Reasons for low utilisation of public facilities among households with hypertension: analysis of a population-based survey in India

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ABSTRACT

Introduction In India, for most patients, primary healthcare remains the intended entry point for the management of non-communicable disease risk factors. The extent and determinants of non-utilisation of public primary care among households with hypertension are not well examined. We explored health facility utilisation patterns and reasons for non-utilisation of public facilities in 21 states and union territories in India, with a focus on hypertension.

Methods We used data from the 2012–2013 District Level Household and Facility Survey. We examined the self-reported usual source of care for all households, households with hypertension and—where possible—households with hypertension and diabetes. Hypertension was defined by self-reported diagnosis or measurement of systolic blood pressure ≥140 mm Hg or diastolic blood pressure ≥90 mm Hg. Diabetes was defined by self-reported diagnosis or fasting blood glucose level ≥ 7.0 mmol/L or non-fasting blood glucose level ≥ 11.1 mmol/L. We assessed facility utilisation choice and reasons for non-utilisation of public facilities by household with the presence of hypertension alone and hypertension with diabetes.

Results In 336 305 households, 37.6% (N=126 597) had at least one household member with hypertension, while 15.9% (N=53 385) had members with hypertension and diabetes. 20.0% of households sought care at public primary clinics, 29.9% at public hospitals and 48.3% at private facilities. Choice of private facilities increased with the burden of hypertension and diabetes. Households with hypertension and diabetes cited quality reasons for non-utilisation of public facilities more than households without hypertension.

Conclusion Households, particularly those with hypertension, chose private over public primary facilities for usual care. Quality of care was an important determinant of facility choice in households with hypertension and diabetes. With the increase in hypertension and cardiovascular disease in India, quality of public primary healthcare must be addressed for current policy to become reality.

Key questions

What is already known?

- The non-communicable disease burden in India is increasing, with cardiovascular disease now the number one cause of death.
- For most patients, primary care facilities in India are the intended entry point for the prevention and diagnosis of non-communicable disease risk factors, such as hypertension, and health system users in low-income and middle-income countries are known to use private facilities in search of better quality care.

What are the new findings?

- In this population-based survey of 336 305 households in 21 states and union territories in India, households chose private facilities for care, with this choice increasing with the burden of hypertension and hypertension–diabetes multimorbidity.
- Households with hypertension only and with both hypertension and diabetes were more likely to cite quality of care as a reason for non-utilisation public facilities than households without hypertension.

What do the new findings imply?

- Quality of health care is an important determinant of facility choice in households with hypertension and choice of private facilities signals that the primary public health system is failing to respond to the changing health needs of the population.

INTRODUCTION

India is undergoing an epidemiological transition, with the burden of non-communicable diseases increasing significantly over the past 25 years.1 Cardiovascular disease is now the number one cause of death, accounting for 28.1% of deaths in India and 14.1% of life-years lost.2 Hypertension is one of the primary risk factors for cardiovascular disease, with 54.6% of cardiovascular disease disability-adjusted life-years attributable to high systolic blood pressure.3 Those with hypertension...
likely to use private care than other adults. However, that those with diabetes or hypertension were even more representative study of older individuals in India found at private or higher level health facilities. A population scale. No prior studies quantitatively address reasons for choice for public or other health centres. High healthcare costs driven by such expenditures are a leading cause of poverty in India. While bypassing poor quality facilities may lead people to better quality care, this is not always the case since technical care quality is not fully observable to non-experts. Further, relying on referral facilities for routine care can undermine continuity of care: utilisation of higher-level facilities for routine care is often for one-off visits without continued patient follow-up or management of care. From the perspective of health system financing and design, investing in primary care services that are not used is inefficient, while overuse of secondary facilities may blunt their capacity to provide adequate and timely care for complex or acute conditions. Prevalence and reasons for bypassing or non-utilisation of public primary care facilities are likely to differ based on the health need, as patients balance cost and expected benefit specific to a given condition. Policymakers need evidence on reasons for non-utilisation public primary care facilities to inform India’s response to the growing epidemic of hypertension. To date, to our knowledge, no studies have considered reasons for health facility choice among people with hypertension at the population level in India.

To understand health system preferences as India prepares to tackle the growing burden of non-communicable diseases, this paper explores health facility utilisation patterns and reasons for non-utilisation of public facilities among households in 21 states and union territories in India, with a particular focus comparing households with hypertension to households without hypertension. To understand the influence of comorbidity, a secondary analysis examined these aims among households with both hypertension and diabetes.

**METHODS**

**Study design and sample**

We used publicly available data from the fourth cycle of the District Level Household and Facility Survey (DLHS-4) implemented by the International Institute of Population Sciences in India. The DLHS is a population-based survey conducted in states and union territories not included in India’s Annual Health Survey. The DLHS-4 was conducted from 2012 to 2013 in 21 states and union territories in India using a multi-stage stratified sampling design. Generally, within each state, each district was stratified into urban and rural areas. Then, a two-stage sampling frame was used with the primary sampling unit as urban blocks or rural census villages and the secondary sampling unit as the household. The methods are described elsewhere.

The household head was interviewed about the households’ characteristics. In addition, consenting individual household members available at the time of the household interview aged 18 and older had their blood pressure measurements taken and blood collected for blood glucose levels. Individuals were asked if they had consumed any food or liquid prior to the blood draw. This analysis was restricted to households where at least one household member provided complete individual-level biomarker data for measures of hypertension and diabetes.

**Measures**

The main measures of interest were household hypertension status and health facility utilisation choice. Households were categorised into three distinct groups: households without hypertension (no members with hypertension), households with hypertension only (at
least one member with hypertension, no members with diabetes) and households with both hypertension and diabetes (at least one member with hypertension and at least one member with diabetes). For households with hypertension only, at least one household member with chronic disease had to have self-reported a past hypertension diagnosis or have systolic blood pressure of ≥140 mm Hg or diastolic blood pressure of ≥90 mm Hg based on the mean of two blood pressure measurements and have no household members with diabetes. For households with both hypertension and diabetes, at least one household member had to meet the hypertension criteria above and at least one household member (same or different) had to report past diagnosis of diabetes or have a blood glucose level of ≥7.0 mmol/L for those who reported not consuming food or liquid prior to the test (fasting blood glucose) or a blood glucose level of ≥11.1 mmol/L for those who reported consuming any food or liquid consumption prior to the test (non-fasting blood glucose).

Household choice of public or private health facilities was assessed with a question asking where household members generally seek care when they are sick. Facilities were categorised as public primary healthcare facility (subcentre, primary health centre, community health centre, urban health centre, dispensary/clinic), public hospital, private facility and other (non-medical shop, home treatment, other).

Households that chose private facilities were asked why they did not choose a public facility using a multi-response question. We categorised these reasons for non-utilisation of public facilities into three domains: access (no public facility available, facility too far away, not aware of any facility), technical quality (poor quality of care, doctor not available, drugs not available, health personnel often absent, no adequate infrastructure) and non-technical quality (wait time too long, facility timing not convenient, distrust).

To describe the characteristics of the household, we included a mix of demographic variables based on the relevant literature: mean age of the household, age of the head of household, household has a member less than 5 years of age, household has a member ≥65 years of age, mean number of household members, mean number of male members, mean number of female members, sex of the head of household, religion (Hindu vs other religions), household has health insurance, household has a below the poverty line card, socioeconomic status and household location (rural vs urban). Socioeconomic status was measured using a principal component analysis of 14 household asset variables (main source of lighting, housing structure (three variables), fuel used for cooking and ownership of a radio, television, telephone, sewing machine, bicycle, motorcycle, car, tractor). The results were split into quintiles, with the lowest 40% categorised as poor.

Statistical analysis

The survey included weights to account for sampling within each state. To generate representative estimates across states, we scaled the weights based on the 2011 state population. Demographic characteristics of all households, households without hypertension, households with hypertension only and households with hypertension and diabetes were summarised with descriptive statistics. Next, using descriptive statistics, facility utilisation choice (public primary facility, public hospital, private facilities, other) was assessed by household non-communicable disease status. To account for possible differences in availability of health facilities by location, these results were then stratified by household location (rural vs urban). A secondary analysis stratified facility utilisation choice among households with hypertension only by state/union territory. As households that chose private facilities could provide more than one reason for non-utilisation of public facilities, the total number of reasons provided was summed. We then calculated the relative importance of each reason for non-utilisation of public facilities and by domain (access, technical quality, non-technical quality). We compared reasons for non-utilisation of public health facilities between households without hypertension and (1) households with hypertension only and (2) households with hypertension and diabetes among all households, among poor households and among households with no health insurance by calculating an absolute difference and using chi-square tests. These analyses were also stratified by household location. Analyses were conducted in Stata V.14.

RESULTS

A total of 378 487 households were included in the DLHS-4, of which 378 280 had weight information available. Of the 378 280 households, 378 195 had a household member ≥18 years of age and were therefore eligible for biomarker screening. Eighty-nine per cent of the eligible households (N=336 305) had complete hypertension and diabetes biomarker data available.

The majority of households were of Hindu religion (N=263 576, 78.4%) and had a male head of household (N=287 224, 85.4%) (table 1). About a quarter of households had health insurance (N=94193, 28.0%) and 42.2% were categorised as poor (N=141 239). About 38% (37.6%, N=126 597) of households had at least one household member with hypertension only, while 15.9% (N=53 385) of households had both hypertension and diabetes. A larger proportion of households with hypertension and diabetes had health insurance (N=15 508, 29.1%) and a smaller proportion were categorised as poor (N=14 801, 27.8%) compared with households without hypertension (insured: N=43 891, 28.1%; poor: N=75 428, 48.5%). Households with non-communicable disease risk factors were generally older, with the mean age of the household increasing with the burden of non-communicable diseases. About a third (30.3%) of households...
were missing for 0.08% of the analytic sample. Hypertension. Data for at least one descriptive variable
years of age compared with 17.3% of households without hypertension and diabetes had a household member
65 with hypertension only and 40.7% of households with hypertension only and diabetes chose private sector (55.2%) facilities. When stratified by household location, there was a similar pattern of choice for private facilities with the double burden of hypertension and diabetes chose private sector facilities. When stratified by household location, there was a similar pattern of choice for private facilities overall and among households with non-communicable disease risk factors. However, a higher percentage of urban households chose private sector (55.2%) facilities than rural households (44.1%). Among households with hypertension only, the proportion of people choosing public primary care varied across states, from a low of 3.8% in Haryana to a high of 57.2% in Meghalaya (online supplementary figure 1); Meghalaya was the only state with over half of the population seeking care in public primary facilities.

**Table 1** Demographic characteristics of households with biomarker data in the District Level Household and Facility Survey-4 by chronic disease status, 2012–2013

| Household demographics | All households (N=336 305) | Households without hypertension (N=156 323) | Households with hypertension only (N=126 597) | Households with hypertension and diabetes (N=53 385) |
|------------------------|-----------------------------|--------------------------------------------|---------------------------------------------|------------------------------------------------|
| Mean age of household members (mean, SD) | 33.5 ± 2.2 | 30.7 ± 2.3 | 35.0 ± 2.3 | 38.0 ± 2.4 |
| Mean age of head of household (mean, SD) | 49.2 ± 13.9 | 45.9 ± 13.2 | 50.9 ± 13.8 | 54.8 ± 13.4 |
| Any household member <5 years of age | 95 352 (28.4%) | 47 672 (30.5%) | 33 393 (26.4%) | 14 288 (26.8%) |
| Any household member ≥65 years of age | 87 183 (25.9%) | 27 052 (17.3%) | 38 410 (30.3%) | 21 721 (40.7%) |
| Mean household size (mean, SD) | 4.5 ± 2.2 | 4.2 ± 1.9 | 4.5 ± 2.2 | 4.9 ± 2.6 |
| Mean number of males in household (mean, SD) | 2.2 ± 1.3 | 2.1 ± 1.2 | 2.3 ± 1.3 | 2.4 ± 1.5 |
| Mean number of females in household (mean, SD) | 2.2 ± 1.3 | 2.1 ± 1.2 | 2.3 ± 1.3 | 2.5 ± 1.5 |
| Sex of head of household is male | 287 224 (85.4%) | 132 993 (85.1%) | 107 895 (85.2%) | 46 336 (86.8%) |
| Hindu religion (vs all other religions) | 265 576 (78.4%) | 124 294 (79.5%) | 97 970 (77.4%) | 41 313 (77.4%) |
| Household has health insurance | 94 193 (28.0%) | 43 891 (28.1%) | 34 795 (27.5%) | 15 508 (29.1%) |
| Household has a below the poverty line card | 144 136 (42.8%) | 69 569 (44.5%) | 54 008 (42.7%) | 20 560 (38.5%) |
| Household has electricity | 320 438 (95.3%) | 147 285 (94.2%) | 121 167 (95.7%) | 51 987 (97.4%) |
| Household has a bicycle | 152 722 (45.4%) | 71 675 (45.9%) | 56 373 (44.5%) | 24 675 (46.2%) |
| Poor (lowest 40%) | 141 594 (42.1%) | 75 657 (48.4%) | 51 186 (40.4%) | 14 769 (27.7%) |
| Rural household location | 208 099 (61.9%) | 101 408 (64.9%) | 78 927 (62.3%) | 27 764 (52.0%) |

*Sampling weight proportion/SD.*

Figure 1 shows the distribution of reasons for non-utilisation of public facilities. Technical quality accounted for the largest proportion of the reasons for non-utilisation (39%), followed by access (32%) and non-technical quality (28%). The top individual reasons for non-utilisation of public facilities were no public facility available (16%), too long of a wait time (15%), poor quality of care (15%), facility too far away (10%) and no doctor available (10%).

Small but statistically significant differences (at p<0.01) in reasons for non-utilisation of public facilities were apparent based on household health status (table 3). Compared with households without hypertension, households with hypertension only were more likely to cite quality (technical or non-technical) as a reason for non-utilisation of public facilities (79.5% vs 78.5%).

The difference was even larger for households with both hypertension and diabetes (80.8% citing a quality-related reason vs 78.5% of households without hypertension). Households with both hypertension and diabetes were less likely to mention any access reason (65.5%) compared with households without hypertension (68.1%).

The largest difference in reasons for non-utilisation of public facilities was technical quality for households with hypertension only (cited by 61.8% compared with 59.7% of those without), while the households that also had diabetes, the largest difference was for non-technical quality (60.4% vs 57.1%). These differences were similarly reflected among poor households with
Table 2  Facility utilisation patterns of households with biomarker data in the District Level Household and Facility Survey-4 by chronic disease status, 2012–2013

| Facility type                              | All households (N=336305) | Households without hypertension (N=156323) | Households with hypertension only (N=126597) | Households with hypertension and diabetes (N=53385) |
|--------------------------------------------|---------------------------|-------------------------------------------|---------------------------------------------|-----------------------------------------------------|
| N                                          | %                          | N                                         | %                                          | N                                                   |
| Public primary healthcare facility         | 67021 20.0                | 34104 21.8                                | 29904 19.7                                 | 8013 15.0                                           |
| Public hospital                            | 100379 29.9               | 47378 30.3                                | 37194 29.4                                 | 15807 29.6                                          |
| Private facility                           | 162382 48.3               | 71226 45.6                                | 62289 49.2                                 | 28867 54.1                                          |
| Other (non-medical shop, home treatment, other) | 6233 1.9                   | 3489 2.2                                  | 2111 1.7                                   | 633 1.2                                             |
| Missing                                    | 289 0.1                    | 126 0.1                                   | 98 0.1                                     | 65 0.1                                              |

Rural household location (N=208099) (N=101408) (N=78926) (N=27764)

| Facility type                              | N                          | N                          | N                          | N                      |
|--------------------------------------------|----------------------------|---------------------------|---------------------------|------------------------|
| Public primary healthcare facility         | 51400 24.7                 | 26745 26.4                | 19089 24.2                | 5566 20.1              |
| Public hospital                            | 59666 28.7                 | 29135 28.8                | 22369 28.3                | 8162 29.4              |
| Private facility                           | 91693 44.1                 | 42442 41.9                | 35710 45.3                | 13541 48.8             |
| Other (non-medical shop, home treatment, other) | 5185 2.5                    | 2997 3.0                   | 1708 2.2                  | 480 1.7                |
| Missing                                    | 155 0.1                    | 89 0.1                    | 51 0.1                    | 15 0.1                |

Urban household location (N=128206) (N=54915) (N=47671) (N=25621)

| Facility type                              | N                          | N                          | N                          | N                      |
|--------------------------------------------|----------------------------|---------------------------|---------------------------|------------------------|
| Public primary healthcare facility         | 15621 12.2                 | 7358 13.4                 | 5816 12.2                 | 2447 9.6               |
| Public hospital                            | 40713 31.8                 | 18243 32.2                | 14825 31.1                | 7645 29.9              |
| Private facility                           | 70690 55.2                 | 28784 52.5                | 26579 55.8                | 15326 59.9             |
| Other (non-medical shop, home treatment, other) | 1048 0.8                     | 492 0.9                   | 403 0.9                   | 153 0.8                |
| Missing                                    | 134 0.1                    | 38 0.1                    | 47 0.1                    | 49 0.2                |

*Sampling weight proportion/SD.

hypothesis and diabetes and among households with no health insurance. For example, among households with no health insurance, a higher proportion of households with hypertension only mentioned any technical quality reason (60.7% vs 58.9%) and a higher proportion of households with both hypertension and diabetes mentioned any non-technical quality reason (60.0% vs 56.8%) than households without hypertension (table 3).

Among rural households, a higher percentage reported any access reason and any technical quality reason than urban households, while urban households reported more non-technical quality reasons (online supplementary table 1).

**DISCUSSION**

In a large population-based household survey in 21 states and union territories in India, the majority of households elected private facilities for usual care; household choice of private facilities increased with the number of risk factors for cardiovascular disease in households with hypertension. Small but consistent differences in reasons for non-utilisation of the public health system suggest that quality of healthcare plays a stronger role in households with cardiovascular disease risk factors. This was particularly the case for uninsured households seeking private sector care, implying a direct financial burden on these households for the high cost of private healthcare. These findings reflect the misalignment between the public health system and people’s needs and expectations, and they provide important insights for health administrators and policymakers to strengthen the public healthcare system.

The choice of private health facilities, particularly among those with hypertension, is consistent with the literature on private sector preference in India. For example, a study in Karnataka, a state with relatively better healthcare than many of the states in India, found that the primary public health system lacked the medicines and human resources and infrastructure to treat and diagnose non-communicable diseases. These deficiencies were recognised by health system users, who, similar to participants in this study, cited quality factors such as poor availability and quality of medicines and fragmented healthcare in the public sector, as reasons for using private facilities.

While the majority of participants chose to utilise private facilities, a large proportion sought care from public hospitals. Bypassing the public primary healthcare for secondary or tertiary care is inefficient both to the patient and the health system. Seeking diagnostic services for hypertension and other cardiovascular disease risk factors at hospitals can also inhibit long-term care management, which is crucial to ensuring control of disease progression. Particularly in the context of
India’s new health insurance scheme which will provide coverage for hospital care, the trend towards hospital utilisation for diagnosis of non-communicable disease risk factors may continue. This may overburden the hospital system and detract from the goal of providing screening, diagnosis and treatment services of non-communicable diseases at the primary care level.

We found that among all households, technical quality was the most cited category for non-utilisation of public facilities for general illness, and households with cardiovascular risk factors were more likely to cite quality reasons compared with those without hypertension. Interestingly, households with hypertension and diabetes were less likely to mention access reasons, which may reflect that these households place more emphasis on quality when deciding where to seek care.

Quality healthcare as a motivator for facility choice is similarly reported in other studies in India and elsewhere. In Madhya Pradesh, India, residents travelled outside of their village to seek private healthcare at facilities staffed with qualified providers. In a study performed in Chhattisgarh, India, the majority of participants bypassed the local primary public healthcare facility when seeking care for a recent illness, and absence of providers and providers’ clinical competence influenced bypassing behaviours. Quality of care is particularly relevant when it is perceived to significantly impact the health outcome. Interestingly, in this study, households with hypertension or hypertension and diabetes were more likely to mention any quality reason (technical or non-technical quality) for non-utilisation of public facilities than households without hypertension. These findings may thus reflect the desire to seek health facilities with better quality of care for chronic illnesses. Non-utilisation of the primary care level for quality reasons is well documented in obstetric care, where the risk of maternal or newborn death is higher without the proper quality.

This study has important strengths. To our knowledge, this is the first study to use a large, population-based sample in India to assess reasons for non-utilisation of public facilities among those with hypertension. We used a combination of self-report and biomarker measures to define hypertension and diabetes, which allowed for a
Table 3 Among households that chose private facilities, reasons for non-utilisation of public facilities, District Level Household and Facility Survey-4, 2012–2013 (N=162 382)

| Reason for Non-Utilisation | Households with Hypertension only | Households with Hypertension and Diabetes | Difference in % | χ² p-value | Households without Hypertension | Difference in % | χ² p-value |
|---------------------------|-----------------------------------|-----------------------------------------|----------------|-----------|---------------------------------|----------------|-----------|
| All Households N=71 226 N=62 289 | 48 521 68.1 42 769 68.7 0.60 0.12 | 18 916 65.5 2.60 <0.0001 | 18 916 65.5 0.60 0.12 | 17 632 61.1 1.40 0.004 |
| Any Access Reason 42 510 59.7 38 461 61.8 2.10 <0.0001 | 17 437 60.4 3.30 <0.0001 | 17 437 60.4 3.30 <0.0001 |
| Any Non-Technical Quality Reason 40 667 57.1 36 307 58.3 1.20 0.001 | 23 333 80.8 2.30 <0.0001 | 23 333 80.8 2.30 <0.0001 |
| Average number of reasons provided (range: 0–12) 2.7 2.9 2.9 | 2.7 2.9 2.9 | 2.7 2.9 2.9 |
| Poor Households N=27 619 N=19 709 N=5553 | 19 615 71.0 14 157 71.8 0.80 0.17 | 3904 70.3 −0.70 0.46 | 3904 70.3 −0.70 0.46 |
| Any Access Reason 16 612 60.2 12 131 61.6 1.40 0.04 | 3343 60.2 0.00 0.96 | 3343 60.2 0.00 0.96 |
| Any Non-Technical Quality Reason 14 977 54.2 10 728 54.4 0.20 0.76 | 3096 55.8 1.60 0.14 | 3096 55.8 1.60 0.14 |
| Average number of reasons provided (range: 0–12) 2.7 2.9 2.9 | 2.7 2.9 2.9 | 2.7 2.9 2.9 |
| Households with no health insurance N=51 313 N=45 464 N=20 681 | 35 274 68.7 31 731 69.8 1.10 0.007 | 13 606 65.8 −2.90 <0.0001 | 13 606 65.8 −2.90 <0.0001 |
| Any Access Reason 30 221 58.9 27 603 60.7 1.80 <0.0001 | 12 452 60.2 1.30 0.02 | 12 452 60.2 1.30 0.02 |
| Any Non-Technical Quality Reason 29 159 56.8 26 304 57.9 1.10 0.01 | 12 416 60.0 3.20 <0.0001 | 12 416 60.0 3.20 <0.0001 |
| Average number of reasons provided (range: 0–12) 3.9 880 77.7 35 713 78.6 0.90 0.02 | 16 578 80.2 2.50 <0.0001 | 16 578 80.2 2.50 <0.0001 |
*Sampling weight proportion/SD.

comprehensive assessment of cardiovascular disease risk factors at the household level. A few limitations should be noted. First, we limited our sample to households that had both household survey data and complete biomarker data available (online supplementary table 2); moreover, prior diagnosis reported by household members could underestimate prevalence. Second, stated choice of the private or public health sector and reasons for non-utilisation of public facilities were available only at the household level, not the individual level. Therefore, it is possible that individuals with hypertension and diabetes might have provided different reasons for non-utilisation of the public health system than those given at the household level for general illness. Third, we were unable to distinguish private primary facilities from private hospitals in the data, as private sector hospitals in India may represent a facility at the primary care level (online supplementary table 3). Future studies should compare utilisation of public primary and private primary facilities to better understand utilisation patterns at the primary healthcare level. Fourth, all states and territories in India were not included in the DLHS-4, thus, limiting the generalisability of the results to the country level.

CONCLUSION
Choice of the private health sector and non-utilisation of public primary care are signals that the public primary health system is failing to meet the evolving health needs of the population. National level policies call for the primary public health system to provide screening and management of hypertension. However, this study highlights that quality of care was an important determinant of non-utilisation of public facilities. In the context of these policies and the increase in non-communicable diseases in India, the public primary health system needs to urgently prioritise high quality non-communicable disease care if current policy is to become a reality.

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