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CATASTROPHIC HEALTH EXPENDITURE AMONGST PEOPLE LIVING WITH HIV/AIDS AVAILING ANTIRETROVIRAL TREATMENT SERVICES AT TWO TERTIARY CARE HEALTH FACILITIES IN DISTRICT OF NORTHERN INDIA

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ABSTRACT

Introduction: The present study aimed to estimate the out of pocket expenditure incurred and the various factors determining catastrophic health expenditure while receiving ART services.

Methods: A hospital based cross sectional study was conducted at two tertiary care hospitals of Lucknow for a period of six months. A total of 322 HIV-positive patients were interviewed face to face about their various expenses during the visit to ART centre.

Result: Mean out of pocket expenditure of the patients attending ART centre INR 312.26 ± 20.06. Catastrophic out-of-pocket expenditure incurred in about one-fifth (16.1%) patients attending the ART centre. Multiple logistic regression revealed distance travelled more than hundred kilometres to reach ART centre (OR 9.59; 95% CI 1.43–64.267; p = 0.02) and lower socioeconomic class (OR 10.31; 95% CI 2.30–44.58; p = 0.00) were found to be independent predictors of catastrophic out-of-pocket expenditure.

Conclusions: Decentralisation of ART programme up to grass root level, integration of HIV/AIDS-related services into primary health care services and bridging of the loop holes like effective convening of various government benefit schemes to patients during their visit to ART centre and there by promoting utilisation could reduce their financial burden for care and treatment.

Keywords: PLHA, Antiretroviral Therapy, Out-of-pocket expenditure, Catastrophic health expenditure.

INTRODUCTION

Globally over the past few years, there has been a rapid scale-up of access to treatment with ART (Antiretroviral therapy) [1]. This in turn has averted an estimated 4.2 million deaths in low and middle-income countries between 2002 and 2012[1]. The number of people receiving HIV treatment

reached 12.9 million (86% of the global target of 15 million set for 2015, up from 54% at the end of 2011) in low-income and middle-income countries in 2012[2]. As per the new WHO Report 2013 (Global update on HIV treatment), number of people eligible for ART in low-income and middle-income countries globally is expected to rise from 16.7 million to 25.9 million [1].

The Antiretroviral Treatment (ART) program, which was started by Government of India in April 2004 at 8 ART centers, was scaled up in a phased manner across the country [3]. As on January 2010, 239 ART centers have been established and nearly three lakh patients are receiving free ART [3]. It was planned to have 375 ART Centers all over the country and provide free ART to nearly six lakh adults and children by March 2016[3].

The ART services are provided through ART centers which are located mainly in Medical Colleges, Tertiary Hospitals and District Hospitals in the states. The treatment is life-long and ARV (Antiretroviral) drugs are provided to the patient every month, thus necessitating monthly visits to ART Centre for the rest of their life. Although ART has been provided free of cost to the patients, out-of-pocket payments remain high and thereby affecting treatment compliance and outcomes [4,5,6,7]. Out-of-pocket health expenditures were those made by households at the point of receiving health services and include cash payments reported in the surveys. Catastrophic spending on health occurs when a household must reduce its basic expenses over a certain period of time in order to cope with health care expenses on one or more of its members. Health expenditure has been defined catastrophic if 5-20% of total household income is spent on healthcare [8].Monthly visits may entail travel for long distances to reach the ART centre and require out of pocket expenses on travel, food and sometimes stay besides loss of wages. Many a times these costs may be more than the cost of drugs provided to the patients. This may lead to irregular or delayed visits and thus may adversely affect drug adherence and risk of drug resistance. Therefore, understanding the financial burden of HIV/AIDS is necessary to develop protective mechanisms, and improve efficiency of the health-care system.

In the present study, an attempt has been made to assess the out of pocket expenditure incurred and the factors determining catastrophic health expenditure while receiving the health care.

METHODS

The present study was hospital-based cross-sectional analytical study. The study was conducted at the ART centre of King George's Medical University and Ram Manohar Lohia Institute of Medical Sciences, two tertiary care hospitals in Uttar Pradesh, India for a period of six months from November 2013 to March 2014. Both these centres provide ART free of charge and have the relevant resources for CD4 count estimation, counselling sessions and regular check-ups. All PLHA (people living with HIV/AIDS) patients from these centres aged ≥ 18 years, and who have been receiving ART for at least six months were included in the study.

During the study period, data was collected on three (alternate) days every week. Days of data collection were varied in consecutive weeks to reduce the bias for day-specific outpatient department attendance. Every sixth patient from the registration on that day was interviewed, if patient was not eligible for this study next consecutive patient was interviewed in private, until the target sample size was reached. A total of 322 patients were included in the study based on non-adherence level as 30% [9] and an absolute precision of 5%, the total sample size required was calculated to be 322 (formula used: $n = z^2pq/e2$; where n = sample size, z = value of standard normal deviate = 1.96 at 95% confidence interval [CI], p = prevalence of non-adherence, q = 1–p, and e = absolute precision) [10]. Non-willing patients, patients who were unable to communicate and seriously ill patients were excluded from the study.

Socio-economic background and HIV-related characteristics of patients were collected using face-to-face interviews with structured questionnaires. Monthly household income was self-reported including all sources of each household member's income, such as salary, wages, pensions, relatives' supports, interests and revenues. Patients were asked about any expenses incurred during their last use of healthcare services. It included (i) medical expenditures (non-ARV medications, lab tests, hospital fees and others), (ii) non-medical expenditures (transportations, accommodation and special meals if any) and (iii) indirect medical expenditures (loss of wages due to visit to ART centres). In the present study 20% of the household income was taken as threshold for catastrophic out-of-pocket expenditure.

Data was compiled and analysed using the statistical software. Independent variables that were found to be statistically significant in bivariate

analysis were considered for application in the logistic regression model to determine the important predictors of catastrophic health expenditure, with catastrophic health expenditure as the dependent variable. For multivariate analysis inter method was used. A p-value of ≤ 0.05 was considered statistically significant.

Owing to ethical consideration, permission was obtained from the Institutional Ethical Committee of the King George's Medical University UP, Lucknow before commencing the study. Written informed consent was taken from each selected participants to confirm willingness. Honest explanation of the survey purpose, description of the benefits and an offer to answer all enquires was made to the respondents. Privacy and confidentiality of collected information was ensured throughout the process. Data was collected in a way that makes it impossible or at least very hard to identify the respondent.

RESULTS

The mean age of the 322 patients enrolled in the present study was 38.3 ± 9.0 years. Most of the patients were male and Hindu (62.4% and 74.5%, respectively), 50% were each from rural and urban areas and 28.6% were illiterate. The percentages of patients who were married, widowed and separated were 63.4%, 24.8% and 3.1%, respectively. In our study population, 34.8% of patients were unemployed. Majority (64.5%) of the patients belonged to middle socioeconomic class.

Mean out of pocket expenditure of the patients attending ART centre was found to be INR 312.26 ± 20.06 (Median=277) including direct health expenditure, indirect health expenditure and direct non-medical expenditure.Catastrophic out-of-pocket expenditure incurred in about one-fifth (16.1%) patients attending the ART centre.

Table 2 describes the univariate and multivariate logistic regression of the factors related to catastrophic out-of-pocket expenditure. Multivariate logistic regression analysis revealed that distance travelled more than 100 Kms to reach ART centre (OR 9.59; 95% CI 1.43–64.267;p = 0.02) and lower socioeconomic class (OR 10.31; 95% CI 2.30–44.58; p = 0.00) to be independent predictors of catastrophic out-of-pocket expenditure. Patients who belonged to upper lower and below socioeconomic class were ten times more likely to have catastrophic out-of-pocket expenditure.

Table 1: Distribution of patient attending ART centre by their biosocial characteristics

Variable	Number (%)
Current Age(years)	
18-30	69 (21.4)
31-35	75 (23.2)
35-40	78 (24.2)
41-50	66 (20.5)
>50	34 (10.6)
Gender	
Male	201 (62.4)
Female	121 (37.6)
Marital status	
Married	204 (63.4)
Widow/Widower	80 (24.8)
Unmarried	28 (8.7)
Separated/Divorced	10 (3.1)
Religion	
Hindu	245 (76.1)
Non-Hindu	77 (23.9)
Category	
General	126 (39.1)
OBC	158 (49.1)
SC/ST	38 (11.8)
Residence	
Urban	161 (50)
Rural	161 (50)
Type of family	
Nuclear	218 (67.7)
Joint	104 (32.3)
Family size	
≥5	211 (65.5)
6-10	82 (25.5)
≥16	29 (9)
Education	
Illiterate	92 (28.6)
Primary	34 (10.6)
Middle	63 (19.6)
High school	69 (21.4)
Intermediate	31 (9.6)
Graduate and above	33 (10.2)
Current Employment Status	
Employed	210 (65.2)
Unemployed	112 (34.8)
Socioeconomic class*	
I(Upper)	39 (12.1)
II(Middle)	37 (11.5)
III(Lower middle)	38 (11.8)
IV(Upper lower)	82 (25.5)
V(Lower)	126 (39.1)

*** Modified BG Prasad socioeconomic scale 2013

However other factors like place of residence, educational status, native district, need of overnight stay and accompanying of patient by attendant that were found to be significantly associated with catastrophic out-of- pocket expenditure on univariate analysis became insignificant during multivariate analysis.

Table 2: Category-wise distribution of total out of pocket Health expenditure per monthly visit

Incurred Health Expenditure Category	Mean ± SD	Median (IQR)
Direct Health Expenditure (Non-ARV medications, Diagnostics)	110.20 ± 22.97	32(163.50)
Indirect Health Expenditure (Transportation, diets, hiring of care providers)	262.42 ± 33.34	102(223.69)
Direct Non-Medical Expenditure (Wages lost during visit to ART centre)	186.43 ± 46.67	130(240.26)
Total out of pocket expenditure (adjusted for those who got travelling allowance)	312.26 ± 20.06	277(343.29)

Table 3: Univariate and Multivariate analysis of factors associated with catastrophic out-of-pocket health expenditure. (N=322)

Variables	Out-of-pocket health expenditure		Unadjusted	Adjusted
	Non-catastrophic (n=270)	#Catastrophic (n=52)	OR (95% CI)	OR (95% CI)
Age (Yrs)				
>30	209(82.6)	44(17.4)	1.60(0.71-3.59)	-
≤30	61(88.4)	8(11.6)	**Ref**	
Gender				
Female	97(80.2)	24(19.8)	1.52(0.84-2.78)	-
Male	173(86.1)	28(13.9)	**Ref**	-
Marital Status				
Single*	98(83.1)	20(16.9)	1.09(0.59-2.02)	-
Married	172(84.3)	32(15.2)	**REF**	
Type of Family				
Nuclear	179(82.1)	39(17.9)	1.52(0.77-3.00)	-
Joint	91(87.5)	13(12.5)	**REF**	
Residence				
Rural	118(73.3)	43(26.7)	6.15(2.88-13.12)	1.73(0.71-4.20)
Urban	152(94.4)	9(5.6)	**REF**	
Employment Status				
Employed	176(83.3)	34(16.2)	1.00(0.54-1.88)	-
Unemployed	94(83.9)	18(16.1)	**REF**	
Religion				
Non-Hindu	59(76.6)	18(23.4)	1.89(0.99-3.59)	-
Hindu	211(86.1)	34(13.9)	**REF**	
Social Class				
OBC	127(80.4)	31(19.6)	1.95(0.98-3.85)	-
SC/ST	31(81.6)	7(18.4)	1.80(0.67-4.86)	-
General	112(88.9)	14(11.1)	**REF**	
Education				
Illiterate	67(72.8)	25(27.2)	2.80(1.52-5.16)	1.62 (0.78-3.36)
Literate	203(88.3)	27(11.7)	**REF**	
Socioeconomic Status				
Upper lower & below	158(75.9)	50(24.1)	17.7(4.22-74.34)	**10.3(2.30-44.58)**
Lower middle & above	112(98.2)	2(1.7)	**REF**	
Native District				
Others	176(77.2)	51(22.8)	27.7(3.70-200.2)	2.72 (0.16-32.01)
Lucknow	94(98.9)	1((1.1)	**REF**	
Duration on Treatment				
≥ 1 Yr	217(83.5)	43(16.5)	1.16(0.53-2.54)	-
< 1 Yr	53(85.5)	9(14.5)	**REF**	
Distance travelled to reach ART Centre (Kms)				
50-100	50(89.3)	6(10.7)	7.14(1.39-36.58)	3.06 0.39-23.70)
>100	101(69.7)	44(30.3)	25.9(6.13-109.5)	**9.59 (1.43-64.26)**
<50	119(98.3)	2(1.7)	**REF**	
Anybody accompanies during visit				
Yes	74(75.5)	24(24.5)	2.27(1.23-4.16)	1.78(0.86-3.70)
No	196(87.5)	28(12.5)	**REF**	-
Overnight stay				
Yes	13(65.0)	7(35.0)	3.07(1.16-8.12)	1.12(0.36-3.41)
No	257(85.1)	45(14.9)	**REF**	

*Single includes unmarried, widow, divorced & separated; **Modified BG Prasad's socioeconomic scale 2014
Incurred expenses more than 20% of household income were taken to be catastrophic.

DISCUSSION

Limited studies are present in context to out-of-pocket expenditure amongst the HIV patients on treatment attending the health care facilities. The present paper, therefore aimed to estimate the out of pocket expenditure incurred and the various factors determining catastrophic out-of-pocket expenditure while receiving ART services.

The per capita out-of-pocket health expenditure for general population India was INR 847 per month for non-subsidised health services utilisation [11]. Although ART services were offered free-of-charge, even after, HIV/ AIDS patients had to pay INR312.26 ± 20.06per visit (per month). There was not much difference in percentage of households that experienced catastrophic health expenditure in Uttar Pradesh due to HIV/AIDS care (16.1%) and that of the general Indian population (27.7%)[11].

High OOP (Out of pocket) payments for HIV/AIDS care, excluding ART, were also found in other settings. In India, OOP direct costs for HIV/AIDS care were US$ 244 in 2002[12]; the scenario was of the period when ART programme was not launched in India. Several policy implications arise from these results. First of all, although ART provided free-of-charge, a large proportion of HIV/AIDS patients still faced catastrophic healthcare costs. This emphasises the importance of a wide-scale expansion of ART services on the grass root level to reduce economic vulnerability of HIV/AIDS patients. Also, other protective financial mechanisms, for instance, health insurance or community-based funding sources, travelling allowance not only for railways but also for road transport should improve and be more readily available. Secondly, patients who had better immunological status must be indented ART pills for more days than usual so as to reduce the frequency of visit to ART centre. Besides that the transportation cost could be reduced by decentralising HIV/AIDS-related services to block level and putting more integrative and comprehensive service delivery for HIV/AIDS care, support and treatment.

The strengths of this study included the involvement of two ART centres with different catchment area including large number of respondents. The study not only included the direct health expenditure costs but also took indirect health expenditure and non-medical expenditure into consideration.

Limitations

However, the study was subject to several limitations. It is possible that selection bias occurred, as only those PLHA who were on ART at the time of data collection were included, whereas those who were lost-to-follow up or could not attend the ART Centre to collect drugs couldn't be enrolled in the study. Second, estimates of spending were self-reported by patients that could be biased and unverifiable. Similarly, the household income and expenditure, which was based on respondents' recalls, could be under-reported. Also the present study was conducted at only two sites in the country and the findings may not be generalized to other clinical settings.

CONCLUSIONS

Out-of-pocket payment for healthcare services of HIV/AIDS patients was high and even catastrophic for about one-fifth of the affected households. Decentralisation of ART programme up to grass root level and integration of HIV/AIDS-related services into primary health care services could reduce the financial burden of HIV care and treatment.

REFERENCES

1. WHO | HIV/AIDS: HIV/AIDS. Global situation and trends 2013. Available from : http/www.who.int /gho/hiv/en.html. Assessed on Nov 21st, 2014.
2. Global update on the Health Sector Response to HIV, 2014. Available from: http://www.who.int/hiv/ pub/global-update.pdf. Assessed on Jul 31st, 2015.
3. Government of India, Ministry of Health and Family Welfare, National AIDS Control Organisation. Programme Implementation Plan (PIP), NACP-III (2007-12). Available from: www.nacoonline.org. Assessed on Jan 1st, 2015.
4. Desclaux A. Equality in access to AIDS treatment in Africa: Pitfalls among achievements. Available from: lassiques.uqac.ca/ contemporains/ Desclaux alice/equity in access to AIDS/equity in access to AIDS.pdf. Assessed on Nov 21st , 2014.
5. Laniece I, Diop K, Desclaux A, Sow K, Ciss B. Determinants of adherence among adults receiving antiretroviral drugs in Senegal (ANRS 1215 Cohort study). Antiviral Therapy 2003: 8: S501-S502.
6. Nwokike JI. Baseline data and predictors of adherence to antiretroviral therapy in Maun General Hospital (MGH), Maun, Botswana. Antiviral Therapy 2003: 8:S396.
7. Weiser S, Wolfe W, Bangsberg D, Thior I, Gilbert P. Barriers to antiretroviral adherence for patients living with HIV infection and AIDS in Botswana. J Acquire Immune Deficiency Syndrome 2003: 34: 281-288.
8. National Sample Survey Organization. National Sample Survey 1996, Report No 441, 52nd Round, New Delhi:

National Sample Survey Organization ,Govt of India; 1998.

9. Mhaskar R, Alandikar V, Emmauel P, Djulbegovic B, Patel S, Patel A, et al. Adherence to antiretroviral therapy in India: Asystematic review and meta-analysis. Indian J Community Medicine 2013;38:74-82.

10. Lwanga SK. Sample size determination in health studies' a practical manual , 1st edition. England : World Health Organization ;1991.p 2.

11. Catastrophic Health Expenditure and Poor in India: New Evidence from a Nation-wide Survey: Available from : paa2012.princeton.edu/papers/121467. Assessed on Aug 24th ,2014.

12. Bach X. Tran, Anh T. Duong, Long T. Nguyen3, Jongnam Hwang, Binh T. Nguyen, Quynh T. Nguyen,Vuong M. Nong, Phu X. Vu6 and Arto Ohinmaa. Financial burden of health care for HIV/AIDS patients in Vietnam. Tropical Medicine and International Health doi:10.1111/tmi.12032 volume 18 no 2 pp 212–218 february 2011.