The Economic Impact of Government Sponsored Health Insurance Schemes on a Tertiary Care Multispeciality Hospital in South India

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Abstract

The number of people registered with health insurance schemes has increased from 161.2 million(2011-12) to 335 million(2016-17), which is two-fold in just 5 years.[1] As per the forecasts regarding the increase in healthcare insurance market in India, it is evident that the hospitals have to face the management of patient costs through the insurance schemes in large numbers as the number of claims will increase eventually. With the present condition of schemes reimbursing the claims with a huge time lag of about 3-4 months, the hospital have to carry the burden of opportunity costs lost on these claims.[2] This indicates the responsibility hospital administration should have to face the ever increasing claims and manage them without incurring loss. This study was intended to do a cost analysis between surgical procedures performed under two categories, Aarogyasri Health Insurance Scheme, A Government Sponsored Health Insurance Scheme in the state of Andhra Pradesh and Cash category, where patients do not hold any insurance policy and pay by cash all the hospital expenses. On the basis of revenue generated the top 15 procedures under Insurance scheme are determined and costing is done using Activity Based Micro Costing method. Costing is done for the determined 15 procedures under both the categories of payment modes. The results are compared to evaluate the economic impact of the health insurance scheme on hospital.

Key words: *Health insurance, ABC microcosting, surgical procedures, hospital economy, costing.*

Introduction

The healthcare industry, consuming around 9.1% of global GDP, is one of the fast growing industries around the world. In India healthcare industry achieved to be 3rd largest growth sector in the country with 3.9% of GDP.[3]

With 1/6th of the world population, India carries the burden of expectations to deliver the basic needs of its citizens. Healthcare being one of the foremost needs among others, the scenario of the health of Indian population is still far from achievable by its

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own standards. With a population of 111 crores people and rising, it is surely a herculean task to provide and satisfy the healthcare needs of the nation by the government. The demographics of the country when studied shows that there is an increase in the life expectancy and growth in socio-economic status, which means that Indian's despite living longer also will have a remarkable increase in group/segment of Indians over the age 65. It has been estimated by the Oxford Economics that 95 million Indian citizens will be above the age of 65 years by 2021.[4] On the contrary, The government spending of 1.41% of GDP, ranking India at 187th position among 194 countries reflects the healthcare scenario in the country.

The income of the middle class population of the country which is estimated to be at 7% CAGR for five year period from 2016-2021 indicates their expectations for high quality healthcare. With respect to this the government spending on healthcare is also expected to increase from US$287 Billion (2016) to US$407 Billion (2021), Whereas household spending is projected to increase from US$1.3 Trillion (2016) to US$2.[2] Trillion. Spending on healthcare, both by the government and household is expected to increase two-fold.

Globally, medical insurance sector is considered in high regard due to its feasibility, size of the market and potential to penetrate into the market with a continuous upward growth. The universal health coverage adopted by UN recognizes the responsibility of Governments to urgently and significantly scale up efforts to accelerate the transition towards universal access to affordable and quality health-care services. The adaptation of Universal Health Coverage by UN recognizes the responsibilities of Governments to immediately increase the efforts to speed up the process of transformation towards global access of affordable and quality healthcare services.

To achieve Universal coverage, all the nations started to develop and initiate financing models so as to provide affordable healthcare to everyone without incurring any losses to the providers and the governments. The most chosen model was health insurance through Government sponsorship or Private payers.

Indian Government too initiated many health insurance schemes to benefit the citizens of the country to avail best of the healthcare at affordable rates

It is very evident that there have been many government health insurance schemes in India that are designed to assist public. Various schemes are made flexible enough to incorporate ever-changing need of families and changing scenarios of the healthcare in the country. The governments have tried to add new schemes and enhance the benefits of existing schemes to ensure the public is benefitted as and when the need arises.

Apart from the Central Government schemes formulated and introduced by the Government of India, each state of the country has its own health insurance schemes formulated to benefit the people within their circles of states. Andhra Pradesh is one such states of India which is promoting Healthcare of the people through state sponsored health insurance schemes and trying to benefitting as many people as possible and reduce the out of pocket expenditure. The major objective of these state sponsored health insurance scheme is to make the healthcare affordable and equitable to every individual of the state and country.

World Health Report, World Health Organization, 2010 states that Every country can maintain what it has achieved or do something to move closer to universal health coverage. Many countries have gone through struggles to establish a system of universal health coverage and all the struggles are well documented which can be taken as templates by the policy makers in the country. There are lessons to be learnt. One of which concerns the importance of social willingness expressed through political engagement to achieve the desired objective. Reform has always resulted where

there is grass roots demand and the active involvement of civil society.[1] This conclusive statement and the recommendations by the WHO in World Health Report-2010 have led to making the UN resolution on Global Health and Foreign Policy, which directed all the nations to adopt and implement universal health coverage.[5] Owing to the UN resolution, India, along with other Nations, initiated Universal Health Coverage to provide Health care to every individual under various health insurance schemes.[1]

The Health insurance market in India has been seeing a consistent incline with the forecasted growth rate from 7.8% during 2011-2016 to 12.6% for the period between 2017-2021 in Government sector and from -3.2%(2011-16) to 12.6%(2017-2021) in private health insurance sector. Govt. health spending is forecasted to increase almost two-fold from US$31.0 billion(2016) to US$56.2 billion(2021), whereas the private insurance is also increasing almost two-fold from US$1.9 billion(2016) to US$3.5 billion(2021).[4]

With the increase in the health insurance market, from the hospital administration perspective keeping in view the irregular reimbursement periods, which is as long as 3-4 months, particularly in Public Health insurance schemes, it is vital to study the loss through opportunity costs associated with the package costs of the schemes and analyze the feasibility of the scheme.[5]

The statistical data taken from Statista-the statistics portal indicates that the number of people registered with health insurance schemes has increased from 161.2 million(2011-12) to 335 million(2016-17), which is two-fold in just 5 years.[1] As per the forecasts regarding the increase in healthcare insurance market in India, it is evident that the hospitals have to face the management of patient costs through the insurance schemes in large numbers as the number of claims will increase eventually. With the present condition of schemes reimbursing the claims with a huge time lag of about 3-4 months, the hospital have to carry the burden of opportunity costs lost on these claims.[2] There is a need for the hospitals, on the basis of forecasts of healthcare insurance market growth, to do a cost analysis to evaluate the feasibility of the schemes based on the profit or loss the hospital is incurring through the opportunity costs loss.

This study is intended to do a cost analysis of the surgical procedures in hospitals and compare them with the package costs of the Govt. Sponsored Health Insurance Schemes and report on the feasibility of the schemes in a tertiary care multispecialty hospital. The costing of the surgical procedures identified under Govt. sponsored health insurance schemes is done through bottom-up approach using Activity Based Micro costing.

Acitivity based microcosting is a very efficient tool to be used in healthcare facilities.[6]

Activity based micro costing- the bottom up approach can be done following three standard steps

- Mapping activities of the procedure
- Computing the cost of each activity
- Computing the unit cost of each procedure

Secondary activities can also be taken into account which are those activities performed by the surgeons, nurses and administrative staff and are not directly linked to patient.[7]

A detailed information relating to all expenditures based on material used, drugs, pre & post-operative examinations, professionals involved, equipment deployed, time spent in OT, days spent in ICU and wards can be carried out using ABC micro costing.[8]

Various cost heads to be considered under ABC micro costing technique are[9]

- Production cost
- Fixed cost
- Variable cost
- Total cost

- Direct cost
- Indirect cost

The labor costs can be taken on the basis of standard costs per minute of per day. This equals the normal salary divided by number of working days or minutes per year.[10]

One Govt. sponsored health insurance schemes are taken for the study. The scheme is AarogyaSri sponsored by the Government of Andhra Pradesh. Policies and procedures of the procedures under these schemes are obtained from the online portals dedicated for the schemes by the Government of AP.

Methods

Study setting and target department

Study setting was a 350 bedded tertiary care multispecialty hospital in South India. The study was conducted in the operation theatre complex of a the hospital. The OT complex of the hospital has a total of 8 operation theatres. Total number of surgeries performed between the time period July 2018 & December 2018 are 5956. On an average 993 surgeries are performed per month in all the categories. This study was intended to do a comparative analysis between the surgical procedures that are performed under the categories of cash and Aarogyasri health insurance scheme. Total number of surgeries performed under Aarogyasri and cash category between the study period are 2353 & 1729 respectively. Average number of surgeries performed under these two categories i.e., Aarogyasri health insurance scheme and cash, per month are 392 & 288 respectively.

Study period

Surgical procedures done from July 2018 to December 2018 are reviewed.

Study Design

The study was done in retrospective approach using the cross sectional data obtained from the operation theatres. The initial data collected was of all the surgeries performed under Aarogyasri Scheme for the time period between July 2018 & December 2018. Total number of all surgical procedures and the revenues generated by them were analysed. This data was used to identify the top 15 surgical procedures performed under Aarogyasri scheme.

Costing of all the identified 15 surgical procedures is done using Activity Based Micro Costing. Average length of patient stay is calculated analysing the length of stay of all the patients in the identified procedures. The stay of patient in the hospital i.e., from the moment patient enters the hospital until the discharge is divided into 5 phases.

Ø Pre-admission consultation & diagnostics

Ø Pre-surgery admission

Ø Surgery

Ø Post-surgery ICU

Ø Post-surgery ward

At each phase various costs are calculated which are categorised as direct & indirect costs levied upon the patient by the hospital. Various cost heads taken into consideration are

Ø Human resource

Ø Equipment

Ø Electricity

Ø Pharmaceuticals

Ø Consumables

Ø Utility

Ø Administration

Human resource

The human resource cost is calculated at each phase of the patient stay in the hospital. In the pre-

admission consultation phase, human resource personnel involved are Aarogyasri desk personnel one in number, physician consultant and assisting nurse for consultation services, lab & radiology technician if any investigations were prescribed for pre-assessment. Consultation time per patient was recorded by time & motion study and average time for patient is calculated. Based on the consultation time the physician consultant & assisting nurse cost were scaled down from their respective salaries per month. Lab and radiology technician costs were calculated based on the average time taken for prescribed test for a particular procedure and the salaries were scaled down to that time obtained.

Equipment

The policy of the hospital regarding equipment is that, depreciation value is set on the item so as to attain return on investment within 7 years from the procurement of that item. All the equipment that is deployed to serve the patient for whole length of stay is taken into account. This equipment includes diagnostics, radiology, surgical procedure, ventilators & other equipment in ICU. Cost for that equipment that exceeded 7 years of procurement is taken as zero. For all the equipment falling within 7 years, depreciation is calculated which is scaled down to the procedure time or up time for the length of patient stay.

Electricity

Electricity department of the hospital maintains segregated consumption reading meters for every department, ward and block of the hospital. Consumption by diagnostic lab and radiology is calculated based on the consumption power of the equipment used. Whereas in wards, ICU and Operation theatre consumption is divided and attributed on per bed basis and calculated with the unit price of electricity.

Pharmaceuticals

This cost is calculated based on the standard drugs prescribed to patient for the determined procedures during different phases of the patient stay.

Consumables

Consumables include gloves, mouth masks, CSSD material, linen material, etc. used during the consultations and surgical procedure.

Utility

It is the cost attributed to the area of space used by the patient at different phases of stay in hospital. That being said, the space occupied by the bed in wards, ICU and operation theatre is determined and calculated with rent of the hospital per square foot.

Administration

All the administration charges levied upon the patient are indirect costs. This is taken as 10% of the package cost per procedure. Aarogyasri desk personnel, billing staff, back office personnel for insurance schemes and other administrative personnel are included in this.

Results & Discussions

Top 15 surgical procedures performed under the Scheme are determined based on the revenues generated by them. Table 1 represents the details about them.

Table 2 is a comparison between package costs given by the scheme and cost incurred by the hospital.

Costing of the procedures is done on par with the specifications provided in a study which was conducted to compare the effectiveness of different costing methods.[10]

It is evident from the findings that except 3 procedures all other surgical procedures under scheme are generating positive margin. The 3 procedures

giving negative margins are, Whipples, Mastectomy and Arthroscopy.

Table 3 is a comparison between unit cost of procedure levied upon patient and cost to hospital in Cost category. The margins yielded are almost 50% of package cost of the procedures.

Comparison is done between the net margins yielded by the procedures performed under both categories.

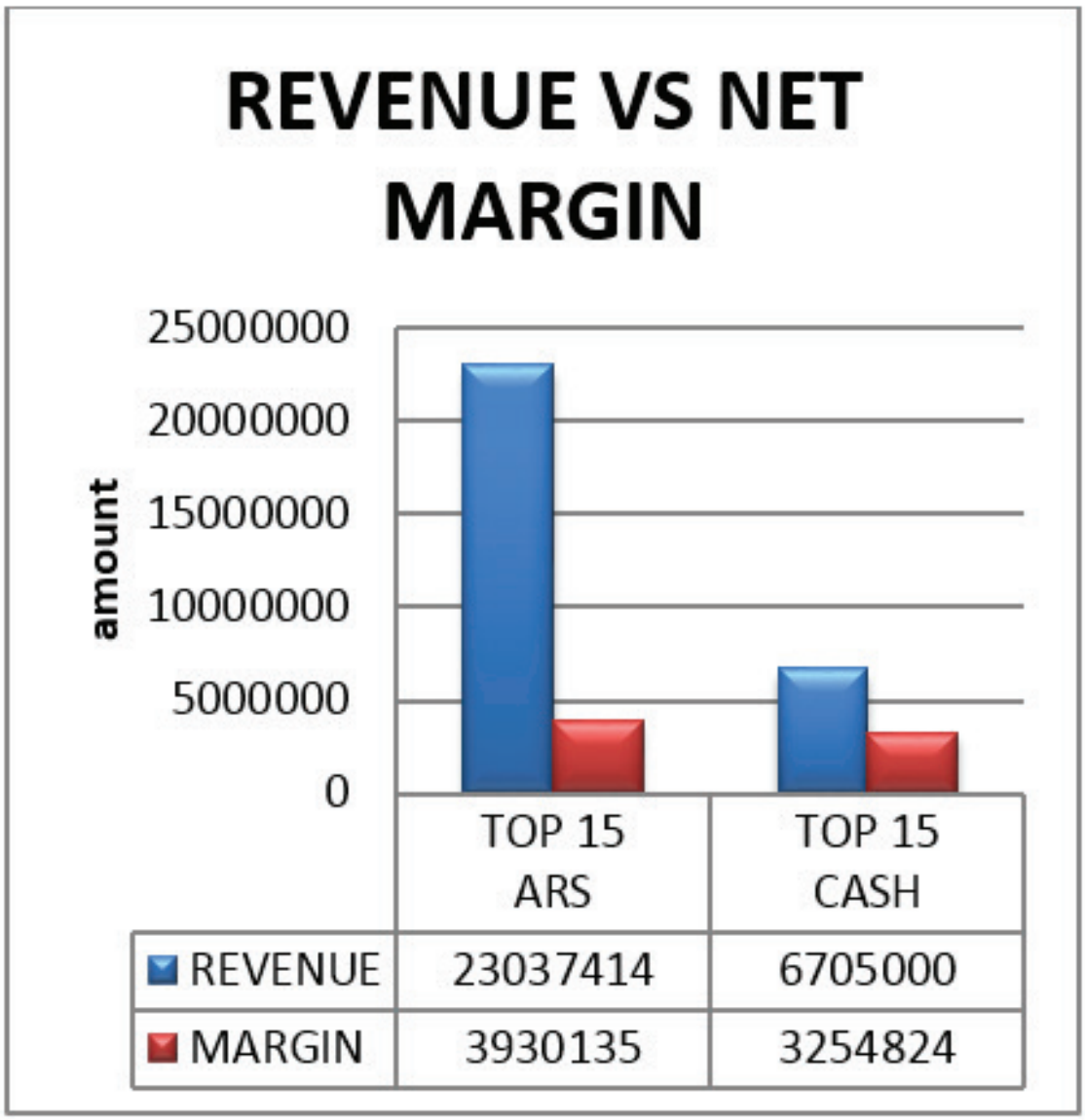

Chart 1 depicts the difference between revenue generated and margins yielded by all 15 procedures under both the categories.

Table 1. Total revenue from surgeries

PROCEDURE	NUMBER OF SURGERIES	TOTAL AMOUNT
CORONARY BALLOON ANGIOPLASTY	62	4461145
CORONARY BYPASS SURGERY	36	4289023
SPINAL FUSION	59	3011319
PCNL	70	2621483
SURGICAL CORRECTION OF LONGBONE	50	1664743
MITRAL VALVE REPLACEMENT	10	1545000
LATERAL PANCREATICOJEJUNOSTOMY	12	1226671
URSL	45	1140168
WHIPPLES	8	877200
LAP SURGICAL TREATMENT FOR HERNIA WITH MESH	18	838805
MASTECTOMY	23	770164
MYRINGOPLASTY	49	753715
EXCISION OF BASAL BRAIN TUMOR	9	643070
ARTHROSCOPY	18	627773
CORPECTOMY FOR SPINAL FIXATION	6	433500

Table 2. Package and Cost to Hospital

PROCEDURE	PACKAGE (In rupees)	COST TO HOSPITAL
CORONARY BALLOON ANGIOPLASTY	66310	59757.73
CORONARY BYPASS SURGERY	118163	108127.8
SPINAL FUSION	51000	45253.52
PCNL	34966	27055.82
SURGICAL CORRECTION OF LONGBONE	30600	19794.12
MITRAL VALVE REPLACEMENT	147900	90508.58
LATERAL PANCREATICOJEJUNOSTOMY	102000	58962.53
URSL	26168	20237.8
WHIPPLES	102000	112152.1
LAP SURGICAL TREATMENT FOR HERNIA WITH MESH	51000	30732.98
MASTECTOMY	30600	32819.47
MYRINGOPLASTY	15382	13800.87
EXCISION OF BASAL BRAIN TUMOR	71400	68981.29
ARTHROSCOPY	25500	32059.34
CORPECTOMY FOR SPINAL FIXATION	76500	50060.5

Table 3. Cost to hospital and margin

PROCEDURE	UNIT PROCEDURE	COST TO HOSPITAL	MARGIN
CORONARY BALLOON ANGIOPLASTY	125000	70763.42	54236.58
CORONARY BYPASS SURGERY	200000	121808.65	78191.35
SPINAL FUSION	95000	51504.42	43495.58
PCNL	75000	31017.74	43982.26
SURGICAL CORRECTION OF LONGBONE	55000	22513.89	32486.11
MITRAL VALVE REPLACEMENT	300000	121734.76	178265.2
LATERAL PANCREATICOJEJUNOSTOMY	160000	65576.6	94423.4
URSL	50000	19549.89	30450.11
WHIPPLES	200000	125333.76	74666.24
LAP SURGICAL TREATMENT FOR HERNIA WITH MESH	80000	35863.14	44136.86
MASTECTOMY	80000	42332.23	37667.77
MYRINGOPLASTY	40000	20200.67	19799.33
EXCISION OF BASAL BRAIN TUMOR	140000	81690.71	58309.29
ARTHROSCOPY	60000	36969.82	23030.18
CORPECTOMY FOR SPINAL FIXATION	95000	50156.72	44843.28

Conclusion

This study was conducted to assess the economic impact Government Sponsored Health Insurance Schemes create on the hospital. Top 15 procedures under ARS scheme based on their revenues were taken to do Activity based micro cost under both scheme and cash category. The results were conclusive. The profits generated by ARS scheme and cash category are 17% & 48.5% respectively of their revenues.

The conclusion that can be taken from the results is that same amount of resources are being pooled in under both the categories to produce two different

margins. For the same amount of resources pooled into procedures under scheme as that of cash category, the profit generated is 33% less, which means if all the procedures under scheme are performed under cash there would be 33% more profit to the hospital. This is a loss of opportunity cost.

Hospital resources are being directed towards procedures under ARS scheme only to produce 33% less margin than those performed under cash.

Ethical Clearance- Taken from IEC committee of hospital

Source of Funding- Self

Conflict of Interest - None

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