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LETTER TO THE EDITOR

The Modeling of Hospital Beds Forecasting in I.R. of Iran

Dear Editor,

A public hospital is the most visible part of the public health system, and also the most expensive one.[1] The availability of a hospital bed has always been a problem in developing countries; and it is perhaps the most important single factor in determination of the hospital utilization in the countries.[2] Before the 1979 Islamic Revolution in Iran, shortage of hospital beds was considered as a substantial problem.[3] Moreover the construction cost of a new bed hospital and also its huge maintenance cost were the reasons for establishing an effective model for forecasting of hospital beds according to the increasing demands due to population growth, increasing the flow of patients and rising demand for hospitalization.[4]

According to the reasons and shortages of resources, we had to draw a model in which the development of hospitals can be adjusted by the increasing trends of admission in previous few years, so the present model with a new comprehensive view on usage of resources and health information system is used in estimating number of inpatient beds during the 3rd and 4th five-year strategic plans in IR of Iran. The term *hospital bed Forecast* is used to estimate future requirements for hospital bed across the health system and within subsectors of the system[5] that is the way in which the prediction of hospital beds number based on the needs of the community will be performed.[6] The main, commonly used indices[4,7] in this study are:

1. Average Length of Stay in each hospital unit (ALOS), 2. Target Population (TP), 3. Average Bed Occupancy rate (ABO), 4. Admission Rate (AR) and 5. Bed Population Ratio (BPR).

The last forecasting was done from March 2006 to March 2008 and target hospitals were whole of 809 active hospitals in 322 cities and data collection and analysis were performed with the aid of an electronic questionnaire and the web based software. With this assumption that; AR or the rate of admitted patients per 1000 population should be approximately constant during the years of the plan, the calculation formula has been assembled as follows:

$$Bed\ No.=\frac{TP.ALOS.AR}{365\times1000\times0.75}$$

TP for every city at the end of the five-year plan could be calculated on the basis of the growth coefficient of related provincial population. ALOS in each particular unit from all of the same admissions was calculated in the country level and considered as a constant indicator. In the formula, 0.75 is the expected average Bed Occupancy (*BO*) rate which the specific unit (except for psychiatry and intensive care units) should be achieved. In the equation, 365 is simply the number of days in a year.

AR was the other indicator that has been determined from the below equation:

$$AR=\frac{number\ of\ admissions\ \ in\ each\ specific\ \ field}{current\ \ population\ \ of\ the\ (city\ ,\ province\ \ or\ country\ )}\times1000$$

Steps of bed forecasting for every individual 58 specialties and sub-specialty fields (with exception of emergency unit) in the software were done for 322 cities one by one. In order to approximating the AR to the population need for hospitalization, the calculation was done in three steps with AR of the city, province and country, so it was assumed on a rule that the greater value should be considered as the calculated beds at the end.

Average country hospital bed occupancy rate was 54% in 1998[3] and it was 67% in 2008 and is expected to meet 75% in 2014, so the health policy makers should be aware that the increasing hospital beds must be done in equation with such an efficiency indicators. Special resource allocation measures in order to make a better figure in provinces with high priority must to be done in which the provinces with lower than the country average (*e.g.* Lorestan, Ilam and Sistan adn Baluchistan) should be persuaded in expansion of hospital beds rather than the provinces with upper the average (*e.g.* Yazd and Tehran).

Keywords: Forecasting; Hospital beds; Allocation of resources; Iran

Conflict of interest: None declared.

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