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Inequalities in Unmet Needs for Healthcare Services Among Middle-Aged and Older Adults in China

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ABSTRACT

Unmet needs for healthcare services are widely recognized as an indicator of inequalities in healthcare access and utilization. This study estimated inequalities in unmet needs for healthcare services as well as their contributing factors and reasons among middle-aged and older adults in China. Results indicated that 30.47% and 5.69% of the middle-aged and older population in China reported unmet needs for outpatient and inpatient services, respectively. Mostly pro-poor inequalities concerned unmet needs for both rural and urban residents. The coverage of public health insurance and individuals' health status contributed most to the inequalities in the unmet needs identified. The most prevalent reason for unmet needs was affordability, especially for poor or rural respondents. Despite the rapid development of universal healthcare, unmet needs for healthcare services still existed and remained high among people living in rural areas and with low incomes in China. Policy interventions should focus on improving the public health insurance system and targeting financial barriers to obtaining care, particularly vulnerable populations in China.

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KEYWORDS

China; inequalities; middle-aged and older people; unmet healthcare needs

Introduction

Accessible and equitable healthcare services are a fundamental public health concern worldwide. According to the World Health Organization (WHO), at least half of the world's 7.3 billion population report not receiving the essential healthcare services they needed (Njagi et al., 2020). In low- and middle-income countries (LMICs), 5.7–8.4 million deaths each year were attributed to a lack of appropriate healthcare services (O'Donnell, 2007). Universal Health Coverage (UHC), one of the 2030 Sustainable Development Goals (SDGs), is driving the global health agenda and becoming an ambition for many nations at all stages of development (Vongmongkol et al., 2021). The UHC works to achieve equity, health, financial well-being, and economic development, ensuring that everyone has access to quality, affordable health

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services when needed (Tao et al., 2020). Self-perceived unmet needs for healthcare services, defined as “the difference between the healthcare services deemed necessary to treat a particular health problem and the actual services received,” are gradually used as a critical indicator for monitoring the accessibility and equity of healthcare use (Carr & Wolfe, 1976). The issues of unmet healthcare needs can lead to increasing health inequalities and affect the achievement of UHC (C. Zhou et al., 2015).

In recent years, increasing research has demonstrated substantial inequalities in unmet healthcare needs (Devaux, 2015). Concentration indices (CInds) have been widely used to measure income-related inequality and to assess disparities in the unmet needs for healthcare services (Urbanos-Garrido, 2020). According to previous studies, there are usually more unmet needs for healthcare services among women, young, rural, unemployed residents, and those with low income, poor health, and without insurance (Allan & Ammi, 2021; Başar et al., 2021; Fiorillo, 2020; Hwang, 2018). In addition, affordability and longer waiting times largely contributed to unmet healthcare needs (Quintal et al., 2023). Nevertheless, most of the relevant research has been conducted in developed nations such as Canada, Europe, and the United States, with little study in developing countries such as China (Ohonba et al., 2023). There is also relatively limited information available regarding the factors contributing to the inequalities in unmet needs for healthcare services. Yet this information is indispensable when working toward a more equitable healthcare system and even the achievement of UHC.

As the largest developing country, China has experienced a dramatic transition in the healthcare system over the past decades. The market-oriented economic reforms since 1978 have resulted in widespread discontent among Chinese people toward inaccessible and unaffordable healthcare services (Tao et al., 2020). In 2009, China officially launched a new round of healthcare reform and made tremendous efforts to achieve the long-term objective of UHC – providing affordable and equitable basic healthcare for all (Qingyue Meng & Xu, 2014). The Chinese government further increased fiscal investments in healthcare to improve health insurance coverage and strengthen the healthcare system (Y. Li et al., 2023). These measures led to improvements in health access, financial protection, and population satisfaction (Qun Meng et al., 2012; Ta et al., 2020). Currently, China has almost established a healthcare system through three-level platforms and completed universal health insurance coverage, with the health insurance coverage rate dramatically rising from 22% in 2003 to nearly 97% in 2019 (S. Zhou et al., 2021). However, gaps remained in the equitable and efficient utilization of healthcare resources due to changes in demographic structures, income inequality, and rural-urban disparities (Yip et al., 2019).

A small but emerging number of studies have estimated the prevalence of unmet healthcare needs in China. For example, Sheng et al. (2021)

estimated unmet healthcare needs among China's urban residents by using a provincial dataset (Sheng et al., 2021). They found that unmet healthcare needs at the national level were 12.6% in 2018, and regions with high medical prices confronted more unmet healthcare needs. Gao et al. (2022) explored the magnitude of unmet healthcare needs and their correlates, including age, sex, marital status, employment status, etc., among middle-aged and elderly, and demonstrated that unmet healthcare needs are more concentrated among people living with multiple health conditions and mental health problems (Gao et al., 2022). However, most studies have focused on the prevalence of unmet healthcare needs or were limited to cross-sectional data, and little is known about how unmet needs vary across China's rural-urban settings. We address the limitations of the previous studies by examining the complexity of inequalities in unmet healthcare needs in China through decomposition analysis to unravel the factors contributing to these inequalities. Moreover, we considered variations across different income groups and between rural and urban populations and used longitudinal data to explore the evolving trends of healthcare inequality. This study contributed to assessing the performance of China's healthcare system by focusing on unmet healthcare needs among middle-aged and older adults over time and innovatively explored the distribution and determinants of inequalities in unmet healthcare needs, which help to capture the need-service gap in the aging Chinese society.

Methods

Data sources

Data were obtained from the three waves of the China Health and Retirement Longitudinal Study (CHARLS) conducted in 2011, 2013, and 2015. Due to its high quality and national representativeness, this micro-level database on middle-aged and older individuals has been utilized extensively in China for geriatrics-focused clinical, public health, and sociological research. Information on respondents, including socioeconomic status, demographic characteristics, health behaviors, lifestyles, and health status, was collected through face-to-face interviews. Importantly, CHARLS is the only publicly accessible database in China that gathers information on unmet needs for healthcare services on a national scale. The 17,708 individuals in the 2011 baseline survey were followed up every two or three years; detailed sampling and variable measurement descriptions were reported elsewhere (H. Li et al., 2022). The inclusion criteria for the sample were: (1) at least 45 years old; (2) no missing values in key variables. In total, 17,545 respondents in CHARLS 2011, 18,433 respondents in CHARLS 2013, and 20,936 respondents in CHARLS 2015 were included in our study.

Measures

Unmet needs variables

We computed two kinds of unmet needs for healthcare services, specifically (1) the unmet needs for outpatient services and (2) the unmet needs for inpatient services. Dichotomous variables were constructed based on the question that asked respondents whether they sought outpatient care in the past month or inpatient care in the last year when needed. Notably, unmet need for outpatient services is defined as follows: having experienced illness in the past month but without any outpatient experience, which is not caused by “Already Under Treatment,” “Illness Is Not Serious, and Don’t Need Treatment.”

Reasons for not seeking or receiving outpatient and inpatient services were grouped into five dimensions: (1) Affordability, related to the cost of healthcare services (outpatient services: no money; inpatient services: not enough money); (2) Availability, related to availability and accessibility of services (outpatient services: inconvenient traffic; inpatient services: no ward available); (3) Acceptability, the extent to which people receiving healthcare services consider it to be appropriate (outpatient services: poor service in the hospital, treatment is not useful; inpatient services: hospital quality poor, problems too serious); (4) Personal reasons, the subjective belief of the necessities of receiving healthcare services (outpatient services: no time; inpatient services: not willing to go to the hospital); (5) Other reasons.

Contributing factors

Using the healthcare utilization model proposed by Andersen, the independent variables were classified into three major groups, i.e., predisposing factors, enabling factors, and need factors (Andersen, 1995). Predisposing factors include individual characteristics (e.g., age, gender). Enabling factors involve the resources for individuals to access social services (e.g., public insurance, education, residence). Need factors include individuals’ perceived and evaluated functional capacity, symptoms, and general state of health (e.g., self-rated health, living habits).

The measurement for variables used in the analysis can be seen in Appendix Table 1.

Statistical methods

Descriptive analysis and plotting were first carried out to describe unmet needs for outpatient and inpatient services segregated by rural-urban residence and income deciles. Furthermore, the CInd and its decomposition analysis were conducted to examine the extent of inequalities in unmet

Table 1. Descriptive analysis.

Group	2011	2013	2015
Gender, n (%)	<i>N</i> = 16946	<i>N</i> = 17925	<i>N</i> = 19663
Female	8669 (51.16)	9214 (51.4)	10087 (51.3)
Male	8277 (48.84)	8711 (48.6)	9576 (48.7)
Age, mean (SD)	<i>N</i> = 16785	<i>N</i> = 17813	<i>N</i> = 19573
	59.1 (9.76)	59.92 (9.91)	60.18 (10.13)
Residence, n (%)	<i>N</i> = 16946	<i>N</i> = 17925	<i>N</i> = 19664
Urban	6832 (40.32)	7194 (40.13)	7923 (40.29)
Rural	10114 (59.68)	10731 (59.87)	11741 (59.71)
Household income per capita, mean (SD)	<i>N</i> = 10277	<i>N</i> = 9422	<i>N</i> = 7495
	7522.32 (16116.07)	8372.42 (17308.15)	8532.92 (22244.81)
Educational attainment, n (%)	<i>N</i> = 16940	<i>N</i> = 17920	<i>N</i> = 19656
Elementary school or below	11298 (66.69)	11825 (65.99)	13617 (69.28)
Middle or High school	4865 (28.72)	5273 (29.43)	5229 (26.6)
Vocational school or above	777 (4.59)	822 (4.59)	810 (4.12)
Work status, n (%)	<i>N</i> = 16666	<i>N</i> = 17573	<i>N</i> = 19249
No	6284 (37.71)	6131 (34.89)	6694 (34.78)
Yes	10382 (62.29)	11442 (65.11)	12555 (65.22)
Self-rated health, n (%)	<i>N</i> = 16921	<i>N</i> = 17068	<i>N</i> = 18453
Poor	12988 (76.76)	13056 (76.49)	13880 (75.22)
Good	3933 (23.24)	4012 (23.51)	4573 (24.78)
Hypertension, n (%)	<i>N</i> = 16830	<i>N</i> = 17142	<i>N</i> = 16712
No	12374 (73.52)	12227 (71.33)	11023 (65.96)
Yes	4456 (26.48)	4915 (28.67)	5689 (34.04)
Diabetes, n (%)	<i>N</i> = 16766	<i>N</i> = 17003	<i>N</i> = 16595
No	15718 (93.75)	15701 (92.34)	14946 (90.06)
Yes	1048 (6.25)	1302 (7.66)	1649 (9.94)
Tobacco use, n (%)	<i>N</i> = 16286	<i>N</i> = 14411	<i>N</i> = 19614
No	11499 (70.61)	11508 (79.86)	14039 (71.58)
Yes	4787 (29.39)	2903 (20.14)	5575 (28.42)
Alcohol use, n (%)	<i>N</i> = 16919	<i>N</i> = 17830	<i>N</i> = 19607
No	11300 (66.79)	11650 (65.34)	12668 (64.61)
Yes	5619 (33.21)	6180 (34.66)	6939 (35.39)
Public insurance, n (%)	<i>N</i> = 16869	<i>N</i> = 17774	<i>N</i> = 16948
No	1327 (7.87)	819 (4.61)	1582 (9.33)
Yes	15542 (92.13)	16955 (95.39)	15366 (90.67)
Unmet needs for outpatient services, n (%)	<i>N</i> = 1433	<i>N</i> = 2011	<i>N</i> = 2338
Overall	486 (33.91)	533 (26.50)	749 (32.04)
Urban	147 (27.95)	191 (23.21)	242 (28.3)
Rural	339 (37.38)	342 (28.79)	507 (34.19)
Unmet needs for inpatient services, n (%)	<i>N</i> = 15628	<i>N</i> = 13749	<i>N</i> = 19612
Overall	717 (4.59)	935 (6.80)	1153 (5.88)
Urban	260 (4.1)	360 (6.68)	419 (5.31)
Rural	457 (4.92)	575 (6.88)	734 (6.27)

needs, as well as to identify the main contributors. Finally, the reasons for unmet healthcare needs were analyzed.

Specifically, CInd is a value ranging from 1 to +1, with negative values indicating that inequalities are more prevalent among those with lower socioeconomic status (i.e., “pro-poor”) and positive values indicating “pro-rich” inequalities with respect to the outcome variable. When quantifying the extent of income inequality in cases of unmet needs, we used Erreygers’ correction for binary variables, so that CInds derived would satisfy desirable properties like the linear transformation of the main variables, not affecting the main values of the index (Erreygers, 2009). In other words, the measured degree of inequalities is the same, regardless

of the fundamental scale of measurement identified for evaluating binary variables.

We then performed a decomposition analysis to identify contributors to the inequality in unmet needs for outpatient and inpatient services. It relies on the supposition of a linear model linking the unmet needs to the observed contributing factors (Wagstaff et al., 2007). As the dependent variables (unmet needs for healthcare services) in our study are binary, we used a logit model for the decomposition analysis. It also provides more detailed information and raises potential areas for policy intervention.

Results

Prevalence of unmet needs for healthcare services

Results shown in Table 1 summarize unmet needs for outpatient and inpatient services. The average percentage of unmet needs for outpatient services was 30.47%, with a decline from 33.92% in 2011 to 31.89% in 2015. The average proportion of unmet needs for inpatient services was 5.69%, with 4.55% in 2011 and 5.82% in 2015. Unmet needs for outpatient and inpatient services among rural residents were higher than those in urban areas. From 2011 to 2015, the prevalence of unmet needs for outpatient services decreased from 37.38% to 33.2% in rural areas and 27.95% to 26.32% in urban areas, respectively, whereas the prevalence of unmet needs for inpatient services increased by 1.35% among rural residents and 1.21% among urban residents. Moreover, Appendix Table 2 indicates the change in unmet needs across income deciles.

Income-related distribution of the unmet needs for healthcare services

Figure 1 shows how unmet needs for outpatient services and inpatient services differed by income level. The overall trend was generally consistent for urban and rural respondents. With increasing economic deciles, the frequency of unmet needs for outpatient services decreased. For outpatient services, people in the lowest third income group reported the highest unmet needs (39.94%). The lowest percentage of the population reporting unmet needs was observed in the highest income decile (23.70%). Moreover, rural respondents had higher percentages of unmet needs in outpatient services. Regarding inpatient services, unmet needs are generally concentrated among those in the median income groups. Specifically, the wealthiest income decile had the lowest prevalence of unmet needs for inpatient services (4.23%), and the greatest unmet need was found in the fifth income group (7.59%). Notably, the seventh income group of urban residents reported the lowest unmet needs for inpatient services. On the contrary, rural residents in the seventh income group reported the highest rate of unmet needs for inpatient services.

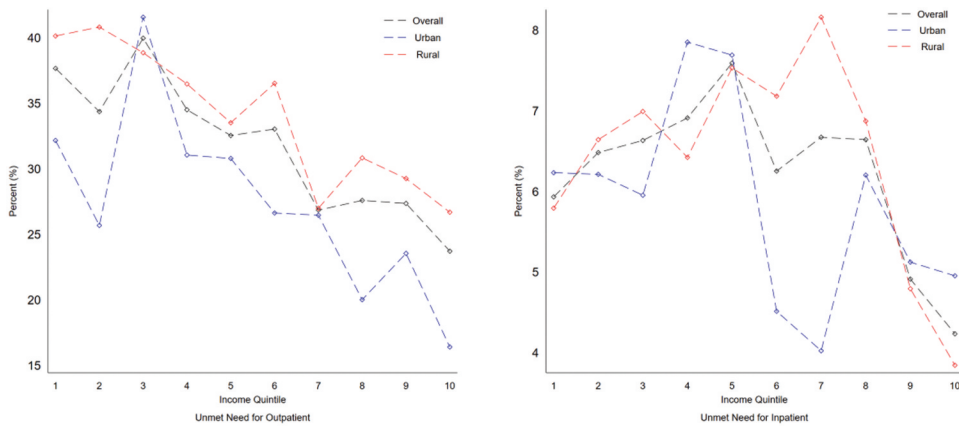


Figure 1. Prevalence of unmet needs for healthcare services by household income.

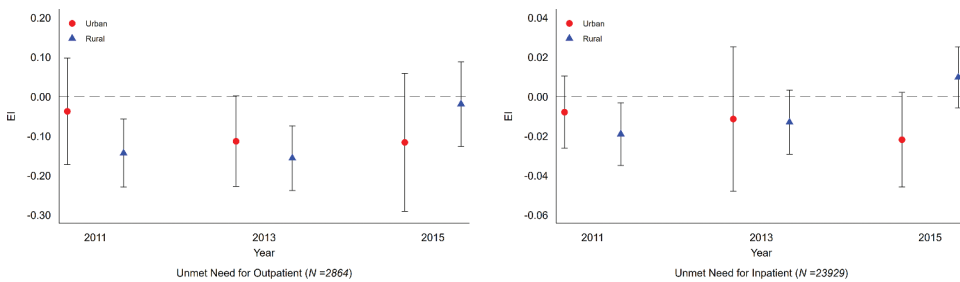


Figure 2. The Erreygers-corrected CInds for the unmet needs for healthcare services.

Inequalities in the unmet needs for healthcare services

The results in Figure 2 display Erreygers-corrected CInds by residence and time. As mentioned above, a CInd with a negative coefficient indicates that inequalities are more prevalent among individuals with lower socioeconomic status (i.e., pro-poor). Conversely, a positive coefficient indicates an unequal distribution of the outcome variable in a direction that is pro-rich. Our analysis revealed that the unmet healthcare needs among rural respondents were almost skewed significantly in the pro-poor direction. While the CInd values of the unmet healthcare needs among urban residents did not achieve statistical significance. The statistical significance of the CInd values of unmet needs for outpatient and inpatient services diminishes over time, reaching a non-significant level.

Decomposition analysis

Figure 3 presents the results of the decomposition analysis of CInds, documenting the relative contribution of each critical variable to the changes in the prevalence of unmet needs over time. Our analysis presents the results of the

decomposition analysis of CInds, documenting the relative contribution of each critical variable to the changes in the prevalence of unmet needs over time. Public health insurance coverage and self-rated health were two main factors associated with the unmet needs for healthcare services. For outpatient services, public insurance coverage contributed 31.70% to 69.89% in reducing inequality. Differences in residence could explain 9.29% to 32.03% of the observed inequality across all outcomes. Work, gender, and educational attainment had positive but relatively smaller contributions to mitigating the inequality in the nonuse of outpatient services. Concerning inpatient services, good self-rated health was the main factor in reducing inequality of unmet needs from 2011 to 2015, ranging from 6.73% to 7.87%. While public health insurance could explain 1.98% to 13.12% of the increasing inequality associated with unmet needs.

The decomposition analysis stratified by residence was displayed in [Figure 3](#). Public health insurance coverage contributed most to decreasing inequality of unmet needs for outpatient services, which accounted for 49.20% and 47.04% on average, respectively, among rural and urban respondents. Good self-rated health explained the majority of the reductions in the

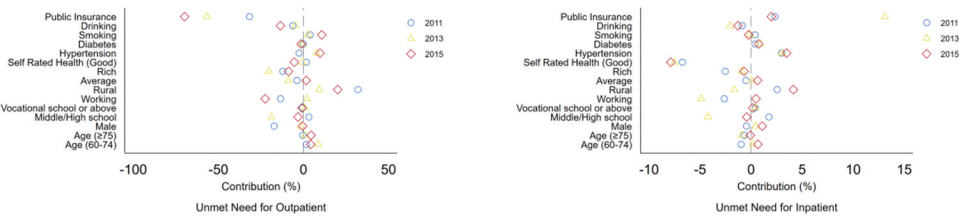


Figure 3a. Decomposition of the factors contributing to inequalities in unmet needs for healthcare services by (a) year, (b) year and residence.

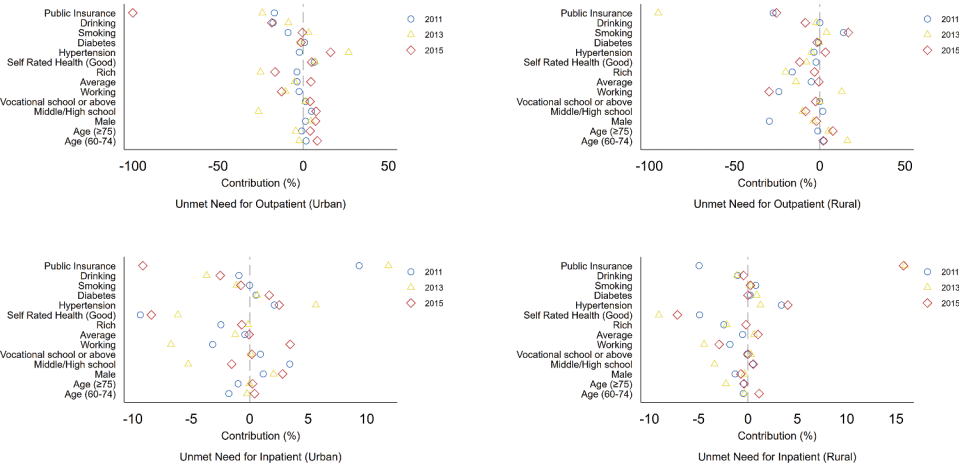


Figure 3b. (Continued).

inequality of unmet needs for inpatient services for rural (7.04%) and urban residents (7.98%) in general, and it was consistent when grouped by year. By contrast, public health insurance basically explained the majority of the observed inequality associated with unmet needs for inpatient services for both rural (8.91%) and urban residents (4.03%). The detailed analysis results, including the elasticity and CI of each regressor, are provided in Appendix Table 3 through Appendix Table 8.

Reasons for unmet needs for healthcare services

As shown in Figure 4, the leading reason for unmet needs for outpatient services was affordability (42.02% to 46.20%) followed by other reasons (27.92% to 33.76%), acceptability (6.80% to 12.73%), and availability (8.05% to 8.40%). In all three years, over half of the individuals reported not “having enough money” as the primary reason for unmet needs for inpatient services, although their share of the unmet needs decreased slightly from 60.76% in 2011 to 52.55% in 2015.

When stratified by residence and socioeconomic status, affordability was the most prevalent reason for having unmet inpatient care needs in both rural and urban groups, and it was higher among rural residents (56.60% to 64.55% in rural versus 46.39% to 54.25% in urban). Likewise, rural respondents had the highest likelihood of unmet needs for outpatient services due to affordability (44.35% to 51.18%). While other reasons were more common for unmet needs for outpatient services among urban residents (33.19% to 42.55%), compared with rural residents (25.81% to 29.82%). In general, most of the respondents in all SES categories reported having unmet needs for inpatient services (52.71% in the poor, 48.49% in the general, and 39.41% in the rich) and outpatient

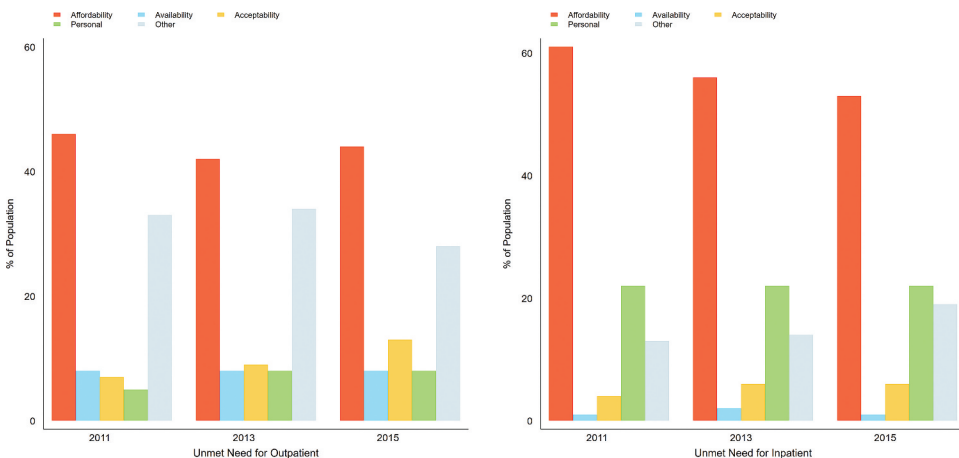


Figure 4a. Prevalence of reasons for unmet needs for healthcare services by (a) year (b) year and residence (c) socioeconomic status (d) socioeconomic status and residence.

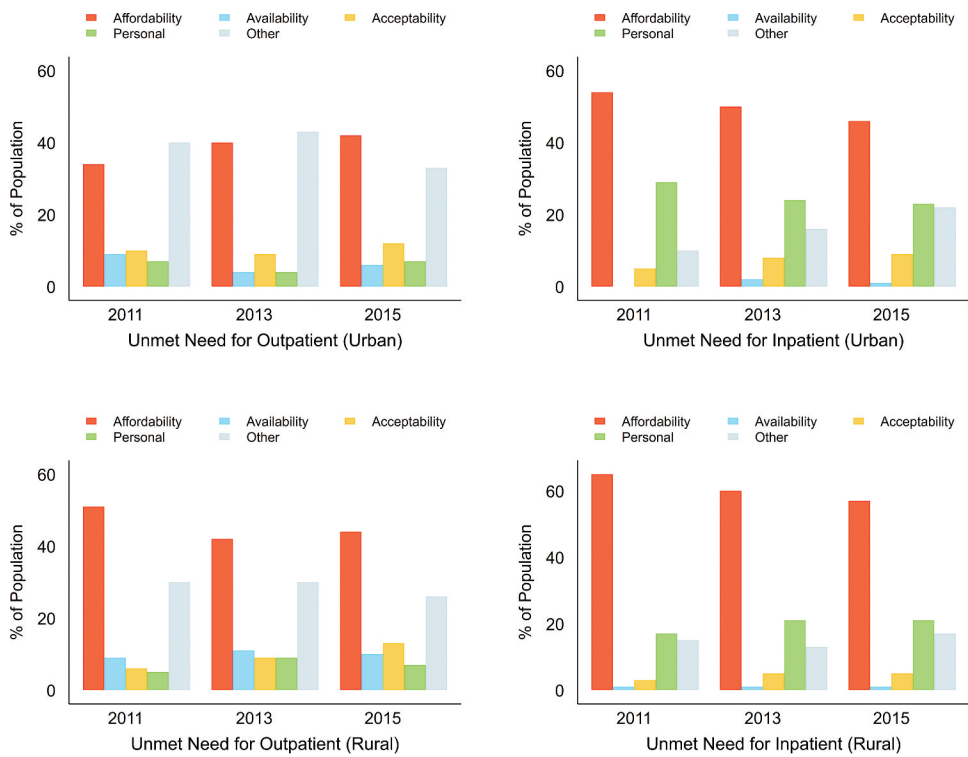


Figure 4b. (Continued).

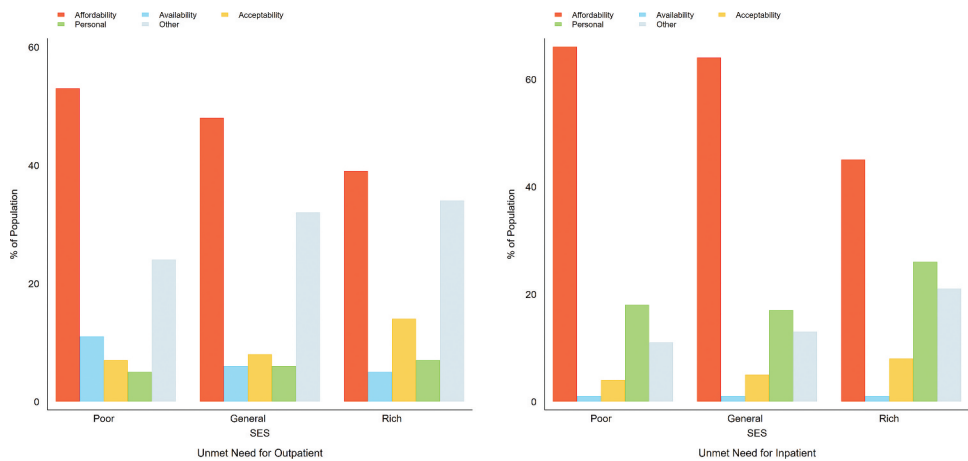


Figure 4c. (Continued).

services (65.58% in the poor, 64.20% in the general, and 44.73% in the rich) due to affordability, and affordability contributed more significantly as socioeconomic status declines. Additionally, respondents (especially those in higher SES categories) were more likely to indicate that, apart

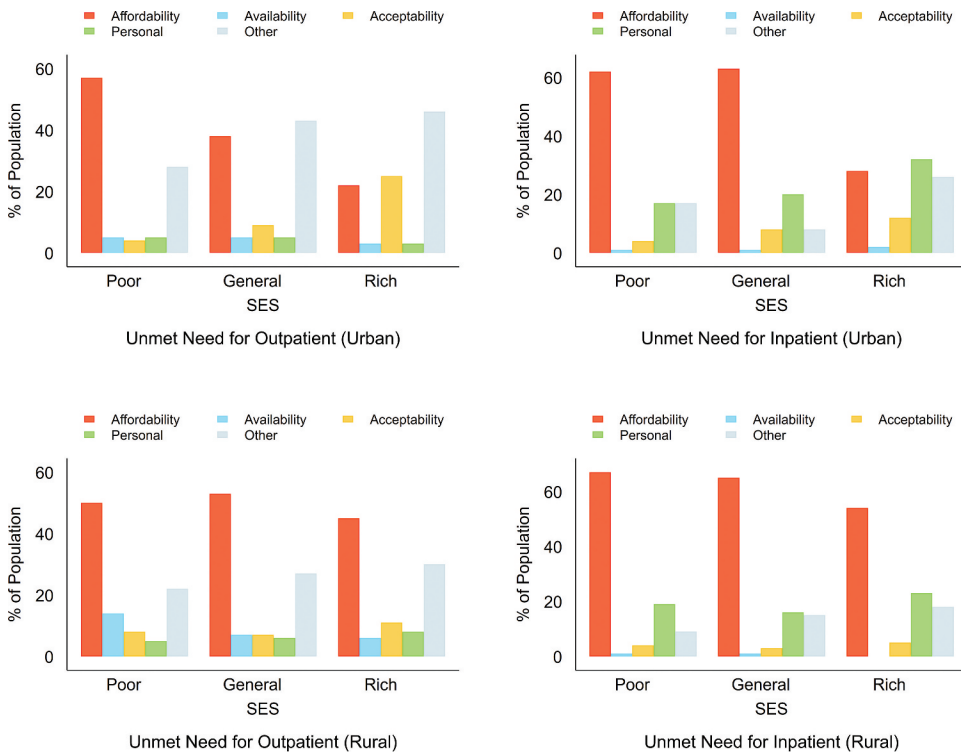


Figure 4d. (Continued).

from affordability, other reasons were prevalent for unmet needs for outpatient services.

The percentages of the reasons for unmet healthcare needs were also illustrated by socioeconomic status within the residence categories. Rural residents had higher rates of unmet needs for outpatient services caused by affordability in the general group (53.04%) and the rich group (45.20%) than their urban counterparts (38.24% and 22.03%, respectively). Moreover, urban residents and the rich groups were more likely to report unmet needs for outpatient services owing to other reasons (43.13% and 45.76%, respectively). The inability to afford inpatient services accounted for the majority of unmet needs among the poor (62.29% and 67.24%, respectively) and the general groups (62.27% and 65.84%, respectively). For individuals in the rich group, affordability remained a reason for a high proportion of unmet needs for inpatient services among rural respondents (53.76%). But for urban respondents, there was only a slight disparity between the proportion of unmet needs for inpatient services attributable to personal conditions (31.76%) and those attributable to affordability (27.70%). The results of the chi-square test are presented in Appendix Table 9 and Appendix Table 10.

Discussion

Using nationally representative survey data, this study analyzed the prevalence and inequalities of unmet needs for healthcare services among middle-aged and older adults in China. Findings indicated that 30.47% and 5.69% of the middle-aged and older adults had unmet needs for outpatient and inpatient services, respectively. The prevalence of unmet needs for healthcare services was higher among rural residents and from low- and middle-income households. There was a significant pro-poor inequality among rural residents with respect to the unmet needs for healthcare services that have diminished somewhat over time. Moreover, enabling factors (the coverage of public health insurance) were most significantly associated with reducing the inequalities in unmet needs for outpatient services. Need factors (good self-rated health status) were the most significant contributors to narrowing inequalities in unmet needs for inpatient services. Affordability was the main reason for unmet healthcare needs, and it led to a higher proportion of unmet needs for inpatient services relative to outpatient services. Rural residents and individuals in the lower SES categories had a greater proportion of unmet needs due to affordability.

This paper provides valuable estimates of an all-encompassing analysis of the inequalities in unmet needs for healthcare services and initial evidence about self-reported reasons for unmet needs. We also revealed the main factors that contribute to reducing inequalities and identified public health insurance as well as good self-rated health as key drivers of these observations in China. It was observed that the median income group exhibited higher levels of unmet healthcare needs compared to their low-income counterparts. This disparity can be attributed to targeted policies such as medical aid and subsidized major illness insurance, which primarily safeguard low-income individuals in impoverished households (K. Liu et al., 2017). Moreover, the results that rural residents had a higher prevalence of unmet needs for healthcare services were consistent with the findings of WHO SAGE analyses, which reported the underutilization of healthcare services by rural older populations in China (Prevention, 2012). It is possibly attributable to unbalanced socioeconomic development and health resource allocation between rural and urban areas, which make healthcare services in rural areas less affordable and accessible.

To address this problem, China has been committed to strengthening UHC in rural areas over the past decades. The government substantially increased its funding to expand public health insurance coverage by introducing new rural cooperative medical system and medical assistance for catastrophic diseases in rural areas. Given the critical role of public health insurance in reducing inequalities of healthcare access, China has also made extensive efforts to integrate urban and rural health insurance schemes since 2012, with the aim

of improving healthcare financing and reimbursement levels among rural residents (Ye & Wang, 2023). Furthermore, the Chinese government has strengthened the primary healthcare delivery system's infrastructure in rural areas and built a strong workforce centered on village doctors and community health center workers, with gradual expansion to nurses and practitioners (Yip et al., 2023). This may explain the improvement in reducing pro-poor inequality in unmet healthcare needs in rural areas. Therefore, other developing countries may consider embracing UHC as a national health policy priority by highlighting equitable and affordable access to good-quality basic healthcare and adequate protection from financial risk in rural areas.

The decomposition results showed differences in the contributing factors for inequalities in unmet needs for outpatient and inpatient services. Earlier findings reflected a continuously positive role of universal health insurance coverage in reducing unmet healthcare needs (S. Zhou et al., 2021). Likewise, in our analysis, the coverage of public health insurance had a significant impact on narrowing inequality in unmet needs for outpatient services in China. However, the effect of public health insurance coverage on inequality in unmet needs for inpatient services was totally opposite, indicating that it somewhat further exacerbated the inequality in unmet needs. As previously mentioned, China has set up a universal health insurance coverage system since the 2009 healthcare reform (Zhang et al., 2023). Both the outpatient and inpatient reimbursement amounts have increased significantly, thus stimulating healthcare utilization among the Chinese population to some extent (Wang et al., 2019). However, due to the high cost and low reimbursement rate of inpatient services, public health insurance may only be beneficial to those who can afford insurance cost and out-of-pocket expenditures, which could exacerbate inequality in access to inpatient services. Additionally, consistent with existing reports (H. Liu & Zhao, 2014; Xu et al., 2018), good self-reported health status played an important role in reducing inequality in unmet needs for inpatient services. This may be explained by the fact that healthy individuals are seldom accompanied by long-term or lifelong treatment, which will undoubtedly result in fewer unmet needs, even if they are of low socioeconomic status (C. Jiang & Ma, 2015; Yang et al., 2022).

Previous assessments of unmet needs for healthcare services have revealed that China's universal health system remains challenged due to financial hardship, ongoing barriers to access, unequal supply of healthcare services, and the availability of healthcare services. We found that middle-aged and older people were more likely to experience unmet healthcare needs triggered by economic constraints, especially for unmet inpatient care. Previous studies supported that financial difficulties were factors affecting unmet needs. For instance, the Fifth National Health Service Survey in 2013 showed that older patients' difficulty in paying their healthcare costs played a critical role in determining underutilization, accounting

for 43.4% of those who were not in hospital despite reported need (House, 2013). Furthermore, participants living in rural areas or those with lower SES most frequently cited financial hardship as the primary reason. By contrast, the unmet needs for healthcare services caused by financial reasons were less common among urban residents with high incomes. These findings may be attributed to the limited affordability of healthcare services among rural and low- to middle-income respondents, stemming from insufficient financial resources and the absence of targeted reimbursement mechanisms (Feng et al., 2020). With a lower capacity to pay, rural residents encounter more difficulties in accessing health services, and they also have a more significant financial burden owing to the out-of-pocket payments required at the point of obtaining health services (Nosraty et al., 2015).

Limitations

There were some limitations in our study. Firstly, when assessing the unmet needs for outpatient services, we excluded individuals who had already received treatment or someone who felt their illness was not severe. While assessing the unmet needs for inpatient services, we were unable to screen and exclude these categories in CHARLS data, which may lead to an overestimation of the unmet needs for certain income groups. Secondly, socioeconomic inequalities measured by the CInd (e.g., income distribution) represent only a partial approach to this complex issue, as there are other potentially relevant factors which are not considered. However, we somewhat resolved this limitation by evaluating the contributions of key factors under the Andersen model. Finally, the CInd and decomposition analysis only facilitates the acquisition of correlational rather than causal inference.

Conclusion

Our results indicate that although the Chinese government has made commitments to achieve UHC and advance the Healthy China agenda, efforts toward realizing equality in access to healthcare services should be intensified and rank high among policy concerns given the context of the increasingly aging process. Since the unmet healthcare needs among disadvantaged people were higher, and public insurance coverage somewhat contributed to enlarging the inequality, policies should focus on further increasing the reimbursement level and expanding the service package of public health insurance. Policy interventions should also target financial barriers to obtaining healthcare services and increased inputs to the health and social system to better meet healthcare utilization needs among people in low- and middle-income households, particularly in rural areas. Given

the apparent associations between the inequalities in unmet needs for healthcare services and their related factors, future research may explore the possibility of a causal relationship between these factors and the utilization of healthcare services.

Key Points

- Innovatively exploring the distribution and determinants of inequalities in unmet healthcare needs.
- Revealing a narrowing trend in pro-poor inequality in unmet healthcare needs among rural residents in China.
- Identifying public health insurance and individual health status as major factors and affordability as key reasons for the inequalities in unmet healthcare needs.

Disclosure statement

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Contributors

YW designed the study, conducted the data analysis, and critically revised the manuscript. XW drafted and revised the manuscript. XY critically revised and approved the final manuscript.

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