Equity in Healthcare Utilization and Reimbursement for Patients with Multiple Sclerosis in China: A Benefit Incidence Analysis Using Nationwide Patient-Reported Outcome Data

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BACKGROUND

- Multiple sclerosis (MS) is a chronic disabling neurological disease affecting both physical and mental functions, resulting in impaired quality of life for patients and their caregivers. In 2018, MS was enrolled in China's *First List of Rare Disease*.
- Studies estimated the yearly direct medical cost of MS in China ranging from 27,656 RMB (~$4,023) to 58,668 RMB (~$8,536)[1,2].
- With the cost of illness research on MS being extensively studied worldwide, however, little is known about the equity concern of utilization and reimbursement.

OBJECTIVES

- To evaluate the distribution of utilization, cost, and reimbursement received by MS patients with different socio-economic status (SES) in China.

METHODS

- We conducted an online survey in a nationwide MS patient community in China in July 2022.
  - A total of 740 patient community members responded the survey, and 7 invalid responses were excluded due to no formal diagnosis
  - Data includes demographics, health status, healthcare utilization, and associated costs
- We performed a benefit incidence analysis (BIA), stratified patients using annual household income per capita and calculated concentration index (CI).
- Direct standardization using health utility (measured by EQ-5D-5L) and self-reported disability status scale (SRDSS) was applied in the analysis.

RESULTS

- A total of 733 patients were included in the analysis (Table 1). The average number of outpatient (OP) visits per year was 5.9 (SD=6.21), while the richest quintile had 1.5 more visits than the poorest. The average number of inpatient (IP) visits per year was 1.5 (SD=2.7) with no significant difference across SES.
- The annual direct medical cost per patient was 44,613 RMB (~$6,482), and the reimbursement rate was 41.4% (SD=0.3). However, 36.4% of the medical cost from the poorest quintile was reimbursed compared to 47.7% among the richest quintile.
- BIA results suggested as follows (Figure 1):
  - **A pro-rich distribution of OP utilization**: The CIs of OP vs. IP visits was 0.02 vs. -0.14 ($p<0.05$) , showing lower OP and higher IP utilization for the poor.
  - **A pro-rich distribution of medical cost and reimbursed expenses**: The CIs of direct medical cost and reimbursed cost were 0.07 and 0.05 ($p<0.05$), showing lower medical expenses and higher amount of reimbursement received by more affluent patients
  - **A pro-poor distribution of reimbursement rate:** The CI of reimbursement rate was -0.02 ($p<0.05$), indicating higher level financial protection for poorer patients

Table 1. Statistics description of MS patients stratified by SES groups (N=733)

Variables	Mean (SD)	Q1 (poorest)	Q2	Q3	Q4	Q5 (richest)
Age, years	34.3 (10.1)	35.4 (10.0)	34.1 (9.9)	33.8 (10.1)	34.1 (11.1)	34.2 (9.6)
Female, %	67.7% (0.5)	62.9% (0.5)	68.4% (0.5)	69.6% (0.5)	72.1% (0.5)	65.8% (0.5)
Utility (EQ-5D-5L)	0.725 (0.3)	0.633 (0.3)	0.675 (0.3)	0.758 (0.3)	0.763 (0.3)	0.804 (0.3)
Number of OP visits/yr	5.9 (6.2)	5.2 (5.9)	5.6 (6.1)	5.6 (6.1)	6.5 (6.6)	6.7 (6.4)
Number of IP visits/yr	1.5 (2.7)	2.1 (3.6)	1.3 (2.2)	1.6 (3.0)	1.3 (2.1)	1.2 (2.1)
Direct medical cost	44,613.0 (49,709.6)	33509.7 (39978.4)	48819.2 (62446.0)	46227.3 (45512.6)	46197.9 (52153.1)	48604.7 (44271.1)
Reimbursed cost	22,321.0 (35,160.0)	15518.3 (26189.6)	25709.1 (48441.9)	23554.0 (32865.0)	21791.3 (33809.3)	25072.6 (29302.4)
Reimbursement rate	41.4% (0.3)	36.4% (0.3)	41.6% (0.3)	44.1% (0.3)	37.0% (0.3)	47.7% (0.3)

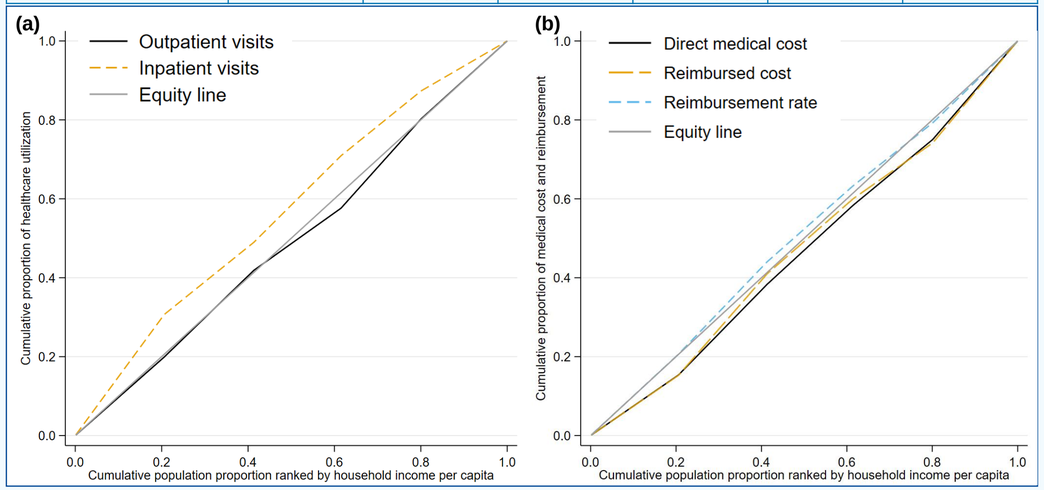

Figure 1. Concentration index of healthcare utilization (a) and medical cost (b)

DISCUSSION & CONCLUSIONS

- Substantial variations exist in utilization and reimbursement received by MS patients across SES groups.
- The pro-rich OP utilization suggested a deprivation of capability in early diagnosis and treatment for the poor. The reimbursement rate was pro-poor, however, the actual benefit (i.e., reimbursed costs) received by patients was pro-rich. Overall, patients with higher SES experienced more OP utilization and were covered with a higher amount of reimbursement.
- Policymakers should be aware of the inequitable utilization and reimbursement of MS patients and pay attention to allocation outcomes of public funding among populations.

REFERENCES

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