Introduction

Equity in healthcare is defined as equal access for equal need, equal utilisation for equal need, and equal quality of care for all (1); it is the basis of the universal health coverage (UHC) concept. UHC can be achieved by ensuring all people can obtain health services they require without experiencing financial hardship (2), which is an aspiration of all countries. Progress towards UHC in the Southeast Asia region has been excellent in both preventive and curative care services (3). Malaysia has emphasised to ensure access to quality healthcare services across all communities (4), and has claimed to have achieved UHC in terms of financial protection and small out-of-pocket payments, as well as equitable usage distribution of public services (5).

Malaysia’s healthcare system exhibits a dichotomous model of healthcare services with a public-private mix. Public healthcare providers in Malaysia impose a nominal charge (or exemption) on users, focusing to cater the poor population and those in rural areas to ensure equitable access for those in need, whereas...
private sector providers are funded primarily by out-of-pocket payment and private insurance, and are usually located in urban areas (6). Access to and utilisation of private facilities is usually limited to richer society owing to affordability constraints (7).

Socioeconomic status (SES) has been widely used in studies and touted as a good predictor of health (8), because it is correlated with education, income, and occupation (or a composite of these three), and ties to affordability of goods consumption (9). Regarding inequitable spending and health services utilisation, a local study has reported that the richer population (higher SES) has a higher utilisation of private sector providers, whereas lower SES populations utilise public healthcare more (10). Thus, the patterns of public and private utilisation are influenced by SES, and equity in healthcare utilisation is directly linked with SES (11). Indeed, disparities in healthcare utilisation across the SES segments can be observed.

Presently, rising healthcare costs is a phenomenon faced by most developing countries and has put more constraints on the public sector (12). Theoretically, healthcare utilisation shifts from private to public sector when users can no longer afford private sector services. Reducing poor–rich inequity in healthcare has recently become one of the most important priorities of national governments and international organisations, and promoting equity is one of the main challenges of the health sector. The establishment of the value of these differences and quantification of the size of inequity are prerequisites for achieving this goal. Therefore, it is important to determine the current extent of inequality that possibly exists in Malaysia and how it has changed in the last decades. This study aimed to assess equity in healthcare utilisation by household SES over time using five series of survey data of the National Health Morbidity Survey (NHMS), indicated by concentration index (CI).

Methods

Data Source

Related information on population characteristics and healthcare utilisation was sourced from NHMS, a nationally representative household survey that has been conducted periodically since 1986. This survey has been an important platform in providing population data for Malaysian health monitoring. The design of the questionnaire has undergone slight changes over time, implying that some estimates may not be fully comparable. For example, the 1986 NHMS did not include questions on dental care utilisation and the 2006 NHMS did not capture inpatient days. Nonetheless, NHMS data are the most comprehensive and best sources available at the population level. Details of the survey methodology are described elsewhere (13).

Outcome and Associated Variables

In the present study, utilisation was defined as the self-reported number of visits to any health facility (for outpatient and dental care) and number of days being hospitalised for inpatient care (with the exception of 2006, when number of visits was used), including separate use of public and private providers. Recall period was two weeks for outpatient care, and one year for inpatient and dental.

The SES of individual respondents was measured using the consumption per adult equivalents (AE) approach: individuals are ranked based on household expenditure, accounting for the total household members (adults and children). This approach has been widely used by the Organisation for Economic Co-operation and Development (OECD) countries (14), and its detailed information has been described elsewhere (15). SES was categorised into five quintiles, where 20% of the poorest and those in fifth quintile are the richest 20%. Missing data on expenditure variable were imputed relative to education level and employment status.

Statistical Analysis

Relative inequalities of the utilisation distribution were measured using CI across the SES segments. Ranging from −1 to +1, CI summarised the direction and degree on the concentration area of utilisation. Negative values implied that the utilisation was concentrated among the poor (pro-poor) and vice-versa for positive values (pro-rich). A value of 0 indicated equal distribution across SES. Details on the concept and formula have been described elsewhere (16). All analyses were conducted using STATA version 13 (Stata Corp, Texas, USA), taking into account the sample weight and study design, with statistical significance set at $P < 0.05$. 
Results

Ideally, utilisation proportion should be distributed equally across the five SES segments, giving 20% value for each quintile. Any proportion exceeding 20% can be considered over-utilisation (and vice-versa). For the total inpatient care (Table 1), the first, second, and fourth quintiles (Q1, Q2, and Q4, respectively) generally had slightly more utilisation. For outpatient care, the values were stable at around 20% across the period and SES segments. For dental care, the difference was more distinguishable: the richer populations were utilising it more, especially the Q5, from year 2011 onwards.

When total utilisation was separated to public (Table 2) and private (Table 3) use, a different trend was observed. The two poorest quintiles generally had more utilisation of the public sector. Meanwhile, the richest population, particularly Q5, noticeably had lower public sector utilisation. This trend applied for both inpatient and outpatient care. For the private sector, clearly only the two richest quintiles utilised them, especially Q5 for inpatient care.

Another perspective to express equality is CI. The corresponding CI showed that the overall inpatient care utilisation was generally equal or slightly pro-poor throughout the years of the survey (Table 1). Outpatient utilisation was slightly pro-rich prior to 2006, and then become equal, before changing back to slightly pro-rich in 2015. As for dental care visits, it remained pro-rich since 1996 and persisted throughout the recent survey in 2015.

Inpatient utilisation at public providers showed a persistent trend over the years, as demonstrated by the CI (Table 2). The trend exhibited increased utilisation among the poorer population, with a CI range between −0.11 and −0.15. Outpatient utilisation at public providers exhibited similar trends. CI was −0.07 in 1986 and climbed to −0.20 (becoming more pro-poor); outpatient utilisation remained pro-poor until 2015.

Table 1. Distribution of health utilisation to public and private providers by SES quintile, 1986–2015

| Survey Year | Poorest 20% | Q2 | Q3 | Q4 | Richest 20% | Concentration Index (CI) | P-value |
|-------------|-------------|----|----|----|-------------|--------------------------|---------|
| 1986        | 22          | 22 | 10 | 26 | 21          | −0.01                    | 0.910   |
| 1996        | 22          | 22 | 19 | 20 | 18          | −0.06                    | 0.017   |
| 2006        | 21          | 19 | 20 | 18 | −0.03       | 0.021                    |
| 2011        | 10          | 16 | 27 | 13 | −0.06       | 0.360                    |
| 2015        | 20          | 25 | 12 | 13 | −0.02       | 0.416                    |
| 1986        | 22          | 22 | 24 | 25 | 21          | −0.13                    | <0.001  |
| 1996        | 16          | 18 | 20 | 22 | 25          | 0.10                     | <0.001  |
| 2006        | 17          | 20 | 20 | 21 | 22          | 0.04                     | <0.001  |
| 2011        | 16          | 20 | 20 | 21 | 18          | 0.01                     | 0.658   |
| 2015        | 24          | 22 | 17 | 17 | 11          | −0.13                    | <0.001  |

Source: NHMS 1986–2015

Notes: *Based on inpatient days, with exception of NHMS 2006 which uses inpatient visits
*Based on outpatient medical visits
*Based on dental care visits, no data for NHMS 1986
Meanwhile, utilisation at private providers showed the opposite tendencies (Table 3). Inpatient care utilisation showed high pro-rich values ranged from 0.31 to 0.52 throughout the years the survey was conducted. Similarly, outpatient utilisation was steadily pro-rich, although not to the extent of inpatient care. CI ranged between 0.13 and 0.26. Nonetheless, the pro-rich trend slightly decreased throughout the years.

Table 2. Distribution of health utilisation to public providers by SES quintile, 1986–2015

| Survey Year | SES Quintile | Concentration Index (CI) | P-value |
|-------------|--------------|--------------------------|---------|
| Inpatient¹  |              |                          |         |
| 1986        | 24 25 11 28 13 | −0.11 0.196            |         |
| 1996        | 25 22 20 20 14 | −0.12 < 0.001          |         |
| 2006        | 25 23 21 19 12 | −0.12 < 0.001          |         |
| 2011        | 23 28 16 25 8  | −0.15 0.061           |         |
| 2015        | 27 28 19 18 8  | −0.18 < 0.001          |         |
| Outpatient² |              |                          |         |
| 1986        | 22 22 21 21 14 | −0.07 < 0.001          |         |
| 1996        | 29 27 19 15 10 | −0.21 < 0.001          |         |
| 2006        | 4 10 10 24 52  | 0.46 < 0.001          |         |
| 2011        | 4 13 14 34 35  | 0.35 < 0.001          |         |
| 2015        | 7 8 11 38 36   | 0.40 < 0.001          |         |

Source: NHMS 1986–2015
Notes: ¹Based on inpatient days, with exception of NHMS 2006 which uses inpatient visits
²Based on outpatient medical visits

Table 3. Distribution of health utilisation to private providers by SES quintile, 1986–2015

| Survey Year | SES Quintile | Concentration Index (CI) | P-value |
|-------------|--------------|--------------------------|---------|
| Inpatient¹  |              |                          |         |
| 1986        | 15 4 2 17 63 | 0.52 0.080             |         |
| 1996        | 11 10 14 22 42 | 0.31 < 0.001        |         |
| 2006        | 4 10 10 24 52 | 0.46 < 0.001          |         |
| 2011        | 4 13 14 34 35 | 0.35 < 0.001          |         |
| 2015        | 7 8 11 38 36  | 0.40 < 0.001          |         |
| Outpatient² |              |                          |         |
| 1986        | 10 13 18 23 36 | 0.26 < 0.001          |         |
| 1996        | 11 16 19 26 28 | 0.19 < 0.001          |         |
| 2006        | 14 17 19 26 25 | 0.13 < 0.001          |         |
| 2011        | 10 15 19 29 27 | 0.20 < 0.001          |         |
| 2015        | 11 21 25 22 21 | 0.24 0.031           |         |

Source: NHMS 1986–2015
Notes: ¹Based on inpatient days, with exception of NHMS 2006 which uses inpatient visits
²Based on outpatient medical visits

Discussion

The results of the present study showed the inequity in healthcare utilisation between the rich and the poor and the slight changes in trends over time in Malaysia. The survey, started in 1986 and most recently conducted in 2015, revealed that the overall utilisation for outpatient and inpatient visits was close to being equal, based on the CI values. However, inequalities can
be seen when the analysis divided the providers to public and private. The pro-poor utilisation (of inpatient and outpatient care) in public providers and pro-rich pattern in the private sector generally persisted over time. Meanwhile, dental care utilisation was pro-rich throughout the survey period.

Findings from this study match the outcomes in neighbouring and other developing countries. Utilisation in low- and middle-income countries has shown disparities between the rich and the poor in both inpatient and outpatient care. In India, the inequity in outpatient and inpatient utilisation was demonstrated across the rural and urban populations in a national survey (17), where pro-rich utilisation was observed across all states. In Thailand, with the adaptation of a universal health insurance, healthcare utilisation in outpatient care grew more concentrated among the poor, whereas inpatient care was highly utilised by the better off. However, two consecutive national surveys in 2001 and 2005 demonstrated that the inequity gap was closing, although the pro-rich and pro-poor utilisation between the two health sectors persisted (18). In contrast, gaps were widening between the rich and the poor from 1998 to 2007 in healthcare utilisation in the Philippines (19). Nonetheless, the lack of recent findings on equity in the Philippines limits the comparison to be drawn with Malaysia. Despite the implementation of a National Health Insurance Program in Philippines and progressing towards UHC, disparities remained in terms of healthcare services utilisation.

In Malaysia, the possible reasons for inequity in healthcare utilisation between the rich and the poor are rooted in the division of services into the public and private sectors. Private providers are most commonly located in urban areas, based on the demands of the affluent local community, thereby increasing the healthcare utilisation of private providers (5). The domination of the rich in the utilisation of inpatient care in the private sector may also be attributed to the sector requiring out-of-pocket payment and the availability of insurance reimbursement to the rich. Meanwhile, the pro-poor utilisation of public providers may be due to the affordability of the services, which are largely funded by the government. The variation in SES resulted in discrepancies in the use of such services. As for the pro-rich utilisation of dental services, the reason may be the geographic location of the dental facilities, high cost of services, and post-operative complications (20). A consequence of such disparities is the poor health outcome and poor health status in the lower SES populations.

This study has several limitations. First, methodological differences between surveys and inconsistencies in the survey questions have been reported (10). Second, the cross-sectional survey design could not directly establish causal relations. Indeed, there are many other determinants, such as acceptability and quality of care, which can affect healthcare utilisation (21). Third, this study did not consider health needs across SES segments; those with higher needs should have higher utilisation. Future work in which the analysis further segregates the sample into urban and rural users, as well as male and female, or uses stepwise age would show more specific patterns of utilisation in Malaysia. The inclusion of health need variables in the analysis could also provide a better view on healthcare utilisation equity.

Conclusion

The effect of pro-poor utilisation in the public sector was generally cancelled out by the pro-rich utilisation in the private sector, leading to a total health utilisation that is almost equal. Although it is commendable that the public sector exhibits a pro-poor utilisation, as desired by the government, it is also equally important to formulate strategies to allow and attract healthcare utilisation of the private sector, which is currently dominated by the richest (Q5), especially by users in rural and remote areas, to reduce congestion in the public sector and improve equity in the utilisation of healthcare services. The early hypothesis on the shift in healthcare utilisation from private to public sector was not clearly seen. This study found slight increases of recent private utilisation among Q5, which may indicate that only the Q5 population can afford the private sector, especially for inpatient care.

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Conflict of Interest

None.

Ethics of Study

Ethical approval was obtained from Medical Research & Ethical Committee with reference number (5) KKM/NIHSEC/F15-657.

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Authors’ Contributions

Conception and design: NSAB, JAH
Analysis and interpretation of the data: AM, JAH
Drafting of the article: NSAB, JAH
Critical revision of the article for important intellectual content: NSAB, JAH
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References

1. Braveman PA, Cubbin C, Egerter S, Williams DR, Pamuk E. Socioeconomic disparities in health in the United States: What the patterns tell us. Am J Public Health. 2010;100(Suppl 1):S186–S196. https://doi.org/10.2105/AJPH.2009.166082

2. Kieny M-P, Evans DB. Universal health coverage. East Mediterr Health J [Internet]. 2013;19(4):305–306. Available from: http://www.ncbi.nlm.nih.gov/pubmed/23882953

3. Minh H Van, Pocock NS, Chaiyakunapruk N, Duc HA, Hanvoravongchai P, Lim J, et al. Progress toward universal health coverage in ASEAN. Glob Health Action. 2014;7:25856. https://doi.org/10.3402/gha.v7.25856

4. Economic Planning Unit. Eleventh Malaysia Plan: 2016–2020, anchoring growth on people. Putrajaya: Percetakan Nasional Malaysia Berhad; 2015.

5. Ng CW. Universal health coverage assessment: Malaysia. Global Network for Health Equity. 2015;November:1–14. Available from: https://umexpert.um.edu.my/file/publication/00008779_131499.pdf

6. Safurah. Malaysia health system review. Health Systems in Transition. 2013;3(1):1–102.

7. Yu CP, Whynes DK, Sach TH. Equity in health care financing: the case of Malaysia. Int J Equity Health [Internet]. 2008;7(1):15. Available from: http://equityhealthj.biomedcentral.com/articles/10.1186/1475-9276-7-15

8. Zurina K, Shah Zaidi MA. Health care utilization among the elderly in Malaysia: does socioeconomic status matters? Pros Perkem VIII. 2015;3(2013):1141–1152.

9. Miech RA, Hauser RM. Socioeconomic status and health at midlife : a comparison of educational attainment with occupation-based indicators. Annals of Epidemiology. 2001;11(2):75–84. https://doi.org/10.1016/S1047-2797(00)00079-X

10. Rannan-Eliya RP, Anuranga C, Manual A, Sararaks S, Jailani AS, Hamid AJ, et al. Improving health care coverage, equity, and financial protection through a hybrid system: Malaysia’s experience. Health Aff. 2016;35(5):838–846. https://doi.org/10.1377/hlthaff.2015.0863
11. Filec D, Davidovich N, Novack L, Balicer RD. Is socioeconomic status associated with utilization of health care services in a single-payer universal health care system? Int J Equity Heal. 2014;13(1):115. https://doi.org/10.1186/s12939-014-0115-1

12. Popescu GH. Economic aspects influencing the rising costs of health care in the United States. Am J Med Res. 2014;1(1):47–52.

13. Institute for Public Health. National Health & Morbidity Survey 2015, Volume I: methodology and general findings. Kuala Lumpur: Ministry of Health; 2015.

14. van Doorslaer E, O’Donnell O, Rannan-Eliya RP, Somanathan A, Adhikari SR, Garg CC, et al. Catastrophic payments for health care in Malaysia. Health Econ. 2007;16:1159–1184.

15. O’Donnell OA, Wagstaff A. Analyzing health equity using household survey data: a guide to techniques and their implementation. Washington DC: World Bank Publications; 2008.

16. van Doorslaer E, O’Donnell O, Rannan-Eliya RP, Somanathan A, Adhikari SR, Garg CC, et al. Effect of payments for health care on poverty estimates in 11 countries in Asia: an analysis of household survey data. Lancet. 2006;368(9544):1357–1364. https://doi.org/10.1016/S0140-6736(06)69560-3

17. Ghosh S. Equity in the utilization of healthcare services in India: evidence from national sample survey. Int J Health Policy Manag. 2014;2(1):29–38. https://doi.org/10.15171/ijhpm.2014.06

18. Yiengprugsawan V, Carmichael GA, Lim L, Seubsman S, Sleigh AC. Explanation of inequality in utilization of ambulatory care before and after universal health insurance in Thailand. Health Policy Plan. 2011;26(2):105–114. https://doi.org/10.1093/heapol/czq028

19. Son HH. Equity in health and health care in the Philippines. ADB Economics Working Paper Series. Manila; 2009. p. 35.

20. Al-Hussyeen AJA. Factors affecting utilization of dental health services and satisfaction among adolescent females in Riyadh City. Saudi Dent J [Internet]. 2010;22(1):19–25. Available from: http://dx.doi.org/10.1016/j.sdentj.2009.12.004

21. Peters DH, Garg A, Bloom G, Walker DG, Brieger WR, Hafizur Rahman M. Poverty and access to health care in developing countries. Ann N Y Acad Sci. 2008;1136:161–171. https://doi.org/10.1196/annals.1425.011