rendered by them,
- (iii) classifying these hospitals and
- (iv) evaluating predictors of treatment outcome.

Material and Methods

A questionnaire (Appendix 1) was designed incorporating important characteristics of mental hospitals and their areas of services, viz., bed strength, bed occupancy rate, total hospital days, turnover rate, length of stay, patients discharged during the year 1983 and their characteristics, diagnosis, outcome of treatment, follow-up rate and expenditure pattern. The questionnaire together with a note of explanation and / or definitions of the terms used in it and a compilation sheet for hospital days was mailed to all mental hospitals requesting for the information.

A brief definition for certain terms employed in the present study is given below. However, further necessary explanations are also given along with results and discussion wherever necessary.

The size of a given hospital is measured by bed strength, total hospital days and bed occupancy. The 'bed strength' is the number of beds sanctioned by the controlling authority and it is based on the accommodation, man-power, budget and necessary facilities. 'Hospital days' is measured by adding the number of patients stayed on every day over an year. The 'total hospital days' is defined as the sum of hospital days and the total out-patient attendance. The 'bed occupancy' is the average number of patients stayed in the hospital per day over an year.

The average 'length of stay' (LOS) is the average period, usually in terms of days, for which the patients stayed in the hospital from the date of admission to the date of discharge. There are three main methods by which LOS is generally measured. By the first method, LOS is computed as the average length spent by those patients discharged during a given year (method 1). In the second method, LOS is estimated as the average period spent in hospital by those patients who were in hospital at the end of a given year, say December 31 (method 2). By the third method, LOS is defined as the hospital days divided by the number of discharges (method 3 or Census method).

The average 'turnover rate' is defined as the average number of discharges per bed strength or per bed occupancy. Death rate is generally defined for a hospital as the number of deaths per 1000 discharges. The 'central mortality rate' (CMR) is defined as the number of deaths per 1000 patients stayed in the hospital in a year.

'Mean attendance' per day is defined as the average number of patients (new and old) attending OPD per day in a given year. 'Follow-up ratio' is defined as the average number of follow-up attendance per 100 new registrations.

Unit cost is the cost per day per patient and is obtained by dividing the total hospital expenditure by the total hospital days. The denominator is total hospital days for calculating the unit cost of salary and medicine and to compute the unit cost of diet, the denominator is the hospital days.

Results

There were 42 major mental hospitals in India as on December, 1983. Majority of them engaged themselves in research and man-power development besides the primary purpose of the services to the needy. To collect the necessary data systematically and to keep the records, specialized personnel were not available in most of the hospitals.

Requested information was received from 36 (85.7%) hospitals. Out of these, 30 (83.3%) hospitals

were specialized government mental hospitals, 3 (8.3%) private nursing homes recognized as hospitals of mental health delivery, 2 (5.6%) psychiatric departments of medical colleges and 1 (2.8%) psychiatric ward attached to central jail. Despite our sincere attempt with a number of reminders and personal contact, information was not obtained from 6 (14.3%) mental hospitals.

The results of observations for 36 mental hospitals which responded to our request are presented below on different parameters explaining the nature and scope of hospitals.

The total bed strength for 36 responded hospitals was 18,944. The bed strength varied from 26 to 2600 beds with a mean of 526 beds. The average bed occupancy varied from 16 to 2432 patients with a mean of 472 patients. The average bed occupancy was more than the bed strength only in 8 (22.2%) hospitals, while in 28 (77.8%) hospitals the bed strength was higher than the average bed occupancy. The month-wise data was available for 11 hospitals only. The month-wise bed occupancy is shown in figure 1 for these hospitals. The bed occupancy was higher generally during April-July and low during winter season.

Month wise bed occupancy

The total hospital days accounted for 7,050,705 patient days for all 36 hospitals giving a mean of 195,853 total hospital days per hospitals.

The average length of stay was 51 days by method 1; 55 days by method 2 and 57 days by method 3 for NIMHANS. The distribution of length of stay by method 2 is given for 25 hospitals in Table 1.

Table 1 - Length of stay of in-patients as on January 1, 1983 for 25 hospitals

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Half of the beds in mental hospitals were occupied by chronic patients (2 years or more) in India. Furthermore, half of the chronic patients stayed for more than 10 years. The average stay was 118 days for the Indian mental hospitals by method 3 for the year 1983. The rate of turnover for the year 1983 was estimated at 3.08. Thus, on an average each bed was occupied by 3 patients in a year.

The distribution of the discharged patients in terms of status of admission is presented in Table 2. The free voluntary patients accounted for 58.6 per cent of the discharged while the paying voluntary patients accounted for 18.6 per cent. Thus more than three fourths of the patients discharged were voluntary patients while 17.2 per cent of discharged patients were certified. Only 4.8 per cent were observational. It is gratifying to note that less than one per cent of patients were criminals.

Table 2 - Distribution of discharged patients by their status of admission (%) for 34 hospitals

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It may be noted that there is no provision for involuntary admission in private mental hospitals and in psychiatric wards of medical colleges. Furthermore, essentially voluntary admissions could not exist in psychiatric wards of central jail and also in few state mental hospitals.

The distribution of the discharged patients are presented in Table 3 in terms of their diagnosis. The functional psychoses (82.8%) and organic psychoses (8.1%) put together accounted for 90.9 per cent of the total discharges. While neuroses and other non-psychotic patients formed 7.2 per cent, mentally retarded were 1.9 per cent.

Table 3 - Distribution of discharged patients by diagnosis (%) for 35 hospitals

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The distribution of patients by outcome of treatment is shown in Table 4. The improved patients at the time of discharge ranged from 31.3 per cent to 100 per cent among hospitals. The overall rate of improvement was 93.1 per cent for the year 1983. The central mortality rate (CMR) was 55.2 for the Indian hospitals. Thus 55 patients died out of every 1000 patients stayed for one year in the Indian hospitals

Table 4 - Distribution of discharged patients by the result of hospitalization (%) for 35 hospitals

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For 31 hospitals, the new registrations were 1,41,449 and follow-up attendance 7,07,176 with a mean of 13 and 62 respectively per day per hospital. Thus the total out-patient attendance was 8,48,625 for 31 hospitals during the year 1983. The follow-up ratio for the group of 31 hospitals was calculated to be 500 (ranging from 48 to 5234) indicating that the follow-up attendance was five times more than that of new cases.

For a sample of 33 hospitals, the salary of the staff accounted for 51.3 per cent of the total expenditure. While the amount spent for diet and medicine was 13.8 per cent and 7.1 per cent respectively, the cost per day patient (unit cost) on various items is shown in Table 5. As shown already the unit cost is high on salary and low on medicine and diet.

Table 5 - Unit cost on various items in rupees

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A model which indicates the relation between certain characteristics of mental hospitals with the treatment outcome is shown in Table 6. This model was based on the Ditto Clustering Procedures to the correlation matrix [2]. The treatment outcome was positively correlated with the higher unit cost, higher rate of turnover, and more out-patient attendance, but negatively correlated with the bed occupancy. The results of the above model may be helpful for the administrative decisions and in the evaluation of hospital functions.

Model for the association among hospital characteristics

Proforma to collect the basic information of Mental Hospital

The information collected by Channabasavanna and his associates [1] for the year 1977 is compared with the information collected in the present study for the purpose of studying the trend of mental health services in the country. The average length of stay has decreased to 118 days from 133 days; the rate of turnover has increased to 3.1 from 2.7; the average out-patient attendance and follow-up ratio have also been increased. As one would expect, the unit cost has also increased. However, the distributions of voluntary and / or psychotics have not changed much.

The mental hospitals were classified using four key indicators, viz: average bed occupancy, rate of turnover, unit cost (total expenditure) and average out-patient attendance. Employing the modified K-Means [2] Clustering Algorithms, 8 clusters have been obtained for 36 hospitals. The characteristics of these 8 clusters are shown in Table 7 in terms of four key indicators employed. The first cluster consisted of only one hospital which was an advanced research institution with high unit cost, higher

rate of turnover, high out-patient attendance and moderate bed occupancy. The third cluster also consisted of a single hospital with high out-patient attendance, higher rate of turnover and low unit cost. The last cluster consisted of a single hospital without out-patient facilities and with a least rate of turnover and bed occupancy. Clusters IV and V represented about half of the hospitals studied where rate of turnover was less. The fourth cluster consisting of 9 hospitals represented average hospitals with moderate unit cost, average out-patient attendance and average bed occupancy. The fifth cluster of below average hospitals. The seventh cluster with 4 hospitals with low out-patient attendance and very less rate of turnover.

Table 7 - Characteristic features of the clusters

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Discussion

Information on mental hospitals and hospital statistics are useful to identify the national indicators of important areas of services in the country. They also play major role to start new hospitals and / or to modify the existing hospitals due to change in mental health trends and management procedures. Thus, mental hospitalization has always been a central aspect of national mental health policy [3], [4], [5], [6]. The present communication gives some idea on the general description of the psychiatric patients institutionalised during the year 1983 in India.

In 36 hospitals studied, the total bed strength available was 18,944 (mean 526). Among these beds, 85.6 per cent were distributed among various psychiatric hospitals maintained by State Governments, and 1.6 per cent were maintained by private hospitals. The average bed occupancy was 16,992 for 18,944 beds in 36 hospitals studied, giving the bed occupancy as 90 per cent. If the restrictions with respect to the type of beds (male and female, open ward and closed ward, voluntary, observational and criminal, etc) and the charge involved in private mental hospitals were considered, then we have to conclude that almost all beds in mental hospitals in the country were occupied during 1983.

In 1946, the number of beds available for the psychiatric patients in undivided India was just over ten thousand [7]. In 1961, the figure was raised to 12,685 in independent India. For 46 mental hospitals in India, the latest available figure on bed strength was 21,139 for the year 1985 [9]. This works out one bed for every 35,000 (approx) population. This is far from satisfactory. When this problem was analysed hospital-wise, the average bed occupancy was higher than the bed strength in 8 (22.2%) hospitals and in the remaining hospitals the bed occupancy and bed strength were nearly equal, except in few. Though the geographical distribution of the hospitals with the size of the population was not studied in the present report, the general conclusion was that the available bed strength for psychiatric patients is not sufficient in India.

Though the average bed occupancy was less than the bed strength in some of the hospitals, due to variation in bed occupancy during a given year, in certain months the bed occupancy was more than the bed strength. When the data for 11 hospitals were analysed, it was found that the variation was more due to change in the weather and the vacation in the schools and other academic institutions. In general, the bed occupancy was higher during April-July and lower during the winter season. Stabilizing census level and undue bed wastage and undue bed shortage is a very difficult task and is

of classical operation - research problem which is extremely complex in nature [10], [11].

The bed strength only indicates the maximum possible number of patients who could be institutionalised at a given point of time. If one wants to know the number of patients who could be treated as inpatients for a given period of time, then the informations on the average length of stay and the average of turnover are necessary. The average length of stay ranged from 51 to 57 days for NIMHANS, for the year 1983, depending on the method employed. For the Indian hospitals the average stay was 118 days which lead to the conclusion that 3 patients were treated per bed for the year 1983. This for 46 hospitals reported by DGHS [9], about 60,000 patients may be treated on an average in an year in India.

From the view point of administration, management and research, the study of characteristics of mental hospitals in general and of in-patients in particular is important. Since information could be completed for in-patients only at the time of discharge, the characteristics of patients were studied only for those who were discharged. The results revealed that the majority of those discharged were voluntary patients and the criminals accounted for less than one percent. Functional psychoses and organic psychoses accounted for 91 per cent of the total discharges. The higher number of psychotics attending mental hospitals have been documented previously also [1], [12], [13].

The status of admission and diagnosis presented in Tables 2 and 3 were for those patients who were discharged. There is no reason not to assume that the number and distribution of patients who were admitted during the previous year but remaining in hospitals during the current year would be generally the same as the number and distribution of those patients who were admitted during the current year but carried over to the next year. But, the number of chronic patients who were staying in hospitals is generally considerable and the data presented in Tables 2 and 3 did not take these patients into consideration.

The crude mortality rate for the discharged patients was 1.7 per cent, which compared with the previous report [1]. The percentage of deaths to the total discharges may be a misleading index for measuring the institutional mortality since the chance of death may be more if the stay was longer. Hence, Central Mortality Rate (CMR) is introduced as the number of death per 1000 patients stayed in the hospital for one year. The CMR was 55 for the Indian mental hospitals during 1983 which was higher than the crude mortality range reported for the general population (11.9 per 1000). Higher relative risk of death in the institutionalized psychiatric patients than in the general population have been reported by others also [14], [15], [16], [17]. In 31 hospitals, nearly 850 thousand patient's visits the follow-up attendance was five times more than the newly registered patients. The follow-up visits would be expected to be more if the awareness increased and the misconception decreased.

Regarding the expenditure pattern more than half of the total expenditure was spent for salary and only 7 per cent was spent for medicine. Thus, the amount spent on developmental activities was either nil or negligible.

Reducing the number of days spent in the hospital per episode is essential for lowering costs [18]. When we compared the results of the present communication for the year 1983 with the results of 1977 [1], it was gratifying to note that the average length of stay has decreased (118 from 133 days) and the rate of turnover has increased (3.1 from 2.7). The average out-patients attendance and follow-up ratio have also increased. However, the distribution of voluntary and/or psychotics have not changed much. Thus, the trend in pattern of treatments in mental hospitals have shown encouraging improvements. Furthermore, the good treatment outcome was positively correlated with the higher unit cost, higher

rate of turnover and more outpatient attendance. Thus, the available data clearly indicated that the performance of mental hospitals in India have been improving during 1977 to 1983.

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