Morbidity profile and out of pocket health care expenditure among under five children of an urban area of Puducherry

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**Abstract**

**Background:** Information on out of pocket (OOP) health care expenditure is essential for health planning and devising strategies for Universal Health Coverage (UHC). **Aims and objectives:** To describe morbidity profile, treatment preferences and OOP expenditure toward health care of under five children in an urban primary health center of Puducherry. **Materials and Methods:** A cross-sectional study was conducted in four Anganwadi centers selected randomly from a total of 13 centers in the urban service area of JIPMER, Puducherry. All mothers of under five children from selected centers were interviewed regarding sociodemographic details, treatment preferences, and expenditure incurred on illness of under five children by the family for a period of 15 days and 3 months (exclusive of past 15 days) preceding the day of interview. **Results:** Among the 164 children studied, 23.8% and 30% reported illnesses in the past 15 days and 3 months, respectively. Most frequent illness reported was respiratory infections. Private facilities (60%) were the preferred sources for seeking health care. Median OOP expenditure in last 15 days was Rs. 375 and Rs. 450 for the past 3 months, amounting to 8% and 6.8% of the total family income, respectively. The majority of the health care expenditure was toward drugs (71%). No money was spent toward healthcare in government facilities. **Conclusion:** Almost all OOP health care expenditure was incurred when the illnesses were managed by private providers. Hence, strategies can be planned to include private providers under UHC.

**Key words:** Acute illness, out of pocket expenditure, preferred provider, under five children

**INTRODUCTION**

In view of the growing need for Universal Health Coverage (UHC), the Government of India commissioned a high-level expert group to develop a framework for UHC, which proposed a “National Health Package” that consists of a list of health services that will be made available free of cost to all.[i] The children under five years of age form an important part of any strategy related to health care due to their vulnerability to morbidities and mortalities and also due to their importance as a potential future asset for any nation. At the household level, the health care expenditure due to children can result in financial strains for the family, especially in developing countries like India. India is known to have inequities in health care despite economic growth and increasing efforts to strengthen primary health care.
in the country. The country’s health system ranks as one of the most heavily dependent on out of pocket (OOP) expenditure (nearly 72% of total health expenditure) and private health care in the world.[2,3] Expenditure in the form of OOP spending pushes more than 40 million people into poverty each year. The rapid increase in drug prices, estimated to have doubled or even tripled annually in recent years, has magnified this already significant burden.[4]

The Union Territory of Puducherry with a population of 12 lakhs is one of the regions of the country which has surplus of both private and government health care facilities, with two general hospitals and nine medical colleges in the region. The profile of expenditure may, therefore, be different from the rest of the country. Therefore, an attempt was made to understand the morbidity profile, treatment preferences, and financial burden due to OOP expenditure toward health care of children under five years of age in an urban area of Puducherry.

MATERIALS AND METHODS

A cross-sectional study was done during September-October 2013 in the urban field practice area of JIPMER, which caters to four areas namely Chinnayapuram, Vazhaikulam, Kurusukuppam, and Vaithikuppam. The study area has 13 Anganwadi centers with a total population of 9500. Based on feasibility, we decided to include 200 households with under five children in the study. There are at least 50 households with under five children under each Anganwadi. So we decided to select four Anganwadi centers (center numbers 3, 4, 7, and 11) randomly by lottery method and these were included in the study. All the households that had under five children, and who had been residing in the area for at least 3 months prior to study period were included in the study. After obtaining informed consent, the mothers of the under five children were taken as respondents.

Data were collected using a pretested questionnaire on sociodemographic details (age, gender, and socioeconomic status). For all the under five children of the household, details regarding the morbidity pattern and preferred source of treatment were obtained for a period of 15 days and 3 months (exclusive of past 15 days) preceding the day of interview. In addition, information regarding OOP expenditure incurred toward health care for each under five child in a house was collected under the following heads: doctors’ fees, investigations, medicines, transportation, food, room rent, and wages lost. In case the house was locked or mother was not available even after a second visit on a different day, it was not included in the study.

In this study, morbidity patterns were classified as per standard definitions.[5] OOP expenditure was calculated as the total amount of money spent by the respondents on both medical expenses (doctors’ fees, medicines, and investigations) and nonmedical expenses (transport, food, room rent, and wages lost due to hospital visits) for an episode of illness.

Data analysis

Data were entered using MS Excel (Microsoft corporation) and analyzed in IBM SPSS V 21 (IBM Corp., Armonk, NY). Proportions are represented as percentages and expenditure as median interquartile range (IQR).

RESULTS

We studied 127 households; majority belonged to the upper lower class according to Kuppuswamy’s socioeconomic scale (55.9%). Median income of the families studied was Rs 4000 (IQR= Rs. 3000-10,000).

Morbidity profile and health care expenditure among under five children

The study population comprised of 164 children; 55.5% were boys. The mean age of the children was 2.3 ± 1.3 years.

Nearly, 23% (39 of 164 children) had reported that they suffered from some illness in the past 15 days. The most common morbidity reported was respiratory illnesses found in 90% (34) of children [Table 1]. Of the children who had morbidity, 46% (18) and 41% (16) approached a government and private provider, respectively [Table 2]. Nearly, 30% of the children (12) incurred OOP expenditure. The median OOP in these 15 days was Rs. 375 (IQR = Rs. 309-492). The proportion of family income spent toward OOP was 8%.

Around 37% (62 of 164 children) reported illness during the past 3 months. Nearly, 60% (36) of children approached a private provider for health care [Table 2]. OOP expenditure was incurred among 69% (42) of the

| Type of illness* | Number of under five children |
|------------------|------------------------------|
|                  | Past 15 days (n = 39) | Past 3 months (n = 62) |
| Respiratory illnesses | 35 (89.7) | 54 (87.1) |
| Diarrheal diseases   | 1 (2.6)  | 3 (4.8)   |
| Fever               | 1 (2.6)  | 1 (1.6)   |
| Others              | 2 (5)    | 4 (6.5)   |

*The denominator for type of illnesses is restricted to 39 children in the past 15 days and 62 children for past 3 months.
children. Median expenditure incurred in these 3 months was Rs. 450 (IQR = Rs. 287–650). The proportion of family income spent toward OOP was 6.7%.

Most of the expenditure was toward medicines [Figure 1]. None of the households reported any expenditure toward immunization of the under five children. There was no instance of hospitalization among any of the 164 children during the last 3 months.

**DISCUSSION**

Nearly one-fourth of the children suffered from morbidity during the last 15 days and one-third in the past 3 months.

Awasthi and Pande reported that respiratory (17.2%) and diarrhoeal (6.3%) diseases were the major morbidities in preschool children in the age group of 1½-3½ and a half years residing in urban slums in Lucknow and that the mean family expenditure on sickness in 1-month was Rs. 12.27 ([standard deviation]: Rs. 23.81) that is 1% of their income (1 US $ = Rs. 32 at the time of study). In 95% of the cases, the health care provider was a self-employed, nongovernmental dispenser. [6]

Sambo et al. studied under five children in a semiurban area of Nigeria for a recall period of 3 months and reported illness in 26.9% of the children with fever, cough, and diarrhea as the leading causes. About 41.7% of them took treatment from patent medicine vendors. Median OOP expenditure per episode was 171 Naira (1 US $).[7]

Respiratory illnesses were reported by 34 (27%) of the 126 children in this study in the last 15 days. This is lower than that reported by a cross-sectional study carried out in an urban area of Puducherry (63.7%) in 2014.[8] This difference may be due to seasonal variations.

Daga et al. conducted a facility based cross-sectional study among children <6 years of age attending the pediatric Outpatient Department (OPD) of a rural nongovernmental medical college in Maharashtra and reported that 36% of the OPD attendance was for respiratory complaints which are higher than that reported in our study.[9] The different study settings may be a reason for this difference.

Patil et al. studied OOP among under five children in an urban slum of Bijapur, Karnataka and reported that private practitioners were treatment providers for majority of the episodes of acute illness (15 days preceding survey) and that almost all study households suffered catastrophic expenditure (catastrophic expenditure was defined as spending 5-20% of total household income is spent on health care).[10]

In our study, private providers were the sources of health care availed most of the time for the study population as well as the subset of under five children in past 3 months but this choice was not reflected in recall period of past 15 days. The proportions differ between the studies due to the different recall periods, age groups, study periods, and settings. Respiratory illnesses constituted a major part of ailments in this study also. Most of the OOP was toward buying medicine that is consistent with the observations made in the joint report on UHC by the WHO, UNICEF, and Rockefeller foundation.[4]

Median OOP in this study was Rs. 375 and Rs. 450, which accounted for 8% and 6.7% of the total monthly family income, respectively for past 15 days and 3 months in this study. This is higher than the Lucknow study probably due to the inflation over the years and also high compared to the study from Nigeria, which may be due to the different study settings.

In their facility based study, Daga et al. also assessed OOP expenditures among children <6 years in a rural area of Maharashtra and reported a median total OOP of Rs. 122 (IQR Rs. 61-220), which is lower than our study.[9] This may be because the medical college provided

### Table 2: Source of treatment availed by the under five children who participated in the study

| Source of treatment | Number of under five children | Past 15 days | Past 3 months |
|---------------------|--------------------------------|--------------|--------------|
|                     | (n = 39) | (n = 62) n (%) | (n = 62) n (%) |
| Private providers   | 16 (41) | 36 (58.1) |
| Government providers| 18 (46) | 19 (30.6) |
| Home remedy         | 1 (3)   | 0 |
| Both private and    | 0       | 6 (9.7) |
| government providers| 2 (5)   | 0 |
| None                | 2 (5)   | 1 (1.6) |
| Others              | 2 (5)   | 0 |

*The denominator for preferred provider is restricted to 39 children in the past 15 days and 62 children for past 3 months

![Figure 1: Various sources of expenditure as a proportion of total health care expenditure](image-url)
free OPD services though it was a nongovernmental facility. Therefore, OOP was composed of travel and food charges alone.

There was no OOP expenditure among the under five children when government facilities were utilized. Of all episodes of illness, treatment of 41% and 58% of the episodes led to OOP spending for the periods of past 15 days and 3 months, respectively. This is low compared to the country as a whole where 72% of the health care spending is OOP[3] and may be due to the presence of government facilities in the close vicinity of the area.

CONCLUSION

All the OOP expenditure in this study was incurred due to the utilization of private health care services. It is less compared to the figures for India but the reasons for this choice even though free of cost, accessible government facilities are available in population where respiratory ailments contributed to the bulk of ailments need to be studied further. Also, the preference of private providers adds more relevance to the recommendation of including private practitioners in the UHC system under the proposed national health care package. Their inclusion should go beyond the conventional public private partnership and must include mechanisms for regulating the activities of the private providers. The existing public facilities should focus on better quality of care to make more number of people to utilize health care provided for free of cost.

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Conflicts of interest
There are no conflicts of interest.

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