COST COMPARISON STUDY BETWEEN A PRIVATE SECTOR AND A PUBLIC SECTOR HOSPITAL IN PESHAWAR, KHYBER PAKHTUNKHWA, PAKISTAN FOR MYOCARDIAL INFARCTION PATIENTS

Babar Ayub¹, Abidullah¹, Zulkamal¹, Aslam Khan², Shujat Ahmed¹, Shafiq ur Rahman¹, Nasir Ayub³

ABSTRACT

OBJECTIVE: To determine cost comparison of private sector hospital; North West General Hospital (NWGH) and public sector hospital; Hayat Abad Medical Complex (HMC), for myocardial infarction (MI) patients.

METHODS: The demographic data of the patients suffering from MI were collected from NWGH and HMC Hospital and Research Center Peshawar, Khyber Pakhtunkhwa Pakistan. Frequency of MI patients were calculated from patients suffering from cardiovascular disease (CVD), total direct medical costs were calculated, average hospital stay as well as the Willingness to pay were also determine.

RESULTS: Out of total 667 Cardiovascular disease (CVD) patients 241 patients were suffering from MI. Out of total 241 MI patients from both hospitals, 74 (30.71%) get treatment from NWGH and 167 (69.29%) get treatment from HMC. Average hospital stay of MI patients in HMC is 3.23 days and in NWGH is 1.63 days. Total average MI medical related cost in HMC is Pakistani Rupees (Rs.) 23650 and NWGH is Rs. 280425. Out of total 241 MI patients, 36.93% and 85.89% cannot bear the expenses of myocardial infarction related costs of HMC and NWGH respectively

CONCLUSION: High Cost, low rate of hospitalization, lesser average hospital stay and larger number of patients who cannot bear the expenses of NWGH indicates that NWGH is expensive and not affordable for major population of KPK suffering from MI.

KEY WORDS: Myocardial infarction (MeSH), Costs and Cost Analysis (MeSH), Length of Stay (MeSH)

INTRODUCTION

Myocardial infarction (MI) or heart attack is one of the life threatening situation develops due to sustained ischemia because of reduced blood supply to local area of myocardium resulting in local necrosis of myocardium.¹ MI could be predictable from chest pain, shortness of breath (SOB), ECG findings, elevated level of biomarkers and angiography.¹ If not treated early it may produce severe health complications. MI complications lead to stroke, heart failure, subsequent MI, psychological complications and death. The various risk factors for MI are hypertension, smoking, high cholesterol level, obesity, alcohol and family history.² In US, about 320,000 recurrent and 6,000,000 new MI report each year leading to 696,000 hospital stay, charged at $31 billion.³ In Pakistan, disease burden of ischemic heart disease (IHD) is 5,09,375 patients⁴ and is the second most common cause of death.⁵ In 2020, it will be the top cause of death.⁶ Prevalence of MI is 11%⁸ and is more common in males than females in the local population of Pakistan.⁹ Mortality due to MI has decreased up to 30% since last twenty years in developed countries,¹⁰ but it is still high in underdeveloped countries such as Indian subcontinent including Pakistan.¹¹ Due to increased burden of cardiovascular diseases (CVD) and scarce financial resources the financial burden is increasing on society.¹²,¹³ Pharmacoeconomics provide effective mean to cope with these challenges. Through this, not only economical but more effective intervention is adapted.¹⁴ For this purpose incremental cost effectiveness ratio is calculated in order to adapt more effective and less costly intervention. But if the intervention is much effective and the people are not able to pay for such intervention than this intervention is not cost effective.¹⁵ Therefore, each
TABLE I: FREQUENCY OF PATIENTS ADMITTED TO HMC AND NWGH DURING JANUARY AND FEBRUARY, 2014

<table>
<thead>
<tr>
<th>Hospital</th>
<th>Patients with Myocardial Infarction (MI)</th>
<th>Patients with cardiovascular diseases other than MI</th>
<th>Total (n=667)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Freąncy</td>
<td>%age</td>
<td>Freąncy</td>
</tr>
<tr>
<td>HMC#</td>
<td>167</td>
<td>34.9%</td>
<td>311</td>
</tr>
<tr>
<td>NWGH$</td>
<td>74</td>
<td>39.2%</td>
<td>115</td>
</tr>
<tr>
<td>Total</td>
<td>241</td>
<td>36.1%</td>
<td>426</td>
</tr>
</tbody>
</table>

#: Hayatabad Medical Complex; $: North West General Hospital

TABLE II: COMPARATIVE COST OF PATIENT AT HMC AND NWGH

<table>
<thead>
<tr>
<th>Types of charges</th>
<th>NWGH#</th>
<th>HMC$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cost limit</td>
<td>Average costs</td>
</tr>
<tr>
<td>Drug acquisition</td>
<td>Rs. 800-1500/ day</td>
<td>1150</td>
</tr>
<tr>
<td>Doctor fee</td>
<td>Rs. 500-2000</td>
<td>1250</td>
</tr>
<tr>
<td>Angiography</td>
<td>Rs. 20000-30000</td>
<td>25000</td>
</tr>
<tr>
<td>Angioplasty</td>
<td>Rs. 120000-30000</td>
<td>21000</td>
</tr>
<tr>
<td>Lab investigation</td>
<td>Rs. 5000-10000</td>
<td>75000</td>
</tr>
<tr>
<td>Services</td>
<td>Rs. 50-10000</td>
<td>525</td>
</tr>
<tr>
<td>Ward (Daily)</td>
<td>Rs. 3500-5000</td>
<td>4250</td>
</tr>
<tr>
<td>CCU (Daily)</td>
<td>Rs. 6500</td>
<td>6500</td>
</tr>
<tr>
<td>Other</td>
<td>Rs. 10000-30000</td>
<td>20000</td>
</tr>
<tr>
<td>Estimated total cost on MI</td>
<td>Rs. 166350-394500</td>
<td>280425</td>
</tr>
<tr>
<td>Net cost (Pakistani Rupees)</td>
<td>280425 – 23650 = 256775</td>
<td></td>
</tr>
</tbody>
</table>

$: Hayat Abad Medical Complex; #North West General Hospital

intervention has its own threshold (willingness to pay), above which, the intervention is considered as not cost effective. Willingness to pay or incremental cost effectiveness threshold depends on several factors including socioeconomic condition of the society. WHO considers an intervention to be cost effective if that intervention costs less than GDP per capita of a particular country.16

As there are no local studies available on cost comparison of public and private hospitals for treatment of MI patient, this study was conducted to determine cost comparison of private sector hospital; North West General Hospital (NWGH) and public sector hospital; Hayat Abad Medical Complex (HMC), for MI patients.

METHODS

This study was conducted in the month of January and February 2014, in North West General Hospital and Research Center Peshawar, Pakistan and Hayatabad Medical Complex, Peshawar Khyber Pakhtunkhwa, Pakistan. All patients who were hospitalized in both hospitals cardiac care units were analyzed. Written permission of hospital administration was taken to use the hospital data for research publication. The demographic data of those patients were obtained, who were diagnosed positive for MI or other CVDs, on the basis of ECG finding, biomarkers and electrocardiography. All direct cost were calculated

TABLE III: NUMBER OF MYOCARDIAL INFARCTION (MI) PATIENTS WILLING TO PAY HOSPITAL EXPENSES

<table>
<thead>
<tr>
<th>Types</th>
<th>MI Patients at HMC</th>
<th>MI Patients at NWGH</th>
<th>Of total 241 MI Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>%age</td>
<td>Frequency</td>
</tr>
<tr>
<td>Willing to pay</td>
<td>78</td>
<td>46.71</td>
<td>34</td>
</tr>
<tr>
<td>Not willing to pay</td>
<td>89</td>
<td>53.29</td>
<td>40</td>
</tr>
<tr>
<td>Total</td>
<td>167</td>
<td>100</td>
<td>74</td>
</tr>
</tbody>
</table>

#: Hayat Abad Medical Complex; $:North West General Hospital

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including doctor fee, drug acquisition cost, services charges, hospital related cost such as daily charges for CCU and cardiology ward, angiography, angioplasty and other medical related costs. A questioner, comprising questions related to willingness to pay including a face to face interview, was prepared. Length of stay in both hospitals was calculated from the day of admission to the day of discharge. All data was obtained with the previous consent of patients.

RESULTS

This study was conducted in the month of January and February 2014 in North West General Hospital & Research Center and Hayatabad Medical Complex, Peshawar, Khyber Pakhtunkhwa, Pakistan.

A total 667 CVD patients were hospitalized in HMC and NWGH in the month of January and February 2014. Out of total 667 patients, 241 (36.13%) were suffering from MI. Of the total 241 MI patients, 167 (69.29%) patients received treatment from HMC and 74 (30.71%) got treatment from NWGH. Out of 667 patients, 214 (36.13%) were suffering from MI and 426 (63.87%) were suffering from other cardiovascular diseases (CVD) such as angina, heart failure etc, as shown in Table 1.

Out of total 667 CVD patients 478 (71.66%) got treatment from HMC and 189 (28.34%) got treatment from NWGH. Average stay of MI patients in HMC and in NWGH was 3.32 and 1.63 days, respectively.

Table II shows direct cost associated with MI. Total average cost at NWGH was Rs. 2,80,425 which included drug acquisition Rs. 1,150, doctor fee Rs. 1,250, angiography Rs. 2,500, angioplasty Rs. 21,000, lab investigation Rs. 7,500, services Rs. 525, ward (daily) Rs. 4,350, CCU (daily) Rs. 6,500 and other Rs. 20,000. Whereas, average cost at HMC was much affordable as it is a public sector hospital and the doctor fee, services charges and other related medical related costs are not charged at patient’s pockets. Average costs of drugs were Rs. 1,150, angiography Rs. 400, angioplasty Rs. 15,000 and lab investigations were Rs. 3,500.

Table III shows willingness to pay. Out of total 167 MI patients at HMC, 78 (46.71%) were willing to pay, while in NWGH, 34 (45.94%) were willing to pay. Combining total data of MI patients from both hospitals, 34 (14.11%) patient were willing to pay expenses of NWGH while 152 (63.07%) were willing to pay expenses of HMC.

DISCUSSION

This result of this study shows that more patients get treatment from HMC than NWGH. Dhalla et al., has analyzed that if burden of costs comes on patient than adherence to that treatment reduces as compared to those patients who are paid by government or third party. This adherence to medication improves quality of life and also reduces mortality. He claimed that if 1% price increases, 0.16% adherence to that treatment decreases. This is the reason that due to high costs of NWGH and low socioeconomic condition of majority of the people living in Khyber Pakhtunkhwa, patients adherence or getting treatment from NWGH is much more less due to its high cost as compared to HMC, where more patients get treatment because this is a government hospital. Only the medication charges are paid by patients in government hospital in Pakistan, other costs are paid by government.

Average patient stay in both hospitals/
Average stay of MI patients is higher in HMC (3.23 days) compared to that of NWGH (1.63 days). Desideri et al. has showed that patients who have uncomplicated MI by early discharge the cost of hospitalization reduce, although minor complications produce due to early discharge. The normal time of discharge for those patients who have uncomplicated MI are 3-4 days. But the normal average stay is shorter in NWGH due to its high costs and patients are put on home treatment after early discharge. Though most of patients are willing to stay in NWGH in order to prevent any upcoming complications due to MI, but due to its high cost they soon leave hospitals (discharged) in order to avoid further hospital costs.

Table II shows costs of both hospitals. The average cost of NWGH is much higher than HMC. As HMC is public sector hospital therefore service charges, doctor fee, hospital charges including ward and other medical related costs are not pay by patients. Average cost bearing by patients at HMC (Rs. 23,650) is much lower than average cost at NWGH (Rs. 28,0425). This cost includes drug acquisition, doctor fee, angiography, angioplasty, lab investigation, services, ward, CCU, and other medical related costs. Willingness to pay from table III shows that 46.71% of patients at HMC were willing to pay the expenses of HMC and in NWGH about 45.94% MI patients were willing to pay the expenses of NWGH. Taking total 241 MI patients, 83.89% were not willing to pay the expenses of NWGH, while only 36.93% were not willing to pay the expenses of HMC.

This shows that NWGH is much more expensive for the general patients suffering from MI and majority are not willing to pay the expenses of NWGH.

CONCLUSION

The lower rate of patient’s hospitalization, high cost, lesser stay in hospital and larger number of patients who are not willing to pay the expenses of NWGH indicates that NWGH is not cost friendly and affordable for the MI patients in KPK Pakistan, where majority of the people has a low socioeconomic condition.
REFERENCES


AUTHOR’S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under:

BA: Concept & study design, acquisition of data, final approval of the version to be published

AB & ZU: Acquisition of data, drafting the manuscript, final approval of the version to be published

AK: Critical revision, drafting the manuscript, final approval of the version to be published

SA & SUR: Drafting the manuscript, final approval of the version to be published

NA: Analysis & interpretation of data, final approval of the version to be published

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

CONFLICT OF INTEREST

Authors declare no conflict of interest

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NIL