



Correspondence

Out-of-pocket expenditure due to hepatitis A disease: A study from Kollam district, Kerala, India

Several outbreaks of hepatitis A have been reported from Kerala, India, in the last 10 years¹⁻⁴. An average of 8268 [standard deviation (SD) 1767] cases suspected to have hepatitis A per year has been reported to the State's official disease surveillance system^{4,5}. Most of the affected individuals were young adults between 15 and 35 yr age group. Many public health experts have opined that the Government should start thinking of hepatitis A vaccination in Kerala^{6,7}. Cost is considered as a major concern by many for recommending hepatitis A vaccine in the State. Knowing the out-of-pocket expenditure due to hepatitis A will help the policymakers to decide on the vaccination policy in the State. The present study was done in Kollam district of Kerala in 2015 to estimate the out-of-pocket expenditure experienced by households due to hepatitis A disease.

Kollam district with a population of around 2.6 million has reported maximum number of hepatitis A cases in the State^{4,5}. The female literacy rate for the district is 92 per cent⁸. Integrated disease surveillance programme (IDSP) has been performing reasonably well in the district with the help of a good primary health care team and notifications from major private hospitals. Apart from IDSP weekly reporting, the State also depends on a daily telephone-based reporting system, which collects information regarding communicable diseases from all the government hospitals on a daily basis. The District Surveillance Unit (DSU) prepares a line list of affected people for major communicable diseases based on information from daily and weekly reports. The district reported 584 cases of hepatitis A during 2015. Line list of people affected with hepatitis A notified to the DSU during August-October 2015 (n=114) was obtained.

All 114 individuals with confirmed hepatitis A were contacted with the help of primary health care team.

Exploratory interview, using a pretested and validated questionnaire, was conducted during November 2015-January 2016, with the selected participants at their houses. Details of cost during hospitalization, consultation fees to doctors including traditional healers, amount spent on drugs including traditional medicines, laboratory investigations, additional amount spent for food and travel due to illness by the patient and relatives, informal tips, payment to caregivers, wages lost due to sickness for the patient and wage loss to any relative were collected in detail. Bills and medical records available with the patients were verified. The study was approved by Ethics committee of Center for Public Health Protection, Kollam (6/2015 dated 15.06.15).

For assessing the indirect cost, only the actual income loss to patient and relatives was considered. The productivity loss due to forgone non-market activities including school, household works and intangible cost was not converted to monetary terms. Data were analyzed using SPSS version 12 (SPSS, Chicago, IL, USA). Data were presented as a total and as an average with a SD in local currency, *i.e.*, Indian Rupees (₹) and US dollars (US\$) applying the exchange rate (US\$1=₹68).

A total of 95 of 114 patients were interviewed. Others could not be contacted (n=6) or were not available at the address provided (n=13) during the data collection period. Among them, 40 per cent (n=38) were less than 15 yr, 47.4 per cent (n=45) were between 16 and 30 yr and 10.5 per cent (n=10) were between 31 and 45 yr. Males constituted 60 per cent (n=57). Of them, 60 per cent (n=57) were students, 16.8 per cent (n=16) were unskilled/semi-skilled labourers, 6.3 per cent (n=6) were homemakers, 4.2 per cent (n=4) were professionals/semi-professionals, 3.2 per cent (n=3) were skilled labourers and 2.1 (n=2) per cent were doing petty business. Further, 78.9 per cent (n=75) of

the household interviewed possessed a below poverty line card.

Of the 95 patients, 79 (83.2 %) had hospital admission, and 77.1 per cent (61/79) had admissions in government hospitals. The mean number of days admitted in hospital was 7.60 (standard error 0.92), median being four days. Of them (n=95), 30.6 per cent (n=29) consulted only modern medicine doctors, 18.9 per cent (n=18) consulted Ayurveda system, 6.3 per cent (n=6) visited traditional healers while 44.2 per cent (n=42) visited practitioners from more than one system. The median work days lost due to illness was 60 (range 21-180 days). The details of amount spent for each purpose and the total out-of-pocket expenditure (OOPE) are given in Table I. The mean direct medical cost, direct non-medical cost and indirect costs were ₹8446.2 [95% confidence interval (CI) ₹6726.1-10,166.3], ₹4438.1 (95% CI ₹3502.1-5374.2) and ₹11890.5 (₹6762.2-17,018.4), respectively. Total OOPE for the households due to one of its members affected with hepatitis A disease in Kollam district was ₹24,774.8 (95% CI ₹19426.3- 30,123.2) (364 US\$) with a median expenditure of ₹17,700 (260 US\$).

The details of OOPE by various categories are given in Table II. The OOPE due to hepatitis A disease was higher among those who sought care in modern medicine, especially from private sector.

In our study 34 per cent of total OOPE was found to be contributed by direct medical expenses while

nearly 47 per cent was due to indirect expenditures. Majority of the patients were students and hence not working. The period of absence in schools and year lost due to missing examinations were not converted to monetary terms in the current study. Capturing the health system costs due to hepatitis A which includes service and material costs at government hospitals and cost of public health interventions to deal with hepatitis A cases will give the true picture of the economic loss due to hepatitis A disease. It should also be noted that the indirect costs of health care also contribute to the financial burden incurred by households. There could be some recall bias as data were collected after receiving treatment. However, to minimize the bias, we conducted all interviews between three and four months after initial diagnosis. Sample size was small limiting the ability to look at sub-groups and interactions. The official disease surveillance system has its own weaknesses that it may miss many hepatitis A cases.

The HAV antibody seroprevalence rates reported from Kerala was <10 per cent in children below five years when compared to 60-80 per cent from many other parts of the country⁹⁻¹¹. Among the Indian States, Kerala has the highest average out-of-pocket healthcare spending share and there is very little variation in this share across consumption expenditure quintiles¹². We could not find any recent studies on OOPE due to hepatitis A from India; however, the OOPE in the current study seemed very high when

Table I. Details of household out-of-pocket expenditure due to hepatitis A disease in Kollam district, Kerala

Category	Item	Mean expenditure (₹)	95% CI for mean (₹)	Median expenditure (₹)	Range (₹)
Direct medical cost	Hospitalization charges	3049.4	1798.8-4297.9	300	0-25,000
	Consultation fee to practitioners	497.1	357.7-636.5	200	0-3000
	Drugs	3111.9	2200.1-4302.1	1600	0-20,000
	Investigations	2467.8	1752.5-3183.1	1800	0-18,500
Direct non-medical cost	Additional food expenses	1487.8	1148.3-1757.3	1350	0-5000
	Additional travel expenses	1608.2	1106.5-2108.5	660	0-12,300
	Others*	1701.2	1101.2-2227.7	300	0-8000
Indirect cost	Wages lost due to illness	10,885.0	5669.9-16,100.2	0	0-90,000
	Wages lost to relatives	4422.5	3084.6-5760.4	1400	0-22,500
Total expenses	Direct medical cost	8446.2	6726.1-10,166.3	6600	0-33,000
	Direct non-medical cost	4438.1	3502.1-5374.2	2520	20-19,700
	Indirect cost	11,890.5	6762.2-17,018.4	0	0-90,000
	Total	24,774.8	19,426.3-30,123.2	17,700	20-104,682

*Materials, travel expense by relatives, caregivers expenditure. CI, confidence interval

Table II. Details of out-of-pocket expenditure (OOPE) due to hepatitis A by various categories

Characteristics	n	Median			Total OOPE (₹)	Total OOPE, mean±SE (₹)
		Direct medical cost (₹)	Direct non-medical cost (₹)	Indirect cost (₹)		
Type of system						
Modern medicine	29	7400	2400	0	20,420	38,994±6175
Ayurveda	17	8000	2190	0	13,470	18,295±2858
Traditional	6	3500	2520	0	9700	15,516±3397
Mixed	43	4000	8200	9000	22,750	28,816±7189
Hospitalization						
Yes	79	7400	2520	19,250	17,700	24,923±5754
No	16	4400	2376	0	17,225	23,999±3037
SES						
BPL	75	4700	2190	0	14,520	17,730±1361
APL	20	9240	6275	0	18,085	26,653±3364
Type of health facilities						
Government secondary	52	6725	2520	0	16,650	21,319±3437
Government tertiary	06	5300	2200	0	17,275	38,366±4883
Private	16	21,350	18,000	33,750	42,750	41,335±10,958
Ayurveda dispensary	05	5425	2320	0	14,480	17,334±2742

SES, socioeconomic status; APL, above poverty line; BPL, below poverty line; SE, standard error

compared with the same estimated by other studies for other communicable diseases such as tuberculosis under DOTS from Chennai and acute illness including hospitalizations from Puduchery^{13,14}. The OOPE for those who sought treatment from private sector was high in this study, and this result was consistent with other study reports from India¹⁵.

To conclude, the average household OOPE due to one of its members affected with hepatitis A disease in Kollam district was around ₹25,000. Directions for future research include assessing the real burden of hepatitis A and detailed economic analysis of universalizing HAV vaccination in the State.

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