



Differentials across Private Health Centers and Government Hospitals in treatment for Acute Respiratory Infection ARI: Application of Morkov-Chain Statistical Model

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Abstract

ARI is one of the leading cause of child morbidity and mortality in India and its effect on child survival. It is estimated that Bangladesh, India, Indonesia and Nepal together account for 40% of the global ARI mortality. Recognizing the severity of this health hazards in the child survival program in India, ARI Control program was launched back in 1991 (CSSM, 1994). This study aims to analyze the determinants of ARI among children under age five years in India. The basic data for this study has been taken from NFHS-3. This study reveals that overall 6% children suffered from the disease and age of child has emerged as a significant factor in the prevalence of ARI. Large number of patient take private health facilities for quality treatment however, About 29 percent of ARI treatments were not amenable for any type of medical treatment either in Private facility or public health facilities. Thus by providing effective and timely and quality treatment at appropriate place many ARI deaths can be averted

Keywords: Public Health Facilities, Childhood Morbidity, Child Health, Respiratory Infections, Statistical Models

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Citation: Vipul Vaibhav Pandey et al. (2018), Differentials across Private Health Centers and Government Hospitals in treatment for Acute Respiratory Infection ARI: Application of Morkov-Chain Statistical Model. Int J clinical & case. 2:5, 35-37

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Received: June 14, 2018

Accepted: July 05, 2018

Published: July 13, 2018

Introduction

Improving the primarily hospital services and developing better methods for early detections, are the best strategy to control Acute Respiratory Infections (ARI). Effective reduction of mortality due to ARI is possible if children suffering from ARI are subjected to medical

treatment. One of the priority issues in child hood morbidities has been place of treatment, especially changing preferences in source of place of treatment once a child is not getting cured soon. This study has used **Morkov-chain model to study** the transition probabilities from one form of Hospitals either Private or Government based Hospitals to other by condensing the reported place of treatment. To have a condensed form of their place of treatment, the place of treatment sought during ARI were classified into five groups which are Government facility, Private, Ngo, Traditional and Others/Home made Here, it should be noted that the place of treatment/ hospitals is different from place of first visit for any treatment. To have significant number of observation place of first visit is also grouped into five categories same as above. The data for study is taken from Third round of National Family Health Survey-3 (NFHS-3). The information about children's was obtained from mothers of children under five years

Treatment Seeking Behavior

Study reveals that children suffered from ARI among those 63 percent are soughting for the treatment of ARI. Those who sought for treatment, among them more than fifty percent (53.9 percent) had taken the treatment from private centers. 12.2 percent, treatment from government hospitals and 3.3 percent and 2.3 percent had taken the traditional and other sources respectively. Only 0.3 percent has taken treatment at NGO based hospitals

Characteristic	Government	Private	Others
Age of the child			
< 1 year	20.9	72.9	6.2
1-5	23.6	70.7	5.8
Sex of child			
Male	23.1	70.4	6.5
female	22.3	72.4	5.2
Residence			
Urban	19.3	75.2	5.5
Rural	25.5	68.4***	6.2

* $p < 0.01$, ** $p < 0.05$, * $P < 0.1$

Table 1: Adjusted proportion of sources of treatment for ARI by selected background characteristics

Table presents the result of adjusted proportion of children who have sought treatment from different facilities for ARI. The table reveals that irrespective of background characteristics higher proportion of children have sought treatment from private Hospitals & medical professionals compared to government or other facilities. It is seen that irrespective of age of the child significantly higher proportion of

children sought treatment from the private facilities than government or others facilities. Sources of treatment for ARI have not changed with the sex of the child. Significantly higher proportion of urban children (75%) compared to rural children (68%) have sought treatment from private Hospitals.

Second visit \ First visit	Govt	Private	NGO	Traditional	Home made
Govt	0.788	0.184	0.000	0.000	0.028
Private	0.034	0.947	0.003	0.008	0.008
NGO	0.000	0.000	1.000	0.000	0.000
Traditional	0.059	0.088	0.000	0.941	0.000
Home	0.087	0.370	0.000	0.087	0.457
Probability for first visit	0.158	0.780	0.004	0.025	0.033
Probability for last visit	0.155	0.780	0.006	0.032	0.026

Table 2: System followed by patient visiting type of Health facilities during ARI

Table represents the estimates of transition probabilities among children who sought treatment for acute respiratory infections. The table shows that among different categories of places for treatment, the probabilities of retaining at same place for treatment are 0.788, 0.947, 1, 0.941, and 0.457 for government, private, Ngo, traditional and "others" respectively. The probability of transition from government hospitals to private is 0.184 and for "others" it is 0.028. However there is no transition from government hospitals to Ngo and traditional or AYUSH providers. If the probabilities of transition from private facility to other sources of treatment is analyzed it is found that from private to government hospitals it is 0.034, for Ngo it is 0.003 and 0.008 which is same for traditional and "others".

The last two rows of table shows the marginal figures of probabilities, representing the movement in source of treatment either government hospitals or Private centers during acute respiratory infection

from place of first visit to a health care provider to next place for treatment. These figures indicate that the probability to seek treatment in government Hospitals has decreased slightly from 0.158 to 0.155. Whereas the probability of private place remains same shows believe in private source of treatment.

Summary of Findings, Conclusions and Recommendation

Considering treatment seeking behavior among the children it was observed that 29 percent of ARI treatments were not amenable for any type of medical treatment. About 30 percent of child between ages one to five were not provided any medical care for the treatment of ARI as these figure are low for child less than one year (27 percent). Again more are the cases of not seeking any medical treatment for ARI remains in rural areas and about 31 percent of female child were not given any medical treatment than their male counterparts (27 percent)

reveals the existence of gender biases in treatment seeking behavior for the disease.

In view of the treatment seeking behavior among the children's those who sought treatment for ARI, more than fifty percent (53.9 percent) had taken the treatment from private sources, 12.2 percent, 3.3 percent and 2.3 percent had taken the treatment from government, traditional and other sources respectively. Whereas only .3 percent had taken treatment from NGO based hospitals. The estimates of transition probabilities from place of first treatment to the place of further treatment reveals that, the change pattern is not uniform during the treatment in case of the disease. While, probability to retain in the same group for treatment is highest in private centers followed by government hospitals but varies largely across traditional, others and NGO. Findings from present research suggest that there is a need to enhance private centers as maximum patient visit private health centers and also they retain there for treatment.

Conceiving thus, it can be said that Acute Respiratory Infections is the most common symptom of illness among young children in India, and it is associated with a wide range of causes. Differential diagnosis by health care practitioners/medical professionals of a child pertaining with the disease requires knowledge of proper conducive settings

in which they grow and also to ensure better hospitals. Therefore any interventions related to child health should specially target the "Private hospitals with equipped facilities" that mitigate prevalence of the disease among them. Generally, it is observed that deaths due to ARI occur because either the child has not received any medical treatment or received poor treatment. Relatively cheap and effective antibiotics are available for treatment of ARI at most of private hospital. Many lives can be averted if therapy is provided timely at appropriate hospitals.

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