

Financial Burden of Out-of-Pocket Expenditures for Primary Health Care in Hilly Areas of Garhwal Region, Uttarakhand, North India

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ABSTRACT

Introduction: High total health expenditures via Out-of-Pocket (OOP) as formal user fees and informal payments put India in challenging situation to achieve towards universal health coverage.

Aim: To assess the (OOP) expenditure and its determinants among outpatient in primary care settings of Uttarakhand, North India.

Materials and Methods: A hospital based cross-sectional study was conducted in a Outpatient Department of Urban Health Training Centre, Srinagar, Uttarakhand, India and Rural Health Training Centre, Kritinagar, Uttarakhand in 2015. A total of 200 patients were enrolled in the study using random sampling. Questionnaire covering costs like: travel cost, drug cost, investigation cost, and others was used for measuring OOP expenditure incurred toward health care by patients.

Results: Of the total 200 patients, 43.5% were males and 56.5% were females with mean age 40.36 (SD 19.45) in years. Average annual family income was 11718.5 INR±13457.3 INR. Of the total study subjects, 42.5% were unskilled or had no occupation (unemployed, student, and homemaker). The majority (68.5%) had travelled less than or equal to 10 km to reach the health facility. About 50% of the study subjects presented with communicable diseases and 20% with non-communicable diseases. The health expenditure of the outpatient revealed that major part of the expenditure is the direct cost of the treatment, including registration fee, drugs, and investigation. Mean OOP expenditure for drugs and investigations was 509 INR and 673.1 INR, respectively. Mean total out-of-patient expenditure was 303.1 INR. The proportion of monthly family income spent on out-of-patient expenditure was 2.58%.

Conclusion: The implementation of primary health care needs to be further strengthened in order to improve access of public sector hospitals for curative care.

Keywords: Curative care, Health care utilization, Treatment seeking

INTRODUCTION

In the 21st century, India faces a triple burden of disease, primarily, the backlog of common infections, undernutrition, and the rise of non-communicable diseases [1]. Presently across the world, health system aims towards universal coverage [2,3]. Therefore, to address the multiple factors determining access to health care services, the Government of India introduced a chain of programs under the umbrella of National Health Mission [4]. However, there is a low utilization of public and private health facilities owing to high OOP expenditure [5,6].

The World Bank defined OOP expenditure as any direct outlay by households, including gratuities and in-kind payments, to health practitioners and suppliers of pharmaceuticals, and services whose primary intent is to contribute to the health of individuals [7]. According to World Health Organization, 46.1% of private expenditure on health was OOP in 2013 [8]. In 2013, a study reported the OOP payment in Germany, France, Japan, and Cuba was 10%, and in the USA, Bahrain, Turkey, Malaysia, Pakistan, and Iran were 18, 21, 30, 40, 75, and 56%, respectively [9].

In India, government health care system is erratic with underfunded and overcrowded hospitals, and inadequate rural coverage [10,11]. The utilization of public health services for outpatient is merely 25% [12]. This is reflected as high as, 71.1% of health care is financed through OOP payments [13,14]. Major part of total health expenditures via OOP puts India in challenging situation to achieve towards universal health coverage [15-18]. The studies revealed a persistence of OOP expenditure even in public hospitals, primarily

due to poor availability of drugs and investigation facility [16,19]. OOP is either direct cost as medical cost (cost of admission, consultation, medications, or diagnostics) or non-medical cost (transportation, lodging, loss of wages and others) [20]. OOP payments are "catastrophic" when households are pushed into poverty for the reason of OOP payments for health. This is also a hindering factor in seeking health care [21-26].

Therefore, the current challenge for the Government of India is to reduce the proportion of OOP expenditures through public health plans [27-29]. Given the dearth of studies on OOP expenditures among patients seeking primary health care in government health facilities in difficult terrains, we assessed the OOP expenditure and its determinants among outpatient in primary care settings, Uttarakhand, North India.

MATERIALS AND METHODS

A hospital based cross-sectional study was conducted in an Outpatient Department of Urban Health Training Centre, Srinagar, Uttarakhand and Rural Health Training Centre, Kritinagar, Uttarakhand, India over a period of four months (from September to December 2015). These health centers belong to the Department of Community Medicine of Veer Chandra Singh Garhwali Government Medical Sciences and Research Institute, Srinagar, Uttarakhand.

All the patient's attending the outpatient department constituted the eligible study population. The sample size was determined following the WHO guidelines for medicine [30]. With alpha error of 20%, the sample size came to be 150. Taking non-response rate of 20%,

the final minimum sample size was 180. A total of 200 patients were studied as a subcomponent of a primary study conducted on patient satisfaction in these health centres. An interview schedule was prepared and pretested. A prior approval from the Institutional Ethical Committee was obtained and informed written consent from patients was taken. A random sampling was done to enroll the required number of patients in the study. They were examined, about the diseases they presented with in the health facility. A semi-structured pretested questionnaire was used to interview the patients. The questionnaire was pretested with 10 patients before starting the study. The questionnaire was finalized after incorporating grammar changes based on the pretesting. There were 17 open-ended questions to study demographic details of the patients, diseases they presented with in the health facility, OOP expenditure like travel cost, drug cost, investigation cost and others. This was translated in the local language i.e., Hindi for better understanding of the study participants. Hindi version of form was back translated in English to check the validity of the form. A trained investigator interviewed patients according to the questionnaire. Each patient interview took approximately 15 minute to half hour.

OOP expenditure was calculated as the total amount of money spent by the respondents on both medical expenses (registration fees, medicines, and investigations) and non-medical expenses (transport, and others) for an episode of illness.

STATISTICAL ANALYSIS

Data analysis was done using SPSS 16.0, windows compatible software. The large number of participants reported zero OOP expenditure in the present study. In addition, our positive OOP expenditure results were right-skewed. To overcome these effects, we used the Wilcoxon rank-sum test to study differences in positive OOP expenditure in binary categorical variables (e.g., sex, age, education, occupation family income etc.) and Kruskal Wallis in more than two category variables (e.g., presenting diagnosis). The hierarchical stepwise multiple linear regression analysis used the total OOP expenditure as the dependent variable. Because the total OOP expenditures was not normally distributed, the dependent variable was log-transformed for the analysis. A probability p value of < 0.05 was taken for statistical significance.

RESULTS

A total of 210 patients were invited to participate in the study, out of which 200 participated in the study; therefore the overall response rate was 95%. Age wise, the majority (54.0%) belonged to more than 35 yrs. The mean age of the studied patients 40.36 (SD 19.45) in years. Sex wise, the study subjects were almost equal {43.5% (male) vs. 56.5% (female)}. Average annual family income was 11718.5±13457.3 INR of the total study subjects, 42.5% were unskilled or had no occupation (unemployed, student, and homemaker). The majority had travelled less than or equal to 10 km to seek health care. Half of the study subjects presented with communicable diseases [Table/Fig-1].

The health expenditure of the outpatient revealed that major part of the expenditure is the direct cost of the treatment, including registration fee, drugs, and investigation. Mean OOP expenditure for drugs and investigations was 509 INR and 673.1 INR, respectively. Mean total OOP expenditure was 303.1 INR. The proportion of monthly family income spent on OOP expenditure was 2.58% [Table/Fig-2].

Total monthly family income, occupation, and presenting diagnosis were observed to be significantly associated with health expenditure on medicine/drugs. Statistically significant difference ($p < 0.05$) was observed in overall OOP expenditure and expenditure on investigation, for the type of health facility and presenting diagnosis [Table/Fig-3].

In the hierarchical stepwise multiple linear regression analysis, demographic factors (Block 1, [Table/Fig-4]) explained 1.7% of the

Variable	Category	N(%)
Gender	Male	87(43.5)
	Female	113(56.5)
Age in years	≤ 35	92(46.0)
	>35	108(54.0)
Completed school years	≤ 10	138(69.0)
	>10	62(31.0)
Occupation	Skilled	115(57.5)
	Unskilled	85(42.5)
Family Income per month in INR	≤ 10000	138(69.0)
	>10000	62(31.0)
Type of health facility	Rural	100(50.0)
	Urban	100(50.0)
Distance travelled to health facility (km)	≤10	137(68.5)
	>10	63(31.5)
Presenting disorder	Communicable	100(50.0)
	Non communicable	40(20.0)
	Others	60(30.0)

[Table/Fig-1]: Distribution of patients by sociodemographic details. (n=200)

Cost domain (INR)	Response (n)	Mean (INR)	Median (INR)	SD	Min (INR)	Max (INR)
Travelling	135	65.5	50	68.2	1	440
Registration	98	3	3	0	3	3
Drugs/Medicine	39	509	350	565.4	5	3000
Investigation	38	673.1	200	926.6	16	4000
Others	21	66.2	55	60.1	5	75
Total out of Pocket expenditure (INR)	180	303.1	60	763.0	3	5030
Family income (INR)	200	11718.5	6750	13457.3	1000	100000

[Table/Fig-2]: Pattern of out of pocket expenditure in INR among the study patients. (Response - the total number of patients who had spent under the particular cost domain)

variance (adjusted $R^2=0.017$) in total OOP expenditure when none of the other factors were controlled for. Diagnosis and socioeconomic variables (Block 2, 3, [Table/Fig-4]) explained an additional nearly 3.6%, and health facility set up an additional 6% of the variance (Block 4, [Table/Fig-4]). Altogether, the final model explained 9.7% of the variance in total OOP expenditure [Table/Fig-4].

DISCUSSION

The present facility based cross-sectional study revealed the out of the expenditure pattern in seeking primary health care in the hilly area of Garhwal, Uttarakhand. Nearly 90% of the studied patient reported out of expenditure in direct or indirect form. OOP expenditure of the outpatients in primary health care was observed to be 2.58% of their monthly family income. Comparatively, a census conducted in Bengaluru, India reported overall, 69.6% of households made OOP payments, median of 3.2% of their total income for outpatient care [13]. In addition, a longitudinal community based study conducted in rural Maharashtra, India 2004-2005, observed OOP expenditure to be 4.3% of their annual income [31]. On the contrary community based, National sample survey 2004, 32.9% of the households reported OOP payments for outpatient care, and the mean and median amounts paid OOP were US\$ 9.4 and US\$ 4.2, respectively [23]. Another study conducted in under-five children of urban slums Puducherry, India found the proportion of family income spent toward OOP was 6.7%, which may be due to the different study settings [32].

Mean and Median OOP in this study was 303.1 INR (4.5 US \$) and 60 INR (0.9 US\$), respectively. Against expected, free primary care, services would reduce OOP payments in a hospital outpatient

Variable	Category	Cost domain						Total Df=178 Mean(SD)	p-value
		Drug (Df=37)		Investigation (Df=36)		Travel (Df=133)			
		Mean (SD)	p-value	Mean (SD)	p-value	Mean (SD)	p-value		
Gender	Male	677.2(663.2)	0.123	813.8(737.3)	0.432	66.6(69.2)	0.875	363.2(334.1)	0.370
	Female	391.9(266.2)		570.7(492.9)		64.3(68.0)		259.6(207.3)	
Age in years	≤ 35	339.0(176.5)	0.244	466.2(424.3)	0.220	58.4(48.9)	0.259	186.3(134.9)	0.057
	>35	575.8(549.6)		840.5(915.5)		71.6(80.9)		403.4(404.9)	
Completed school years	≤ 10	481.9(477.2)	0.738	682.7(913.7)	0.950	71.5(75.2)	0.123	242.0(244.8)	0.100
	>10	544.1(476.8)		663.4(664.3)		51.7(46.5)		446.2(477.4)	
Occupation	Skilled	344.3(321.7)	*0.048	542.2(599.8)	0.416	62.7(64.8)	0.564	204.4(124.0)	*0.031
	Unskilled	701.2(621.3)		790.8(757.4)		69.6(73.4)		455.2(412.9)	
Family Income per month in INR	≤ 10000	349.9(202.9)	*0.049	651.4(685.9)	0.861	66.7(65.0)	0.723	225.4(294.3)	*0.029
	>10000	694.7(673.5)		706.4(659.9)		62.1(76.9)		500.3(506.2)	
Health facility	Rural	58.3(79.7)	0.153	130.5(117.3)	*0.007	55.0(37.8)	0.082	58.5(55.7)	*<0.001
	Urban	546.6(472.6)		955.2(936.5)		75.5(87.2)		602.4(662.3)	
Distance travelled to health facility (km)	≤10	502.7(511.4)	0.908	717.7(714.8)	0.668	33.5(23.2)	*<0.001	298.1(247.0)	0.897
	>10	527.2(431.8)		576.3(529.4)		107.9(83.7)		313.9(358.4)	
Presenting diagnosis	Communicable	261.3(150.1)	*0.027	234.7(181.7)	*0.006	55.2(42.8)	0.141	114.7(91.7)	*<0.001
	Non communicable	771.1(737.6)		1069.7(986.7)		75.4(88.2)		783.0(799.9)	
	Others	398.1(320.6)		648.0(696.5)		74.6(83.0)		260.6(281.8)	

[Table/Fig-3]: Pattern of OOP expenditure by socio demographic and clinical features of the study patients.
 ^The total number of patients who had spent under the particular cost domain were included in the analysis. The data were right-skewed therefore we used the Wilcoxon rank-sum test and Kruskal Wallis to study differences in OOP expenditure in categorical variables.
 *p-value of < 0.05 was taken for statistical significance
 **Df is degree of freedom

Analysis Block	Adjusted R-square	Independent Variable	B	95%CI of B	β	p-value*
Dependant Variable= Overall patient satisfaction with Health facility						
Block 1						
Demographic factors	0.017	Sex	34.4	-212.8 to 281.6	0.784	0.482
		Age	6.8	0.7 to 12.8	0.029	0.123
Block 2						
Diagnosis	0.023	Diagnosis	16.8	-41.1 to 74.6	0.568	0.521
Block 3						
Socio-economic factors	0.053	Education	121.1	-108.5 to 350.7	0.299	0.825
		Occupation	250.3	-12.3 to 512.8	0.062	0.981
		Income	0.001	0.007 to 0.009	0.803	0.884
Block 4						
Health facility setup	0.097	Area (rural/urban)	-0.071	-4.7 to 4.6	0.976	<0.001
		Distance travelled	355.7	145.9 to 565.6	0.001	0.140

[Table/Fig-4]: Results of hierarchical stepwise multiple linear regression analyses. B is the unstandardized regression coefficient.
 *The dependent variable i.e., total out of pocket expenditures was not normally distributed, therefore was log-transformed for the analysis.
 **A probability p value of < 0.05 was taken for statistical significance.

department. A cross-sectional study conducted between 2009-2010 covering all of the households in urban Bengaluru found that, the monthly median OOP payment of outpatient care was 400 INR (95% CI=380-403.5) (USD 8.1) [13]. The prime reason for this is different methodology adopted by the two studies. The study conducted in urban Bengaluru was a community based study and it measured OOP expenditure by individuals/households within 30 days [13].

In the present study, it was found with age more than 35 years the OOP on drugs (575.8 INR, 8.1 US\$) increases, similar to the findings a prospective survey conducted to assess costs of Acute Respiratory Infection (ARI) episodes in north India also reported that OOP inpatient cost was the highest among adults aged more than

or equal to 65 years [20]. Higher OOP expenditure among elderly could be due to more episodes of illnesses or multiple chronic conditions. It was also noticed that patient with family income more than 10000 INR per month and unskilled occupation are significantly more likely to spend on drugs.

The mean OOP expenditure on drugs and investigations was found to be 509 INR (7.6 US\$), and 673.1 INR (10.0 US\$) respectively in the present study. In 2012, medicines constituted the largest proportion of OOP expenditure in many other studies [16,33]. The patient consulted in Urban Health Training Centre had a significantly more chance to pay out for drugs (mean 546.6 INR, 7.6 US\$), private investigation (955.2 INR, 13.4 US\$) and thereby have an overall higher OOP (602.4 INR, 8.4 US\$). The key reason of not using government supplies of medicine could be a patient's perception of quality. In addition, there is easy availability of chemist and private laboratory in urban areas, which a rural patient lacks. This may be also because of lack of supplies and medicine and reagent for investigation in government health facility. An evaluation in Punjab and Haryana stated that the drug availability in public health care sector varied from 45%-51% [19]. A study of 2011 conducted in rural districts of Tajikistan was found, the median total expenditure of the users of primary healthcare facilities was 8.8 US\$ and the median amount spent on drugs was 10.7 US\$ [18]. This may be because in our study the medical college provided free OPD services through its Urban and Rural Health Training Centre facility.

The present study also documented that the patients presented with non-communicable diseases were significantly more OOP on drugs (771.1 INR, 10.8 US\$) and investigation (1069.7 INR, 15.0 US\$), leading to higher total OOP (783.0 INR, 11.0 US\$). This is because non-communicable diseases are usually chronic and requires a life long treatment. In the present study, non-communicable disease patients spent 6.5% of their monthly family income on health care. A study found 4.8% OOP spending on drugs and pharmaceutical products; accounted due for cardiovascular-related chronic conditions [25]. The median OOP payment per chronic condition was 320 INR (6.5 US\$), with the greatest share on direct medical

care in a cross-sectional study in urban Bengaluru [13]. Another study conducted in urban households in West Bengal, found less OOP expenditure, 4.2% of their annual household expenditure on care for chronic conditions [34]. This difference is possibly explained by inflation in INR over the years.

The present study found that mean OOP payment for communicable disease was 1.6 US\$. A study conducted during 2012-2013 at 24 health care facilities covering all three levels of health care in the National Capital Region and Srinagar, Jammu & Kashmir, India, reported the total direct cost of ARI episodes requiring outpatient expenditure care was 4US\$-6\$ for public institutions [20]. This difference accounts for the difference in the study setting. Srinagar, Uttarakhand is a low tier city compared to National Capital Region and Srinagar, Jammu & Kashmir, India.

LIMITATION

The primary limitation of the present study is that we had a single visit recall period, which could lead to underestimation of OOP expenditure.

CONCLUSION

The implementation of primary health care needs to be further strengthened in order to improve access of public sector hospitals for curative care. There is a current need for, improvements in the availability of medications and diagnostics within the government health centres and the control of the costs of such services in the private sector are needed.

REFERENCES

- Health Transition. World Health Organization. Available from <http://www.who.int/trade/glossary/story050/en/> [Assessed on 20 June, 2016]
- World Health Organization: Health systems financing: the path to universal coverage. 2010.
- World Health Organization: Everybody's business: Strengthening health systems to improve health outcomes: WHO's framework for action. Geneva: WHO Press; 2007.
- Prinja S, Bahuguna P, Gupta R, Sharma A, Rana SK, Kumar R. Coverage and financial risk protection for institutional delivery: how universal is provision of maternal health care in India? *PLoS One*. 2015;10(9):e0137315.
- Bonu S, Bhushan I, Rani M, Anderson I. Incidence and correlates of 'catastrophic' maternal health care expenditure in India. *Health Policy and Planning*. 2009;24:445-56.
- Prinja S, Aggarwal AK, Kumar R, Kanavos P. User charges in health care: evidence of effect on service utilization and equity from north India. *Indian J Med Res*. 2012;136:868-72.
- Available from <http://data.worldbank.org/indicator/SH.XPD.OOPC.ZS>. [Assessed on 20 June, 2016]
- OOP expenditure on health as a percentage of private expenditure on health (US\$). Available from http://www.who.int/gho/health_financing/out_pocket_expenditure/en/ [Assessed on 20 June, 2016]
- Nasiripour AA, Ghorbani-Kalkhajeh S. The challenges of increasing out of pocket payment in healthcare systems. *International Journal of Healthcare, Insurance and Equity*. 2013;1(2):8491-94.
- 2015 health care outlook, India. Available from <https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Life-Sciences-Health-Care/gx-lshc-2015-health-care-outlook-india.pdf> [Assessed on 20 June, 2016]
- Fazaeli AA, Ghaderi H, Salehi M, Fazaeli AR. Health care expenditure and gdp in oil exporting countries: evidence from opec data, 1995-2012. *Glob J Health Sci*. 2015;8(2):93-98.
- Jayakrishnan T, Jeeja MC, Kuniyil V, Paramasivam S. Increasing OOP health care expenditure in india-due to supply or demand? *Pharmacoeconomics*. 2016;1:105.
- Bhojani U, Thriveni B, Devadasan R, Munegowda C, Devadasan N, Kolsteren P, et al. OOP healthcare payments on chronic conditions impoverish urban poor in Bangalore, India. *BMC Public Health*. 2012;12:990.
- Tomini SM, Groot W, Pavlova M, Tomini F. Paying OOP and informally for health care in Albania: the impoverishing effect on households. *Front Public Health*. 2015;3:207.
- Vian T, Feeley FG, Domete S, Negruta A, Matei A, Habicht J. Barriers to universal health coverage in Republic of Moldova: a policy analysis of formal and informal OOP payments. *BMC Health Serv Res*. 2015;15:319.
- Saksena P, Xu K, Elovainio R, Perrot J. Utilization and expenditure at public and private facilities in 39 low-income countries. *Trop Med Int Health*. 2012;17(1):23-35.
- Modugu HR, Kumar M, Kumar A, Millett C. State and socio-demographic group variation in OOP expenditure, borrowings and Janani Suraksha Yojana (JSY) programme use for birth deliveries in India. *BMC Public Health*. 2012;12:1048.
- Schwarz J, Wyss K, Gulyamova ZM, Sharipov S. OOP expenditures for primary health care in Tajikistan: a time-trend analysis. *BMC Health Serv Res*. 2013;13:103.
- Tripathi N, Saini SK, Prinja S. Impact of Janani Shishu Suraksha Karyakram on OOP expenditure among urban slum dwellers in northern India. *Indian Pediatr*. 2014;51(6):475-77.
- Peasah SK, Purakayastha DR, Koul PA, Dawood FS, Saha S, Amarchand R, et al. The cost of acute respiratory infections in Northern India: a multi-site study. *BMC Public Health*. 2015;15:330.
- OOP health payments and catastrophic expenditures. Available from http://www.who.int/health_financing/catastrophic/en/ [Assessed on 20 June, 2016]
- Chaudhuri A. Socio-economic inequity in health care utilization & expenditures in richer states in India. *Indian J Med Res*. 2012;136(3):368-69.
- Raban MZ, Dandona R, Dandona L. Variations in catastrophic health expenditure estimates from household surveys in India. *Bull World Health Organ*. 2013;91(10):726-35.
- Kumar K, Singh A, Kumar S, Ram F, Singh A, Ram U, et al. Socio-economic differentials in impoverishment effects of OOP health expenditure in China and India: evidence from WHO SAGE. *PLoS One*. 2015;10(8):e0135051.
- Hennessy D, Sanmartin C, Ronksley P, Weaver R, Campbell D, Manns B, et al. OOP spending on drugs and pharmaceutical products and cost-related prescription non-adherence among Canadians with chronic disease. *Health Rep*. 2016;27(6):03-08.
- Balasubramanian D, Prinja S, Aggarwal AK. Effect of user charges on secondary level surgical care utilization and OOP expenditures in Haryana State, India. *PLoS One*. 2015;10(5):e0125202.
- Yardim MS, Cilingiroglu N, Yardim N. Financial protection in health in Turkey: the effects of the Health Transformation Programme. *Health Policy Plan*. 2014;29(2):177-92.
- Marzban S, Rajaei R, Gholami S, Keykale MS, Najafi M. Study of OOP Expenditures for outpatient imaging services in Imam-Khomeini Hospital in 2014. *Electron Physician*. 2015;7(4):1183-89.
- Mogasale V, Kar SK, Kim JH, Mogasale VV, Kerketta AS, Patnaik B. An estimation of private household costs to receive free oral cholera vaccine in Odisha, India. *PLoS Negl Trop Dis*. 2015;9(9):e0004072.
- Hardon A, Hodgkin C, Freshle D. How to investigate the use of medicine in consumers: WHO regional publication, World Health Organization and University of Amsterdam; 2004, 64-65.
- Bera T, Sadhukhan SK, Premendran JS. A longitudinal study on health expenditure in a rural community attached to Mahatma Gandhi Institute of Medical Sciences, Sewagram, Maharashtra. *Indian J Public Health*. 2012;56(1):65-68.
- Nair D, Kar SS, Selvaraj K, Ramalingam A. Morbidity profile and out of pocket health care expenditure among under five children of an urban area of Puducherry. *J Nat Sci Biol Med*. 2015;6(Suppl 1):S139-42.
- Lee JT, Hamid F, Pati S, Atun R, Millett C. Impact of noncommunicable disease multimorbidity on healthcare utilisation and OOP expenditures in middle-income countries: cross sectional analysis. *PLoS One*. 2015;10(7):e0127199.
- Kanjilal B, Mukherjee M, Singh S, Mondal S, Barman D, Mandal A. Health, equity and poverty: exploring the links in West Bengal, India: Research Monograph India Series Future Health Systems. 2007:01-53.

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