

Original Article

OUT OF POCKET EXPENDITURES FOR TREATING ASTHMA IN ELDERLY POPULATION: A CASE STUDY OF PAKISTAN INSTITUTE OF MEDICAL SCIENCES GOVERNMENT HOSPITAL, ISLAMABAD PAKISTAN**Nazish Batool¹, Gulrukh Mehboob², Shaista Bahar³**^{1,2,3}Department of Public Health, Health Services Academy Islamabad**Correspondence:** Email: nazishsahi63@gmail.com**Abstract**

Background: Asthma is a chronic inflammatory disease of the airways which is very common in Pakistan. Worldwide, the economic costs associated with asthma are increased to those of TB and HIV/AIDS combined.

Objective: To estimate the out of pocket expenditures (direct & indirect medical cost) and its determinants in asthma patients visiting tertiary care hospitals.

Methods: The cross sectional study was conducted on 116 asthmatic patients. The data was collected from all elderly asthma patients (60 or above) who were diagnosed with asthma at least from last 1 year and receiving inpatient and outpatient care. The samples were interviewed by using the close ended questionnaire. Data was analyzed by using the SPSS software version 20.0.

Results: Out of total 116 patients, 48% were males while 52% were females. Most of the participants 72% were between age group of 60-65 years. The average out of pocket expenditures in elderly asthma inpatients was Rs.1128, and in outpatients these were Rs.854. The medicines were the major source of OOPS 43%; followed by lab investigators 24% & transportation cost 18%. It was estimated that age was significantly associated with the direct cost having p value 0.026; it was observed that average length of stay, disease duration & severity of disease was significantly associated with the direct as well as with the total cost (direct & indirect medical cost having p value <0.05).

Conclusion: Asthma is expensive disease to manage among elderly patients. The affluent charges of managing asthma can put tremendous socioeconomic burden on patients.

Keywords: Asthma, medical cost, out of pocket expenditures

Introduction

Out of pocket expenditures (OPE) are those which are used by patients at the time of utilization of services which may not be reimbursed by insuran [1]. It basically prevents access to care, influence the health status and quality of life, and leave insufficient income for other prerequisites. The mean out of pocket spending augmented with the chronic conditions, and it is also varied by age and insurance coverage. Out-of-pocket spending (OOPS) for health can cause people to sustain catastrophic expenditures, which in turn can thrust them into poverty. Out-of-pocket also mean that there is no care for the individual when they need it. Asthma is a chronic inflammatory disease of the airways which is common and it is characterized by variable symptoms which may repeat itself, reversible airflow obstruction, and chronic inflammatory condition of lungs [2]. Its

diagnosis is based on the pattern of symptoms, response to therapy over time and spirometer [3]. The clinical classification of asthma is according to the frequency of symptoms, forced expiratory volume in one second (FEV1), and peak expiratory flow rate [4]. It is also classified as atopic (extrinsic) or non-atopic (intrinsic) where atopic refers to predisposition towards developing type 1 hypersensitivity reactions [5]. Asthma is common in elderly population [6]. It basically reduces among older adults both psychological and physical quality of life. The prevalence of asthma in older adults is 4 to 8 percent [7, 8]. It is estimated that people with asthma aged greater than 65 are over two million [9]. According to Demographic projections the number of older adults will be double by 2030 [10]. Elderly asthma patients bear more morbidity, mortality and cost when compared with younger patient groups [11]. They

entitled to higher number of spontaneous asthma related hospitalizations, emergency room visits and outpatient visits, the death rate in patients older than 65 is 14 times higher than patients aged 18-35 years [12,13,14].

In 2011, 235-330 million people worldwide are affected by asthma [15, 16] and people die per year are approximately 250,000-345,000 [17]. Worldwide, the economic costs associated with asthma are increased to those of TB and HIV/AIDS combined [18]. From 2000-2010, in asthma patients the average cost for hospital stay increased from \$5,200 to \$6,6000 [19]. The burden of asthma ranges from \$300 to \$1,300 per patient per year [20]. The annual direct medical cost of asthma is approximately \$50.1 billion, indirect medical cost for asthma extends almost (e.g productivity lost) is \$5.9 billion, and total is \$56.0 billion dollars [21]. More than 80% mortality is making up by low and middle income countries [22]. In the United States the annual direct and indirect costs exceed US\$6 billion. At present for health care the Britain spends about US\$1.8 billion. In Australia, annual medical costs for asthma reach almost US\$460 million [23]. In 2011 it is revealed that, the out of pocket health expenditures are 63.2 % [24]. The prevalence of asthma in Pakistan is annually increase by 5% of which 20% to 30%, so that is why it's cost also increases, almost 20 million persons which consists of 12% adult population have asthma [25]. The prevalence of asthma in older adults over 65 is 14% [26]. The cut off age of elderly is 65 years in Pakistan. The direct costs were those associated directly with treatment, medication, and transportation. Indirect costs were identified in terms of the loss of productivity in asthma patients and their caregivers and consisted of morbidity cost, mortality cost, and caregivers' time cost. It is found that the estimated cost for 2,273,290 asthma patients in 2008 was \$831 million, with an average per capita cost of \$336. Outpatient and medication costs showed the largest cost burden among the direct cost component. The patients ≥ 50 years old had highest per capita cost. Economic burden increase with the rising prevalence, implementation of effective national prevention approaches with attention at the appropriate target populations is critical [27]. It is evaluated that the total cost of illness (direct expenditures and indirect costs) associated with asthma in the United States in 2007 was \$57.28 billion [28]. Although asthma is very important and common disease, the economic literature is relatively sparse, as there is no data exists on the economic impact of asthma care on elderly patients in Pakistan.

Methodology

This was a descriptive cross sectional research that was conducted in Pakistan Institute of Medical Sciences. The study was completed in six months. All elderly asthma patients (60 or above) who were diagnosed with asthma at least from last 1 year and receiving inpatient and outpatient care. All patients who were having insurance coverage were excluded from the study. The sample size

was 116 that included 10% non-response as well. The simple random sampling was used in order to select the study participants.

The samples were interviewed by using the close ended questionnaire that acquired 10 to 15 minutes about direct medical and non-medical cost due to asthma. Prior interviewing, Informed consent was taken from all patients. Consent form having Urdu information was utilized. All the interviews were taken by health care professionals. They were provided one days training before data collection. The study was approved by IRB committee. Direct medical cost incurred by the inpatient care as well as outpatient care like Consultation, admission, laboratory investigation, medication. Direct non-medical cost incurred by patient's i.e. travelling cost and special diet cost. Indirect costs from productivity loss due to absence from work both for the patients and the respondents.

Data was analyzed by using the SPSS software version 20.0, Microsoft Excel 2010. Descriptive analysis was used to describe demographic data. In order to determine the cost for categorical data; frequencies, percentages were used and for continuous data mean, standard deviations were calculated. The association was determined between direct medical and non-medical cost with age, gender, average length of stay, disease duration, and income.

Results

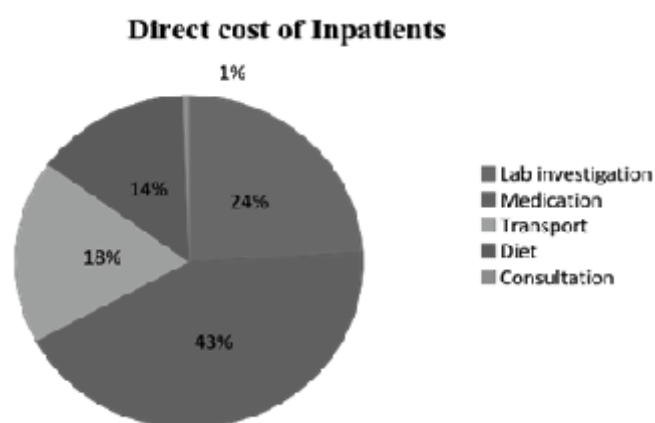
Out of total 116 patients, 48% were males while 52% were females. Most of the participants 72% were between age group of 60-65 years. The more than half 52% of patients was taking pension that was the only source of income for them. Most of the participants were having very less income per month. More than three fourth of the patients were having monthly income only between Rs.10,000-20,000, while 3.8% had income between Rs.20,000-30,000. Only 2.8% of the patients were having income Rs.40,000-50,000 or above. The majority of the study participants 86.8% were having severe form of asthma, while rest of the participants 13.2% was having mild form. In outpatient department, most of the patients have to come almost every week in a month. The length of stay of inpatients in the hospital was too prolonged i.e. maximum it was almost 25 days and minimum is 2 days. So, average length of stay (LOS) of patients with asthma complications was 13 days. The summary is given below Table 1.

Table 1. Sociodemographic characteristics of the study participants

Socio-demographic characteristics of the Study Participants (n= 106)		
Characteristics	Number of patients	Percent (%)
Age		
60-65 years	76	71.7
65-70 years	11	10.4
70-75 years	13	12.3
75 years and above	6	5.7
Marital status		
Single	0	0
Married	106	100
Education		
Un-Educated	25	23.6
Secondary	22	20.8
Intermediate	30	28.3
Graduation & above	29	27.4
Occupation		
Government job	24	22.6
Own Business	8	7.5
Savings	3	2.8
Assets	6	5.7
Pension	30	28.3
any other	35	33
Household Income (Rupees)		
10,000-20,000	83	78.3
20,000-30,000	8	3.8
30,000-40,000	6	4.7
>40,000-50,000	5	2.8

The association was determined between direct medical and non-medical cost with age, gender, average length of stay, disease duration, and income.

The average direct medical cost of admitted patients was Rs.932/ while the total indirect cost was 196 rupees. The total cost was 1128 rupees.

**Figure 1. Direct cost of the inpatients.**

The medicines were the major source of OOPS 43%, followed by lab investigators 24% transportation cost 18% and dietary cost as shown in the figure 1.

Total direct cost in OPD was Rs.604 and total indirect cost was Rs.250 made total cost the Rs.854. the cost on medicine was the main contributor in OPD OOPS as well.

It was estimated that age was significantly associated with the direct cost having p value 0.026, while it was not significant with the indirect cost with p value 0.25. On the other hand, gender was not significantly associated with the direct cost with p value 0.158. It was observed that average length of stay was significantly associated with the direct as well as with the total cost (direct & indirect medical cost) while it was insignificantly associated with the indirect cost with p values 0.008, 0.045, 0.310 respectively. Disease duration was significantly associated with the direct cost, as well as with the total cost but it was not significant with the indirect cost having p values 0.04, 0.03, 0.055 respectively. Severity of disease was significantly associated with the direct as well with the total cost with p values 0.004, 0.005 respectively.

Discussion

It is assumed that asthma prevalence is increasing day by day in Pakistan and is more common among older people as shown by one of the study conducted in USA by [9]. Asthma reduced the quality of life of the patients as shown in our study and these results were disclosed by another survey in 2009 [6]. The elderly people are the most important group of people. Their need regarding their health in that stage of life is very important. Most of participants in this research were not doing any job; because they didn't have ability or their health status didn't allow them to do any work and these findings were in line with one of the study as well [11].

In this research study, it was estimated that age was significantly associated with the direct cost having p value 0.026, while it was not significant with the indirect cost with p value 0.25 as shown by another study in Korea [28]. The cost of asthma was higher for patients older than 65 years as shown in this survey as well [24].

In this survey, the total Inpatient expenditures were Rs.1128 and were higher as compared to the outpatient's expenditures Rs.854 in elderly asthma patients. In one study it was also incurred that inpatient expenditures were higher as compared to the outpatient's expenditures i.e. 15.33 billion were inpatient expenditures 1.34 billion were outpatient expenditures [28]. In this study it was estimated that patients with severe asthma had more direct and indirect cost. In another study these results were also comparable (14).

The medication cost was the highest cost burden among the direct cost and it is consistent with the study of Spain in which it was estimated that the largest component of direct cost was the cost of drugs 124 million (21).

The limitation of this study was its smaller sample size; the results' generalizability can be affected. National level study is required in order to report exact direct & indirect cost of asthma. As there is no study in Pakistan which incurred expenditures for that group of people so

more research specific to out of pocket expenditures in elderly asthma patients is urgently needed to ensure informed decisions making. Basically this group of people was considered an economic burden for the respondents and seeking for healthcare for them also leads to the loss of productivity of their caregivers therefore consideration is required on the various options for controlling these expenditures by insurance coverage or reimbursement of costs of the elderly healthcare. To address the policymaker's needs, it is helpful to generate a conceptual framework for the out of pocket expenditures in elderly asthma patients.

Conclusion

Asthma is expensive disease to manage among elderly patients. The affluent charges of managing asthma can put tremendous socioeconomic burden on patients. So, national level health insurance is required in order to tackle the OOPS in order to prevent the patients from socioeconomic loss.

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