

Effect of Health Services Supply on Hospital Admission Utilization in Brazil.

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Objective:

To extend a previous model of health services utilization to incorporate information on the supply of services.

Methods:

Our data came from 1998 Brazilian National Household Survey, which covered all Brazilian population hospital admissions from October 1997 to September 1998. We used hierarchical models, with individuals as the first level and the state of residence as the second level. Supply of health services was measured by number of beds, number of doctors *per capita*, hospital size, percentage of public beds, average number of admissions per capita, average number of medical consultations per capita and number of public outpatient units. Models were adjusted separately for adults and children. Two models were adjusted for each group: the first using logistic regression with a dichotomous variable for admission (yes or no) as the response variable, and the second using Poisson regression with number of admissions as the response variable. The latter model was adjusted only for people with at least one admission.

Results:

The effect of health needs, predisposing and enabling individual variables on hospital admission did not change by the inclusion of supply variables. We confirmed our previous results (Castro et al, 2002) that the main determinant of hospital admissions in Brazil are health needs. We also observed that poor people are more likely to be admitted in a hospital than rich people, after controlling for health needs and enabling factors (health insurance coverage and a regular health service). Only 1 to 3% of the variability in hospital admission utilization across individuals could be attributed to differences in supply at the State level. In the logistic models, only number of beds and number of doctors *per capita* were the supply variables associated with admission. For adults, Odds Ratio (OR) was 1.21 with 95% Confidence Interval (1.06-1.39) and 0.85 (0.78-0.94), respectively. For children, OR was 1.40 (1.22-1.61) and 0.82 (0.74-0.91), respectively. In the Poisson models, any of the supply variables was associated with admission.

Conclusions:

Our results suggest that over and under use of hospital admission occurred: on one hand, states with larger number of hospital beds might present unnecessary admissions, while states with fewer beds, are likely to be experiencing under use. The inverse association between number of doctors and hospital admissions suggested an influence of outpatient care reducing hospital admissions. These results must be viewed considering the peculiar configuration of Brazilian health system, composed by a universal public Unified Health System (SUS) and by a supplementary private insurance system, and with a very unequal geographical distribution of health care resources.

Castro, M.S.M., Travassos, C. & Carvalho, M. S., 2002. Fatores Associados às Internações Hospitalares no Brasil. *Ciência & Saúde Coletiva*, 7(4):795-811.