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Abstract

Background: Increasing prevalence of catastrophic health expenditure(CHE) in an urban household due to higher amount of out of pocket expenditure which may end up poverty in the middle-income family as well as middle-income countries. This study aims to measure out of pocket expenditure and related factors in urban households of New Delhi.

Methods: A community based cross-sectional study among urban household. Sample size for Delhi is calculated as 358 (with the CI of 1.96, Error term is 0.05 and Prevalence is 63%), it came out to be 134 for southwest district area of Delhi. South West district was selected as it has largest share of population 30.9%. WHO 8-point items used in global health survey 2002-04 was used to determine Out of Pocket Expenditure(OOP), modified kuppuswamy scale was used to capture socio-demographic status & based on literature review factors contributing to OOP were added and tool so formulated was used for data collection from urban households. Descriptive Statistics measures are used in the Socio-demographic characteristics and Out of Pocket Expenditure and incidence of CHE among study group.

Result: OOPE for Upper and Middle Socio-economic category was 79% and about 8.7% suffered from CHE. Having an elderly member and chronic disease in household increase the chance of suffering from CHE. Hospitalization and Medication were major contributing factors to health expenditure

Keywords*:* Out of pocket expenditure, catastrophic spending, middle-income household.

Part-1

Organizational Profile

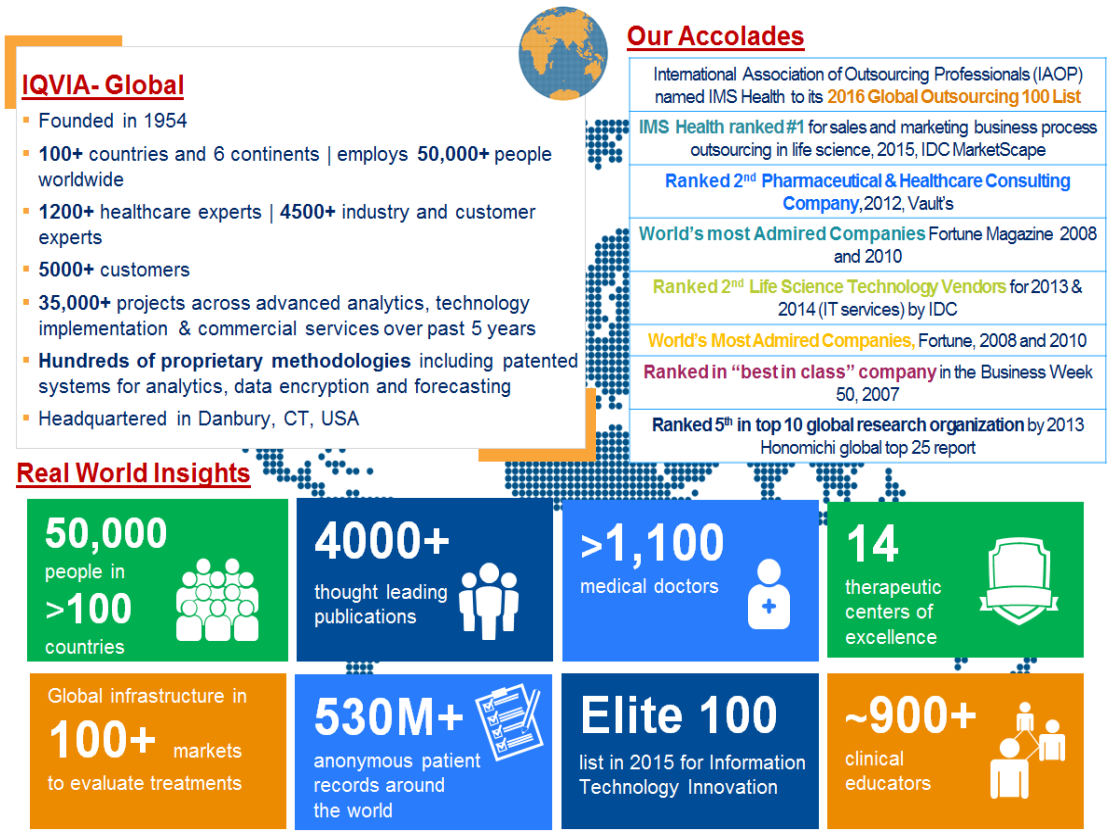
About IQVIA

Global Existence

IQVIA is a global leader in providing research and consulting in healthcare and life sciences sector

IQVIA is the world's leading provider of healthcare survey, consulting & health intelligence services with **over 60 years** of experience. We operate in over **100 countries and serve over 5,000 healthcare customers** across 6 continents. IQVIA accommodate key healthcare organisations and decision makers around the world, spanning government agencies, donor agencies, policymakers, researchers, life science and healthcare companies, consumer health and medical device manufacturers, as well as distributors, providers, payers, and the financial community.

Our global data and analytics **capabilities draw on data from 100,000+ suppliers and on insights from more than 55 billion healthcare transactions** managed annually. We connect knowledge across all aspects of healthcare to help **more than 5,000 healthcare clients globally** to improve patient outcomes and operate more efficiently. The depth of experience available through IQVIA is well-recognized in the industry, as is the commitment to monitor and assess safety, benefit/risk, efficacy, consequenceiveness, quality of care and value.



Our highly experienced teams from our global practices bring specialist skills and insights from large international mandates. Our team have worked on over 200 relevant projects globally and helped some of the world's largest organisations to deliver challenging programs and projects in the areas of healthcare and pharmaceuticals. Globally, all **leading private healthcare companies, government stakeholder and donor agencies** credence on insights provided by us for their business decisions. Some of our major clients in comprise

IQVIA has significant experience in advising **Governments, international NGOs, multidimensional funding agencies in the emerging markets in areas ranging from strategic direction to program management, national health surveys, commodity assessment and mapping, program management, procurement and supply chain assessment, in country development, monitoring and evaluation, pharmaceutical market assessment, private sector engagement, medicine access, policy and regulatory review, health data analytics etc.**

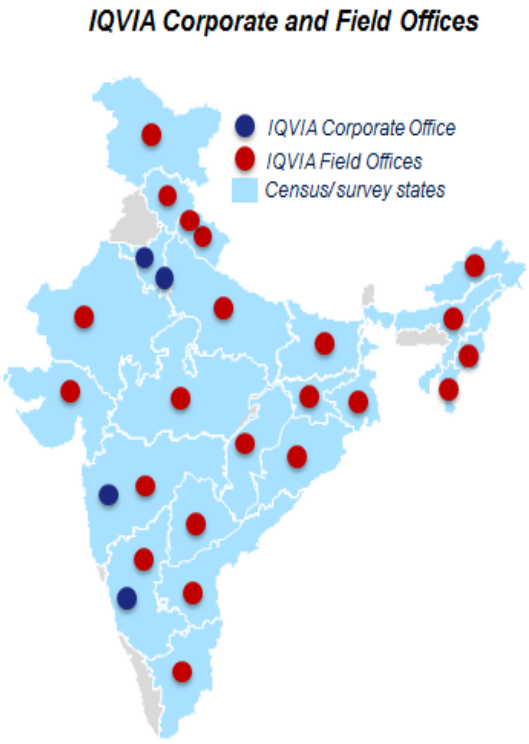
Our partnership with leading academia and international organisations supports their work by providing information and data to researchers

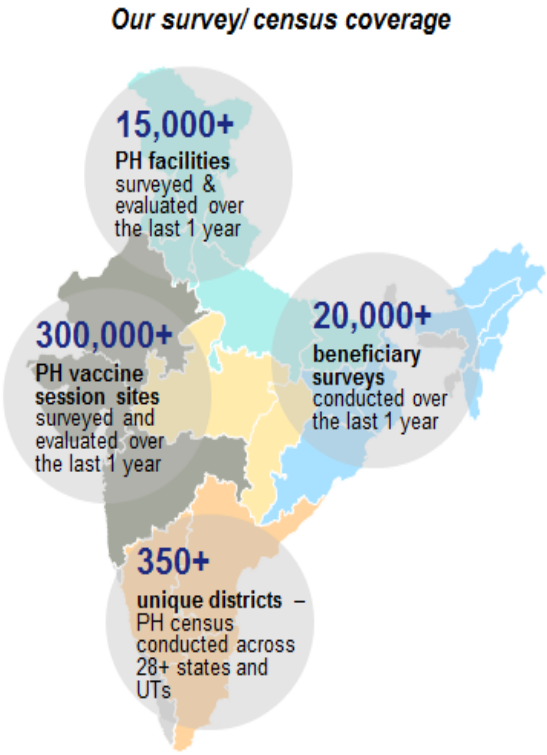
IQVIA India

In India, we have over 13 years of experience and **a strong existence in the healthcare market across data, analytics and consulting services and is the "ONLY" integrated healthcare informatics player in India, with solutions across healthcare sector value chain.** IQVIA India has a deep heritage of providing best-in-class market intelligence to the healthcare industry stakeholders. Our range of services comprises business strategy, market research, performance tracking tools, global market insights, regulatory policy support, operations improvement and allied technology solutions.

We have offices in Gurgaon, Mumbai, Delhi and Bangalore with total employee strength of over 3,000. Our existing data assets and customized large data collection activities are extensively used by our clients in the public, private and non-for-profit sector on regular basis along with our analytics and consulting service providing. Our existing data assets encompasses of detailed information on 3 lac Doctors, 1 lac chemist, 25 thousand hospitals, 22 thousand drugs stockiest. Our team also captures over 8 lac live transcriptions from approx. 5 thousand empaneled doctors and drug sales information from over 5 thousand stockiest monthly. Our field and project teams have experience of working across 50 cities in India with state government, NGOs and international funding agencies.

We have a strong focus on the Government and Public sector (GPS) in India. Our Public Health Government Practice in India works with the key Central Ministries, State Governments and International Donor Agencies across India on significantly large mandates in various areas of Health Policy & Strategic Planning, Health financing, Quality Assurance and Improvement in Health Facilities, Health and Hospital Information Systems by IT solutions, Public Private Partnerships and Monitoring & Evaluation, drug procurement and supply chain system etc.

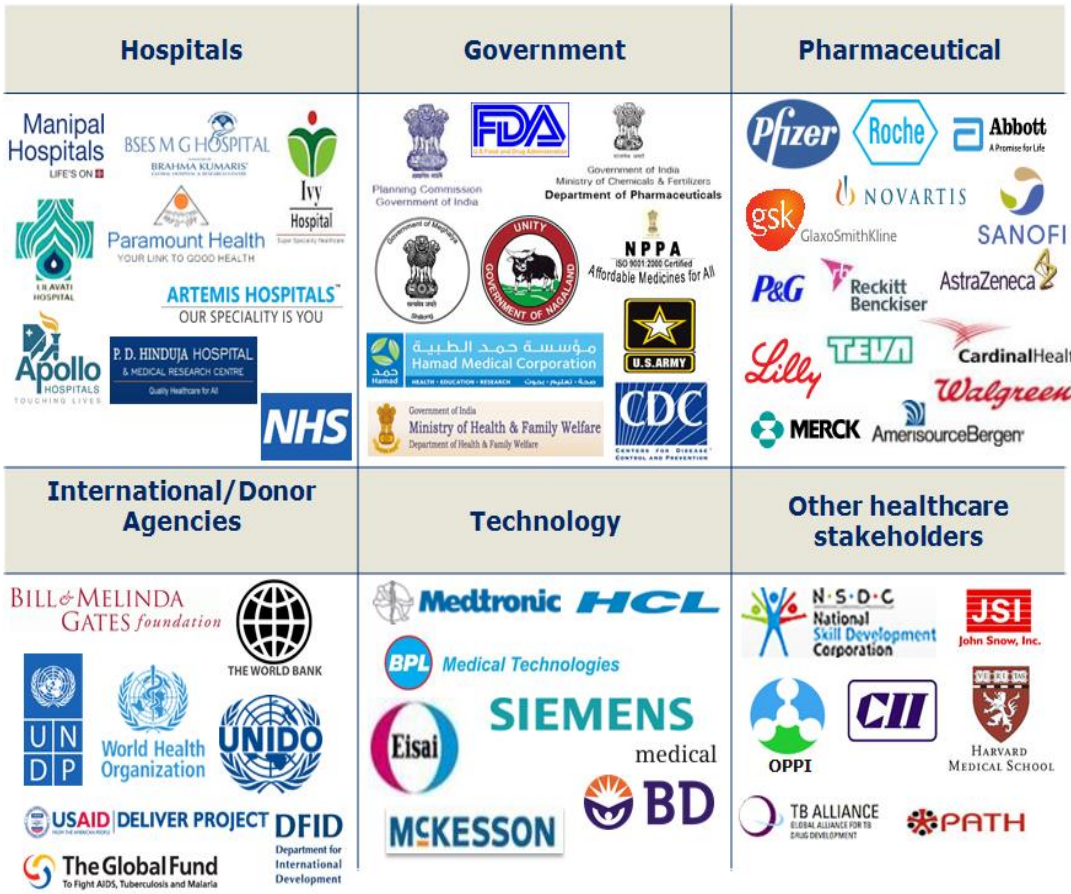




Value Proposition

- *Presence of in house dedicated field teams across 50 cities in India*
- *Single Window Consulting Service*
- *Only company in Asia having extensive existing information and network of formal and informal medical hospitals, practitioners, pharmacies, and stockists*

We have prior **experience of working on projects funded by government and international donor agencies including The World Bank, UNDP, CHAI, JSI, USAID Deliver, NPPA, DoP, Niti Aayog, PSI, BMGF, DFID, Pharmexcil, Tata Trusts, Micronutrient Initiative etc.** Some of our major clients comprise:



Our Core Services

Healthcare Policy Review and Design

We have accumulated in-depth knowledge of the India health system and policy trends through the extensive interaction with health system stakeholders, as well as, work in areas of public health.

We have worked extensively in the arena of Healthcare policy and established thought leadership on policy trends by leveraging broad connections with stakeholders from key government divisions and healthcare institutions. We are currently collaborating with Department of Pharmaceuticals, India on Pharmaceutical pricing policy initiatives.

In 2013, the IQVIA India Institute and OPPI (Organisation of Pharmaceutical Producers of India) jointly produced a thought leadership study on “Understanding Healthcare Access in India” as a knowledge initiative in collaboration with government policy

makers, industry and academics. This provided an opportunity for multi-sector stakeholders to exchange thinking on key issues in the Health Care Access including affordability and quality of care, and to stimulate discussions on policy options.

Quality Assurance

- IQVIA Public Health provider consulting team has senior professionals from industry who are certified as Principal Assessor for National Accreditation Board for Hospital [NABH] and have achieved the distinction of Certification and Lead Auditor for ISO 9000 Quality Systems.
- **Global experience in evaluating health systems performance and providing policy recommendations:** As a global team covering all major markets, we have extensive experience working on health-related topics and providing solutions to public health organisations and local governments and can share best practices from emerging and developed markets across the globe.

Performance Improvement: for healthcare service providers IQVIA offers a range of expertise which encompasses

- **Supply Chain Management:** IQVIA Public Health assists clients understand their existing material use and purchase patterns, inventory management and vendor management practices. This helps the client assess its annual needs for various day to day material and medicine requirements. Upon identifying the key drivers of inefficiency in a client's overall procurement and supply chain system the IQVIA team assists clients in implementing mechanisms such as rationalization of SKUs (Stock Keeping Units) to optimize inventory levels; Procurement mechanisms such as tendering, bid process management and vendor management.

- **Total Performance Improvement:** IQVIA Public Health helps clients achieve their desired performance through its Total Performance improvement plan which helps clients enhance revenues and optimize costs.

- **Process Optimization:** Inefficient service delivery processes can lead to higher patient waiting times as well as lack of adequate personnel at peak operations which leads to higher operation burdens for the providers as well as lower patient satisfaction. Healthcare providers seeking insights regarding their service delivery processes can undergo business process re-engineering mechanisms to streamline their operations consequenceively. IQVIA helps clients implement mechanisms across facilities planning, operations and maintenance as well as contract management mechanisms such as PPPs etc.

- **Other Services:** IQVIA Public Health's other services comprise improving utilization of facilities such as OT, OPD, Imaging services; Performance benchmarking; Designing & implementing clinical KPIs; Specialty COE design.

Program Management:

IQVIA Public **Health helps clients with long term projects/programs by undertaking end-to-end project management**

- **Program Design**: Clients seeking help in creating a prospective project/program can approach IQVIA Public Health for advisory on mapping the entire project/program landscape and on a phase by phase implementation plan.

- **Program Implementation:** IQVIA Public Health can provide clients with full time support during the implementation of their project/program by deploying a team of experts as the Project/Program Management Unit.

- **Monitoring & Evaluation:** The progress can during a program/ project can deviate from its envisioned path if proper monitoring mechanisms are not in place. IQVIA can help clients with monitoring & evaluation services providing information on bottlenecks and their respective solutions for keeping a project on-track.

  Infrastructure Advisory: Clients *envisioning to establish healthcare infrastructure can receive IQVIA's support across a range of activities which can help them make informed decisions*

- **Gap Assessment Study:** IQVIA Public Health can provide clients with detailed gap assessments for infrastructure requirement when they are considering construction or upgradation of their infrastructure projects.

- **Feasibility Studies & Project Structuring:** The experts at IQVIA Public Health can advise clients on the feasibility of their vision, identifying key hurdles which need to be addressed by structuring a project consequenceively.

- **Bid Process Management & PMC Support:** An consequenceively bid process management approach can help clients identify the right service providers while maintaining transparency and fairness.

  Institutional Strengthening & Capacity Building: IQVIA can help clients develop public institutions' internal capacity by upgrading existing personnel's skill sets. IQVIA's services encompass:

- **Capacity assessment:** Designing "To-Be" roles and conducting a skill gap assessment of the skill set and expertise of existing personnel

- **Organisation Restructuring & Capacity Building:** Preparation of new organisation chart, job descriptions, roles and responsibilities, KPIs and recruitment strategy for additional manpower

- **Implementation Support:** Designing detailed work plan, organisation and facilitation of workshops and training sessions, assisting the management identify HR services vendors Strengthening public institutions through training delivery for existing personnel and creating a monitoring & evaluation mechanism for the training provided to personnel

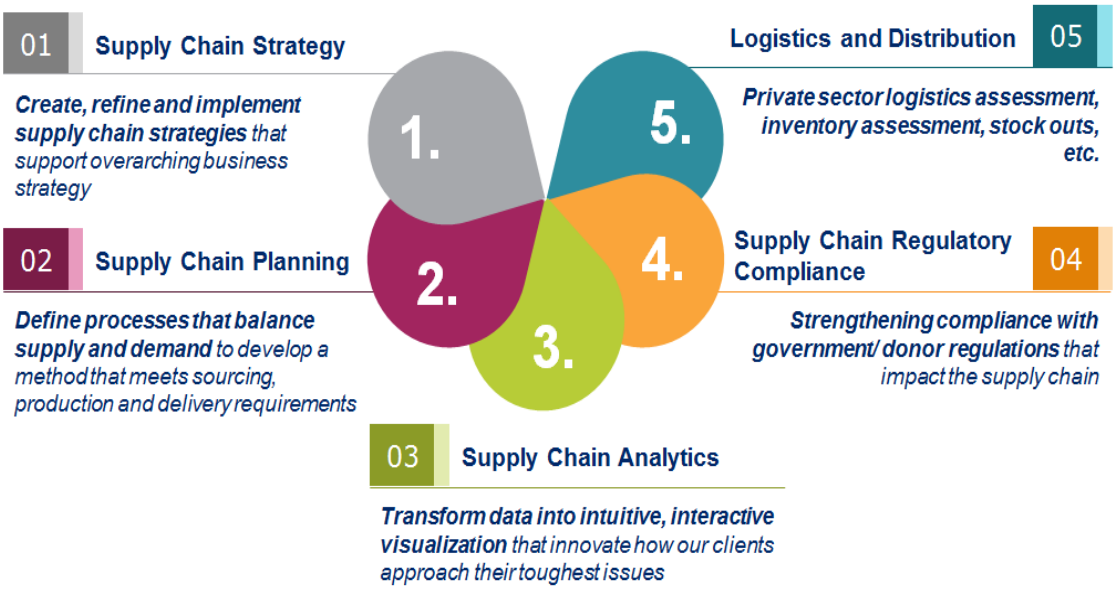
Dedicated Supply Chain Practice with Specialists in Public Health Supply Chain

IQVIA has one of the largest public health practices with nearly a decade of service devoted to the public sector and an internal structure to support and enhance our services to Governments and multi-lateral funding agencies. IQVIA Health has significant experience in advising Governments across the world in areas ranging from healthcare surveys to technology to transformational insights.

IQVIA Health India team has conducted multiple Public Health supply chain/logistics assessments South Asia and Africa markets **in supply chain related to gap/bottleneck analysis, strategy, institutional review, organisational restructuring, manpower assessment, capacity building, review & documentation of policies/ SOPs/ manuals, etc.**

Our practice comprises experts providing comprehensive advisory services to both **public and private sector clients and to all levels of government, legislative agencies, municipalities, nodal agencies, redevelopment agencies, NGOs, and public-sector corporations.**

The **key service providing's in are: -**



Part - 2

Dissertation Report

Background

Health care expenditure is very rapidly rising in countries, especially in developing country. 10% of the GDP (Gross Domestic Product) were globally spend on health (WHO, Health systems financing/Global Health Observatory (GHO), 2015. Unfortunately, all of this money is not spent correctly. There are inadequate resources.

Sustainable Development goals target to achieve universal Health Coverage with one of its key dimension being Financial Risk protection (FRP). Financial protection is achieved when direct payments made to obtain health services do not expose people to financial hardship and do not threaten living standards (WHO).

Financial mechanism plays a very crucial role in healthcare industry of any nation. An ideal financing mechanism works on the principles of insurance which is based on prepayment cross subsidization and risk pooling.

Prepayment is a system wherein the pool members pay average expected costs in advance thereby reducing the uncertainty associated with illness and thus saving from catastrophic & impoverishing effects. Cross subsidization is redistribution of health spending between high income and low income individuals; healthy and sick individuals; workforce and dependent individuals. Tax based financing and social insurance are most equitable and efficient method of financing as they work on principles of insurance supported by prepayment, risk pooling and cross subsidization.

In contrast to tax based financing and social insurance lies out of pocket expenditure by households. According to WHO, Out-of-pocket payments (OOPs) is defined as the direct payments made by individuals for their health care at the time of service utilization. This OOPs excludes any prepayment for health services.

Out-of-pocket payments (OOPs) are part of the health financing landscape in all countries relying on user fees and co-payments to mobilize revenue, rationalize the use of health

services, contain health system costs or improve health system efficiency and service quality [1]. OOP spending is an inefficient way of financing and it can have a negative impact on equity and increase the risk of vulnerable groups slipping into poverty [2].

In India, with launch of National Health Protection Scheme (NHPS, Ayushman Bharat), government is trying to provide protection to poor and vulnerable families for secondary and tertiary care hospitalization which has put reduction in out of pocket expenditure for healthcare as political priority. Additionally, National Health Policy 2017 also acknowledged, as one of four major changes in health context between last health policy and NHP 2017, growing incidence of catastrophic expenditures due to rising healthcare costs as major contributor to poverty in India.

Review of Literature

The elementary role of a healthcare system is not only to improve and provide the health status of the population, it also to protect households from financial crisis which takes place in the household due to Out-of-pocket (OOP) payments for healthcare [3-6]. If country has risk pooling mechanism then the people are protected from catastrophic spending [3] but many of the developing countries experience high OOP payments and due to scarcity of risk-sharing mechanisms, forcing households into hardship, asset depletion, debt, reduction of essential consumption, and sometimes financial catastrophe and at last OOP will end up in poverty [4-10].

It has been observed that poor pay disproportionately more than the rich both in terms of access and ability to pay. Total health expenditure of 10% or more from the total income is often considered as an indication of CHE [1]. Increasing catastrophic health expenditure among households of an urban may lead to the financial risk and financial insecurity. According to World Health Organization (WHO) whenever the health

expenditure is equal or exceeding 40% of a household's non-subsistence income, it is considered catastrophic.

In simple word, Catastrophic Health Expenditure (CHE) is when family spent a large amount of household's income in the health care services, which may be pushed into poverty as a result [11-17]. The contribution factors of catastrophic Health Expenditure are hospitalization, traditional medicine services, dentists, medication, medical tests, health-care products, type of medical or surgical treatment availing and lack of health insurance coverage and this out of pocket expenditure may end up in poverty [18,19].

Studies identified Transportation as one of major contributor to health expenditures [5], few identified Out Patient Services as key health expenditure and many others say in patient hospitalization contributes largely into Health Expenditures. Also, presence of elderly people has shown to be positive predictors of OOP payments [20]. Key difference in all studies was the location where these studies were conducted and all this variation observed establishes that different geographical settings can have distinguished components of health expenditures.

What was discouraging to note was when compared, people who were covered by health insurance and those not covered by health insurance, there wasn't any significant difference in their OOP health expenditure [21] which put overall concept of health insurance to reduce financial burden as defeated. Compared to rural household, urban household spend 2.6 times more on medications, 5 times more on diagnostics and 2.4 times more on doctor's fees [21].

The accessibility of health care for poor has improved slightly and the share of households facing catastrophic health expenditures have seemingly increased among urban households due to catastrophic expenditure and because of this expenditure some family may end up in poverty and financial crises. Though some of the health services were free

in public health centers like emergency care, maternal and child health care, Provision of medical care and Immunization & education to the community, there were charges for services like medicine, bed, user fees and bribe [22,23].

In few of older studies it is highlighted that Catastrophic Health Expenditure in India was higher in rural (25.3%) compared to urban (17.5%) [17]. Additionally, in most of the poor states of India 87% of poverty attributed to OOP occurred in rural areas. While in the richest states, the proportion of poverty in a rural area was 67% [24]. The poverty intensity also was higher in in rural areas (3.5%) compared to urban areas (2.5%) [25,26].

Recently, with National Health Account (NHA) report it is estimated that Total Health Expenditure (THE) for India is estimated at Rs.4, 83,259 crores for the year 2014- 2015. Total Health Expenditure (THE) Comprise of current and capital expenditures incurred by Government and Private Sources including External/Donor funds. Out of Pocket Expenditure (OOPE) on health by households is Rs. 3, 02,425 crores (62.6% of THE, 2.4% of GDP, Rs. 2,394 per capita) for the year 2014-15.

According to consumer expenditure survey by NSSO in 2011-12, 18% of households faced catastrophic health expenditure. National Health policy 2017 envisages to reduce proportion of household facing catastrophic health expenditure by 25% by 2025. Further as per NHA 2014, household out of pocket expenditure was 67% with private hospitals (25.9%) and pharmacies (28.9%) being major providers having a combined share of 54.8%. Studies highlight that as private sector is gaining center stage, urban households are faced with increased burden of health expenditures [27] and relied mostly on savings/income (75%) for financing expenditures on hospitalization [28]. National health policy 2017 highlights importance of developing partnerships with private sectors in urban areas given their large presence in the urban areas.

Rationale of Study

Studies suggests that significant number of people switch from government to private facilities [29] and in urban areas of India between 2004 and 2014 OOP has increased by 50 percent while it was much lower in rural area as 24% [21]. Study done in Bangladesh found that incidence of CHE is more in Urban areas than in rural areas [30].

As per NHSRC report published on NSSO 71st round (2014-2015), Delhi has highest average OOPE for inpatient care in private sector as 45,021 in 2014.

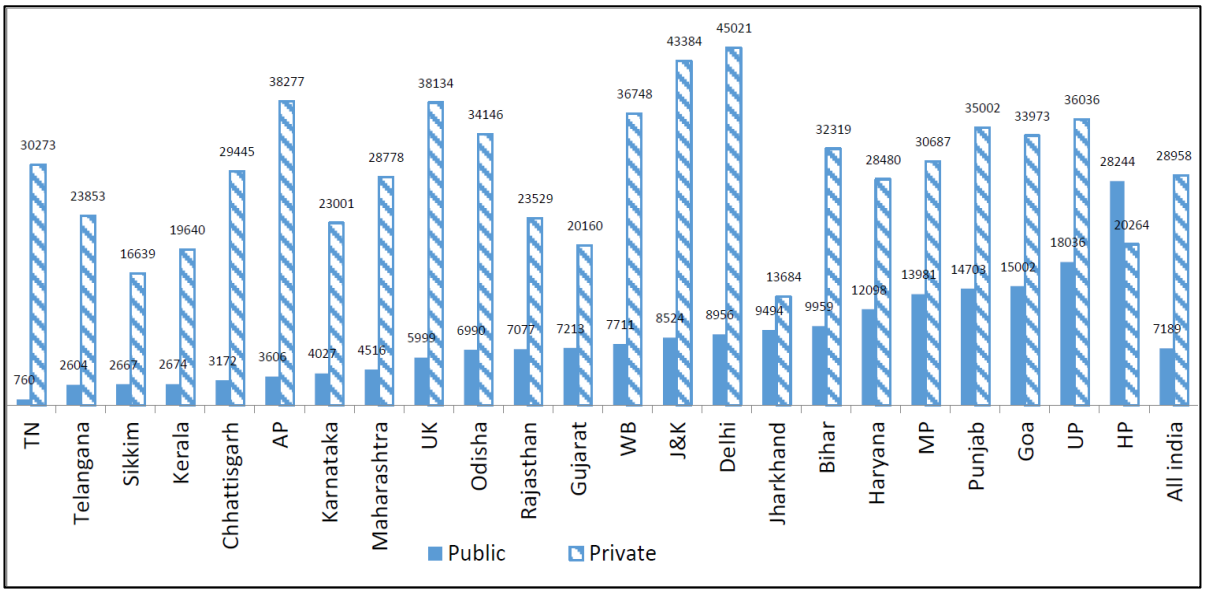


Figure 1: OOPE for inpatient care in urban areas state wise

Source: State wise out of pocket expenditure in urban areas, NHSRC

NHPS scheme launched in February 2018 in its initial phase will provide poor households financial risk protection for health expenditures. The missed strata of population that is Middle and Upper Income category also face financial hardship due to healthcare cost and evidence suggest that these categories also suffer Catastrophic Health Expenditure resulting in impoverishment. Most studies done in different settings focus largely on poor section of society and literature is limited on OOP spending of Middle and Upper Income

category and incidence of CHE in these categories. Although it is agreed that poor households are more vulnerable to suffer from CHE but findings have shown that share of OOP in rich households is much higher [31].

Thus, this study is an attempt to assess the factor that contributes to the Out of Pocket health expenditure among middle and upper income urban household of New Delhi.

Research Question

What is Expenditure for health care of urban areas of South West Delhi?

What is the contribution of OOP to overall Health Expenditure?

Do household face the catastrophic health expenditure in South West Delhi?

Objectives

To determine Health Expenditure and Out of Pocket Expenditure of Urban Households

To assess incidence of Catastrophic Health Expenditure (CHE) in Urban Households

To study various factors that result in Out Of Pocket Expenditure in Urban Households

Methodology

A community based cross sectional study was carried out between period of March-April 2018 in urban households of New Delhi. As per report of NHSRC based on NSSO 71st round in 2014 shows that average medical OOPE for inpatient care with private sector was maximum in Delhi among all states for India as Rs. 45021.

Further, as per literature review & NHP 2017 it is highlighted that private sector has gained center stage in urban areas and urban household rely mostly on income/ savings for financial expenditures [28].

Sample size for Delhi is calculated as 358 (with the CI of 1.96, Error term is 0.05 and Prevalence is 63%) using dilman method. South west district of Delhi has maximum share

of population as 30.9% [Census 2011] and study was done in south west district with sample size calculated as 134 with non-response rate of 20%. Primary respondents were Head of these Households. In households where head was not available, person who had knowledge of financial expenditure and were above 18 years of age were selected as respondents. A semi structured questionnaire tool having 3 Sections.

Section 1 – Socio economic Status & Demographic- modified kuppuswamy scale for assessing socio economic status of households was used

Section 2 – Out of Pocket Expenditure - WHO 8-point items used in global health survey 2002-2004 for measuring OOP of past 12 months.

Section 3- Thorough review of existing literature was done to identify key factors that determine OOP in households. Based on it 11 questions were added on factors as illness treated, chronic diseases, elderly member, children below 5 years in households.

Only Upper and Middle Category households were selected as study participants. Out of 134 responses, 127 were valid responses and fell into upper and middle income categories.

After data collection phase analysis was done using descriptive statistics by SPSS and MS Excel. Out of Pocket expenditure(OOPE) and OOP indicator was calculated for households.

Indicator Is Calculated As:

OOP= (Household out-of-pocket expenditure for health during the past 12 months / Total household Annual Income (or total income - subsistence needs) in past 12 months) x 100 (WHO).

Exclusion Criteria- Any Household that refused to participate in study was excluded.

Inclusion Criteria- Urban Households of New Delhi

Results & Discussion

Data collected from survey of households was analyzed using SPSS and MS Excel. Findings are discussed in this section.

Heads of Households were purposely selected as primary respondent for determining health expense of households. In few Households where head of house was unavailable, member of family who had knowledge about income & expenses of family were chosen as respondents. Majority of respondents were Male (67%) and rest were Females (33%).

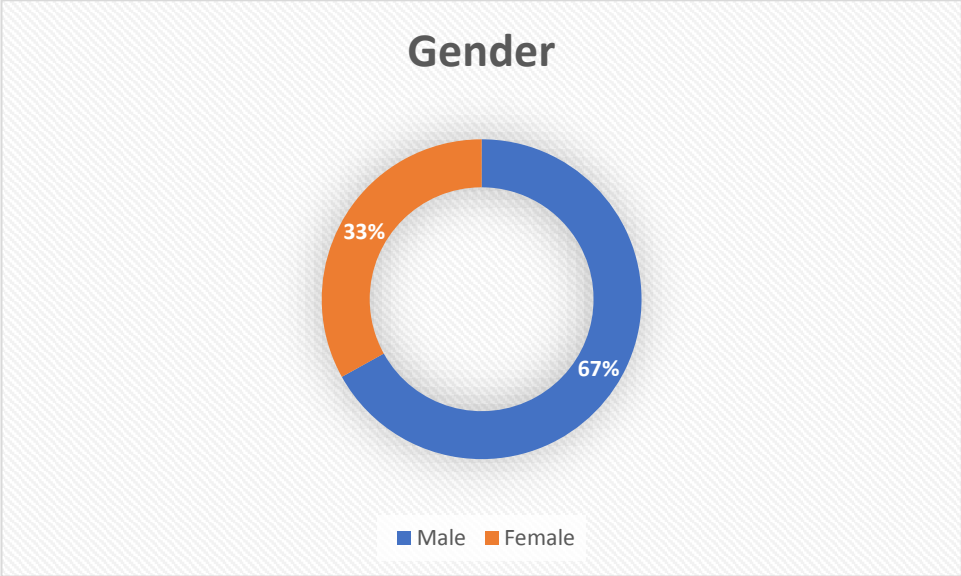


Figure 2: Gender of Respondents

To determine socio economic status of Household modified Kuppuswamy scale was used. Socio economic status of family was calculated based on Education of Head of Household, Occupation of Head of Household and Monthly household income. Respondents education status dominantly was Postgraduate (35%) and Graduate (39%). All these variables were categorized as per kuppuswamy scale and each of 3 variables were given scores.

Based on scoring of each variable, household were categorized into 5 categories as:

Upper, Upper Middle, Lower Middle, Upper Lower and Lower

Basis categorization only Upper, Upper Middle and Lower Middle categories were selected for final analysis in accordance with objective of study. Dominantly households fell into Upper Middle category (70%) and households in Upper category were only 26%. Total valid sample size was 127 households in urban area of New Delhi.

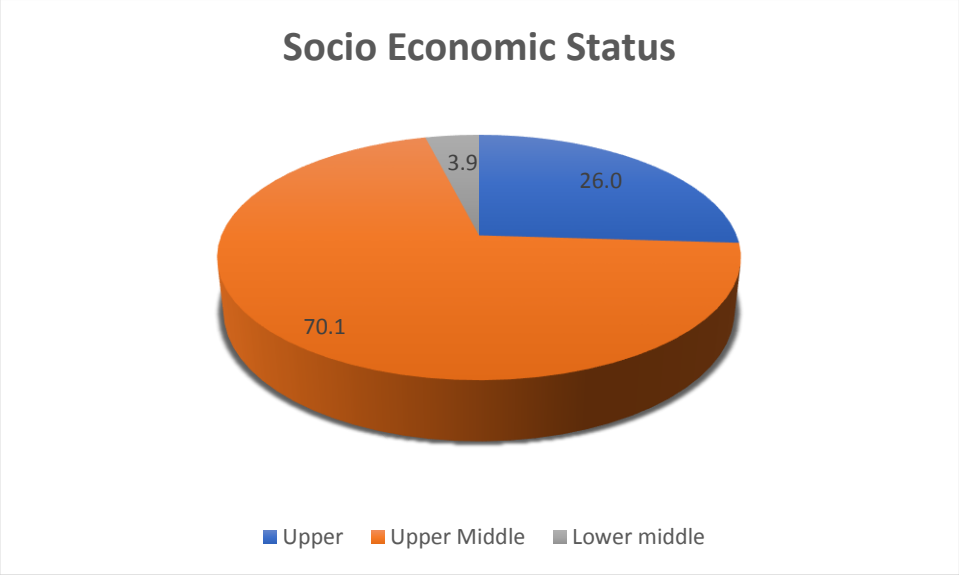


Figure 3: Socio Economic Status

Study population preferred going to Private sector (71.6%) for treatment followed by public sector (25.2%).

If you're not well where will you prefer to go?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		2	1.6	1.6	1.6
	Both (Private & Public)	2	1.6	1.6	3.1
	Private sector	91	71.6	71.6	74.8
	Public sector	32	25.2	25.2	100.0
	Total	127	100.0	100.0	

Table 1: Preference to avail facilities

Health Expenditure for past year was enquired using WHO world health survey 8 items questionnaire. It included Hospitalization, OPD payment, Food, Travel, Healthcare Product, Medical Test, Medications, Dentistry Services.

Total Health Expenditure for past year among study participants was 7% of total Household income and average Health Expenditure spending was 57937. Contribution of individual component to overall health Expenditure is as shown in figure:

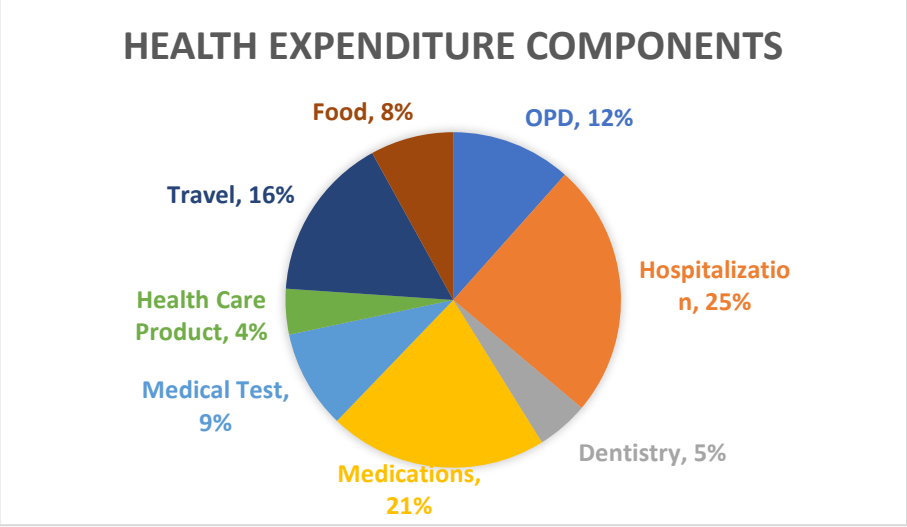


Figure 4: Health Expenditure Components

Hospitalization comes out as key contributor to overall health expenditure which is consistent with NHA report of 2014-15 which highlights Hospitalization as main component of Total Health Expenditures. Average length of stay in hospital for study population was 3.16 days and per day hospitalization cost amounted to 4712.41.

Travel and Food is not a direct cost but in study population it contributes about 24% of Total Health Expenditure(THE). Travel related to health events among study population is ranked 3rd and the result is consistent with finding of bredenkamp (2010) where it was concluded that Transportation accounts for large share of total health expenditure. Similarly, average spending on medicine & OPD was 12672 and 6977 respectively and together they contribute 33% in total health expenditure.

Through semi structured questionnaire variable on health insurance was also enquired for and about 75% Households were covered by one or other insurance schemes. Along with it amount of health expenditure reimbursed by insurance was also captured.

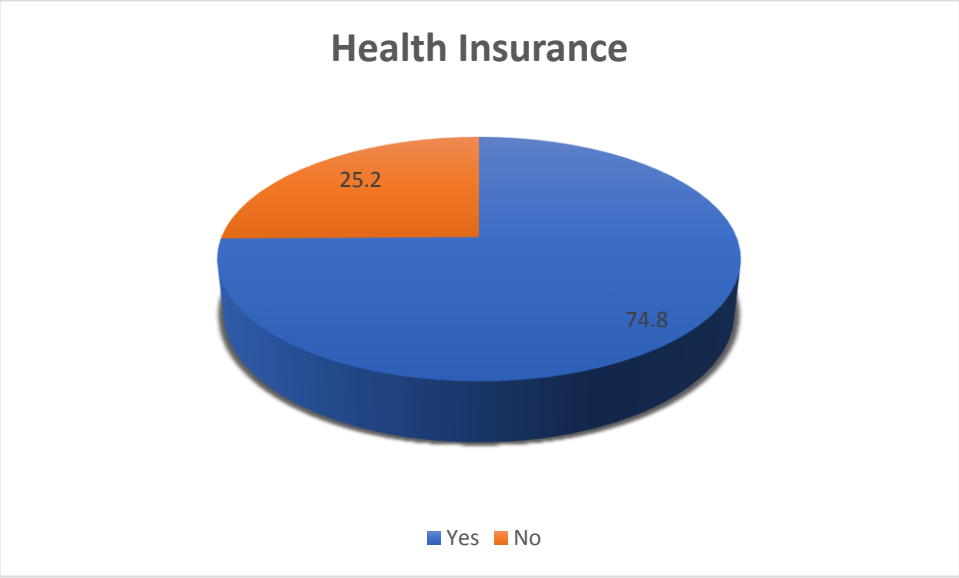


Figure 5: Health Insurance Cover

Health Insurance_Reimbursment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Don't have health insurance	32	25.2	25.2	25.2
	None	50	39.4	39.4	64.6
	Partial	33	26.0	26.0	90.6
	Whole Amount	12	9.4	9.4	100.0
	Total	127	100.0	100.0	

Table 2: Insurance Reimbursement

In contrast to being covered by risk protection scheme many respondents' family (53%) despite being covered under insurance scheme, was not reimbursed any amount.

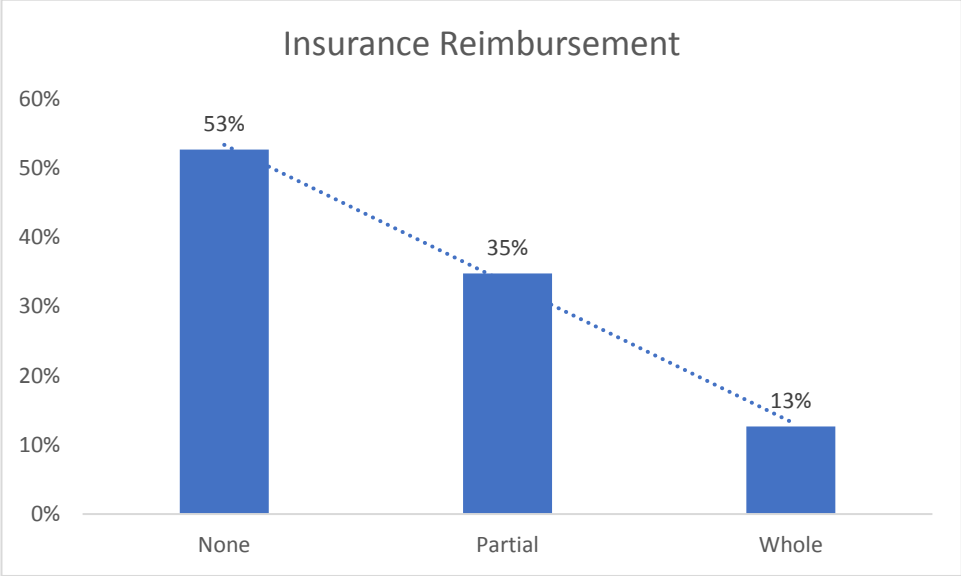


Figure 6: Insurance Reimbursement

When data was further analyzed it was found that in most of cases where none amount was reimbursed, OPD services (68%) was availed and only 20% were hospitalized.

Given the fact Health Insurance mostly reimburses for Hospitalization care the observed trend is justified.

Hospitalization

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	40	80.0	80.0	80.0
	Yes	10	20.0	20.0	100.0
	Total	50	100.0	100.0	

Table 3: Hospitalization (Not reimbursed by Insurance)

Payment for OPD (Out Patient Department)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	16	32.0	32.0	32.0
	Yes	34	68.0	68.0	100.0
	Total	50	100.0	100.0	

Table 4: OPD Payment (Not Reimbursed by Insurance)

Any amount which was paid for by insurance is excluded from OOPE calculations.

Total out of pocket Expenditure for health excluding insurance prepayment & reimbursement was 79% for the population under study which is slightly higher for average OOP for India, 67% as per NHA survey conducted in 2014-15 but is consistent with finding of Jayakrishnan (2016) [28], that urban households relied mostly on Savings/Income (75%). On an average household spend 45800 out of pocket per year to meet their healthcare needs.

Factors such as chronic disease, elderly person in household, children in household, illness being treated for were enquired in survey.

About 33% household had elderly member in household, 27% households had a member with chronic disease, only 1% had a disable member in household. 12% households had a member below 5 years in household. There were 7% household which had both chronic disease and an elderly member in household.

Illness for which healthcare was sort for were:

Minor Illness (49.6%), Non- communicable (32.3%), Communicable (10.2%), Accident (7.9%), surgery (2.4%).

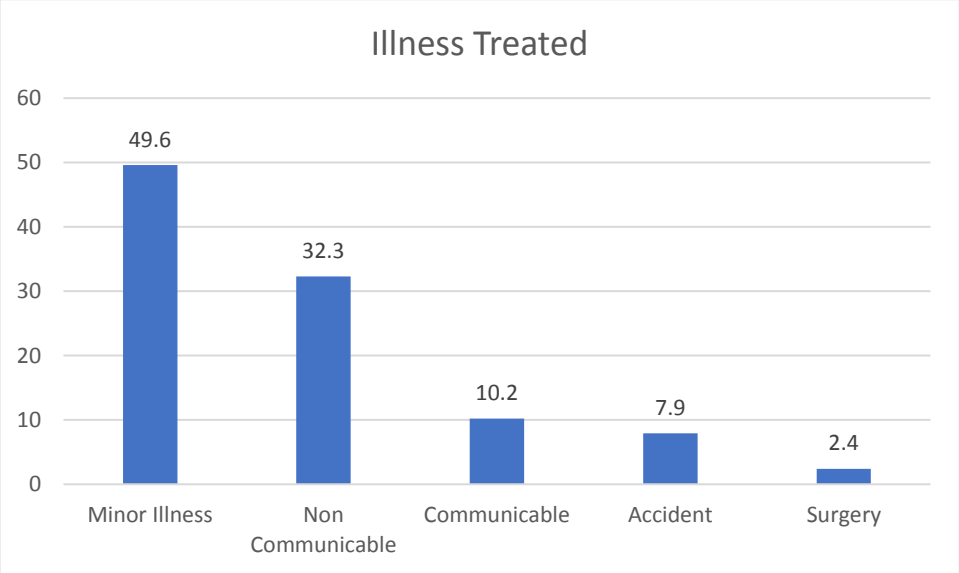


Figure 7: Illness Treated

Majority of households went to healthcare for Minor illness followed by non-communicable disease. Globally talk is about shift in trend from communicable to non-communicable disease which is reconfirmed here if we see illness being treated in study population.

The Out of Pocket expenditure was correlated with variables of Chronic Disease in household, Disabled person in household, Children under 5 years in the household and

Elderly in household. A significant correlation was found between number of times elderly is getting sick and out of pocket expenditure as shown in Table 5.

Correlations

		OutPckt_EXPN	Times Elderly person get sick
OutPckt_EXPN	Pearson Correlation	1	.307**
	Sig. (2-tailed)		.008
	N	127	73
Times Elderly person get sick	Pearson Correlation	.307**	1
	Sig. (2-tailed)	.008	
	N	73	73

**. Correlation is significant at the 0.01 level (2-tailed).

Table 5: Correlation OOP Expenditure and Elderly person

Findings suggest that elderly people who have more sickness episode in a year in household have more health expenditure.

Out of Pocket Expenditure Indicator was calculated using WHO OOP indicator formula as

OOP = (Household Out of Pocket Expenditure for Health during past 12 months/ Total Household Income) x 100.

OOP indicator was categorized into 4 categories as shown in table below, these categories were done based on previous studies on OOPE. Any health expenditure below 10% is manageable and do not put stress on subsistence needs of household. Any expense above 10% is taken as indication of CHE and households which have above 40% expenditure are said to suffer CHE.

OOP

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0-10	99	78	78	77.9
	10.1-20	12	9.4	9.4	87.4
	20.1-39.9	5	3.9	3.9	91.3
	>40	11	8.7	8.7	100.0
	Total	127	100.0	100.0	

Table: 6 OOP Indicator

77% had manageable Health Expenditure (0-10%).

Households that have more than 10% spending on health were 22.5% and although 9.4% had 10-20% health expenditure it is expected to be manageable by Upper and Middle Categories by cutting their non-subsistence needs.

As evident from frequency table 8.7% suffered from catastrophic health expenditure (CHE) and about 4% suffered severe stress on their other subsistence needs due to disproportionate spending on healthcare.

Of those families who suffered CHE 45% had a member with chronic disease in household which is consistent with findings of Rezapour (2017) [33], that household with member having chronic disease have higher incidence and intensity of CHE.

Families that suffered CHE belong to Upper Middle category (54%) and only 27% had an elderly member. Out of 8.7% who suffered CHE, 3.1% were not hospitalized and availed only OPD service. That is if expressed in terms of CHE, 36.3% availed only OPD services yet suffered Catastrophic Health Expenditure.

OOP indicator was cross tabulated with Socio economic status and result show OOP spending of more than 10% is maximum in Upper category as 21% and household suffering CHE is 12%. Upper middle category had 19% household spending more than 10% and 6.7% suffered CHE.

Socio_Economic_Status * OOP Crosstabulation

Count

Socio_Economic_Status		OOP				Total
		0-10	10.1-20	20.1-39.9	>40	
	Upper	26	3	0	4	33
	Upper middle	72	8	3	6	89
	Lower Middle	1	1	2	1	5
Total		99	12	5	11	127

Table 7: Socio Economic Status & OOP Indicator

OOP was cross tabulated with variable of members of family who had below 5 years in household, chronic diseases, above age 60 or disabled.

OOP * Below 5 years old Crosstabulation

Count

		Below 5 years old			
			No	Yes	Total
OOP	0-10	1	87	11	99
	10.1-20	0	9	3	12
	20.1-39.9	0	4	1	5
	>40	0	10	1	11
Total		1	110	16	127

Table 8: OOP & Below 5 year crosstabulation

OOP * Chronic disease Crosstabulation

Count

		Chronic disease			
			No	Yes	Total
OOP	0-10	1	74	24	99
	10.1-20	0	9	3	12
	20.1-39.9	0	2	3	5
	>40	0	6	5	11
Total		1	91	35	127

Table 9: OOP & Chronic Disease Crosstabulation

OOP * Elderly Member

Count

		Elderly Member			
			No	Yes	Total
OOP	0-10	1	64	34	99
	10.1-20	0	9	3	12
	20.1-39.9	0	3	2	5
	>40	0	8	3	11
Total		1	84	42	127

Table 10: OOP & Elderly Member

From above tables it can be seen that out of all cases of catastrophic health expenditure most were in families who had a member with chronic disease in household based on finding correlation was attempted for these two variables as shown below:

Correlations

		OOP	Chroni_Dis
OOP	Pearson Correlation	1	-.168
	Sig. (2-tailed)		.060
	N	127	126
Chroni_Dis	Pearson Correlation	-.168	1
	Sig. (2-tailed)	.060	
	N	126	126

Table 11: Correlation OOP & Chronic Disease

There was no significant correlation between chronic disease and OOP categories. Again, Elderly people getting sick was significantly correlated with OOP indicator as well.

Correlations

		Times Elderly person get sick	OOP
Times Elderly person get sick	Pearson Correlation	1	.356**
	Sig. (2-tailed)		.002
	N	73	73
OOP	Pearson Correlation	.356**	1
	Sig. (2-tailed)	.002	
	N	73	127

**. Correlation is significant at the 0.01 level (2-tailed).

Table 12: Correlation Times Elderly get sick & OOP

Conclusion

Findings suggest that Upper and Middle socio-economic classes living in urban areas of Delhi have 79% Out of Pocket expenditure for health care needs and prefer going to private sector to meet their health demands. Treatment for Non-Communicable disease (32.3%) apart from minor illness is most sought for in urban households and having an elderly member in household puts household at risk of suffering CHE. Travelling expenses often neglected also are major contributor to health expenditure along with in patient hospitalization which is key contributor to Health Expenditure.

Results observed might only apply in study group in urban condition only and may not be generalized to other population. Further research in different settings must be done to establish relationship between disease condition and chances of Household suffering CHE as a result of increasing privatization and rising health cost in urban areas in upper and middle-income categories.

Limitation of Study

- Recall Bias
- Result may not be generalized to other population

Conflict of Interest

None

Annexure A

Modified Kuppuswamy scale for Urban (proposed updating for January 2017)

S.NO	Content	Score
1	**Education of head of family**	
	Profession or honors	7
	Graduate or postgraduate	6
	Intermediate or post high school diploma	5
	High school certificate	4
	Middle school certificate	3
	Primary school certificate	2
	Literate	1
2	**Occupation of head of family**	
	Profession	10
	Semi-profession	6
	Clerical, Shop-owner	6
	Skilled worker	4

	Semi-skilled worker	3
	Unskilled worker	2
	Unemployed	1
3	**Monthly income of family -** In 2017	
	>41430	12
	20715-41429	10
	15536-20714	6
	10357-15535	4
	6214-10356	3
	2092-6213	2
	<2091	1

Socioeconomic class Total score

I- Upper 26-29

II- Upper middle 16-25

III- Lower middle 11-15

IV- Upper lower 5-10

V- Lower Less than 5

Out of Pocket Expenditure Indicator Calculation (According to WHO)

OOP = (Household out-of-pocket expenditure for health during the past 12 months / Total household income (or total income - subsistence needs) in past 12 months) x 100

S. No	Indicators	Amount
1	Household Health Spending (past 12 months)	
2	Total household Annual income	
	Other Sectors	
3	Payment for OPD (Out Patient Department)	
4	Hospitalization	
5	Traditional Medication Services	
6	Dentists	
7	Medications	
8	Medical Test	
9	Health Care Product	
	Other Expenditure during Hospitalization	
10	Travel	
11	Food	
	Hospitalization Duration	

Additional Question based on various literature review (determinants for OOP)-

Amount reimbursed by any Health Insurance?

- Don’t Have Health Insurance
- Whole
- Partial – Mention the Amount
- None

Below questions only for those who reported illness

1. If you’re not well where will you prefer to go?

   Public sector

   Private sector

2. For what disease you are getting treatment?

   Communicable

   Non-communicable

   Accident

   Minor illness

3. Is there any member above 65 years old in the household?

   Yes

   No

4. Is there any member below 5 years old in the household?

   Yes

   No

5. Is there any disable member in the household?

Yes

No

6. Is there any member has chronic disease in the household?

Yes

No

Illness and Treatment

7. Average illness episode per children per annum
8. Average illness episode per adult per annum
9. Average illness episode per elderly per annum
10. Number of treatment episodes

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