

## Vital Surveillances

## Factors in Health Examination Rate Among Chinese Older Adults — China, 2013–2023

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### ABSTRACT

**Introduction:** Health examinations are important components of primary prevention in older adults. This study aimed to assess temporal trends in health examinations in China and analyze the factors with their use.

**Methods:** To this end, four rounds of nationally and provincially representative cross-sectional surveys were conducted. Overall, 180,455 adults aged  $\geq 65$  years were included in this study. Weighted health examination rates were calculated for the overall population and the subgroups. The Anderson model analysis framework was used to analyze the associated factors.

**Results:** From 2013 to 2023, the health examination rate among older adults aged  $\geq 65$  years within 1 year increased from 21.8% to 66.6%, corresponding to an annual increase of 5.6% and an average annual percentage change of 6.49%. Disparities across the subgroups diminished rapidly, particularly in terms of residence, location, education, and income. Examinations provided free of charge by the community accounted for the vast majority of the subgroups. Need- and health-related behavioral factors were the primary determinants.

**Conclusion:** Over the past decade, substantial progress has been made in health examination rates for older adults, particularly among socially and economically disadvantaged populations. Further sustained policy and financial support should be implemented to achieve the universal coverage target for health examinations among older adults aged  $\geq 65$  years as defined by the Healthy China Initiative (2019–2030).

Health examinations, or health check-ups, are medical service activities and processes involving the

medical assessment and evaluation of the health status of individuals or populations. With the goal of initiating early interventions to prevent future illnesses, these examinations primarily focus on the screening of noncommunicable diseases and their risk factors, risk stratification and assessment, and the provision of health guidance and intervention recommendations (1). Health examinations are associated with greater opportunities for the detection and treatment of chronic diseases, improved risk factor control, increased uptake of preventive services, and better patient-reported outcomes (2). According to the National Bureau of Statistics of China, older adults aged  $\geq 65$  years accounted for 15.6% (220 million) of the population in 2024. The Healthy China Initiative (2019–2030) emphasizes improving health literacy among older adults, promoting participation in regular health examinations, and providing free annual health examinations for adults aged  $\geq 65$  years (3). Although our previous studies estimated health examination rates among Chinese adults aged  $\geq 18$  years from 2010 to 2018, evidence on current rates and trends in older adults remains limited (4). This study used four rounds of cross-sectional surveys to estimate the health examination rate among adults aged  $\geq 65$  years on the Chinese mainland and analyze the associated factors.

### METHODS

Data were obtained from the China Chronic Disease and Risk Factor Surveillance (CCDRFS). To date, seven rounds of the survey have been conducted, in 2004, 2007, 2010, 2013, 2015, 2018, and 2023; each round adopted a similar multistage, stratified, clustered probability sampling design to generate a nationally and provincially representative sample. The details of the sampling schemes and sample weights of the CCDRFS have been described previously (5). Data from four surveys (2013, 2015, 2018, and 2023) were used.

Questionnaires were administered by trained and qualified health professionals to obtain information on socioeconomic status, lifestyle behaviors, history of major chronic diseases, and health examinations. Information regarding health examinations, excluding those conducted during medical consultations, included the date of the most recent examination. The reasons for undergoing an examination were also recorded.

Individuals with missing sample weights, information on health examinations, or associated factors were excluded. Individuals with inconsistent data (e.g., an examination date later than the survey date or a reported reason for the examination despite never having undergone one) were also excluded from the study. After stratification, clustering, and incorporation of sample weights, the weighted rate of health examinations was calculated by sex, age group, residence, location, education, ethnicity, and annual per capita income. Taylor series linearization with a complex sampling design and finite population correction was used to estimate 95% confidence intervals (CIs). Differences between subgroups and reasons for examination across subgroups were tested using the Rao-Scott chi-squared test. Joinpoint statistical software (version 5.4.0.0; Applications Branch, National Cancer Institute, Bethesda, MD, USA) was used to calculate the average annual percentage change (AAPC). Based on the Anderson model analysis framework, a weighted multivariate logistic regression model was used to identify the factors associated with health examination within 1 year. The associated factors were classified into four categories: predisposing, enabling, need, and health-related behavioral factors (6).

All data cleaning and analyses were performed using R software (version 4.4.2, R Foundation for Statistical Computing, Vienna, Austria). All tests were two-sided, and  $P \leq 0.05$  was considered statistically significant.

## RESULTS

This study included 180,455 older adults aged  $\geq 65$  years (29,870 in 2013, 35,861 in 2015, 46,713 in 2018, and 68,011 in 2023). The distributions of the subgroups were similar across all surveys (Table 1).

The weighted health examination rate is presented in Table 2. Between 2013 and 2023, the health examination rate steadily increased across all subgroups. The health examination rate within 1 year increased from 21.8% (95% CI: 18.9%–24.8%) in

2013 to 66.6% (95% CI: 64.4%–68.8%) in 2023, by 5.6% (95% CI: 5.1%–6.1%) annually (AAPC 6.49%). The rate rose similarly in men and women, by about 5.6% annually. The rates across different age groups were similar in 2013 ( $P=0.336$ ), whereas that among those aged 75–79 years was higher in 2023. Individuals living in rural areas had a lower examination rate over the survey period (all  $P$  for difference  $<0.05$ ). However, this disparity was rapidly diminishing (from 17.3% vs. 27.3% in 2013 to 65.0% vs. 68.6% in 2023). The examination rate increased faster among rural individuals, as reflected by the annual change (5.9% vs. 5.2%) and the AAPC (7.61% vs. 5.10%). Examination rates in different locations followed a similar trend; individuals in central and western areas exhibited a steeper increase. Significant increases were also observed in older adults receiving less education (from 19.3% in 2013 to 66.1% in 2023) and in those with the lowest annual per capita income (from 16.8% in 2013 to 64.9% in 2023).

In 2013, the reasons for undergoing health examinations, in descending order, were community-provided free examination (71.0%), self-care (14.4%), workplace-provided free examination (10.8%), and other reasons (3.8%) ( $P$  for difference  $<0.001$ ). The proportion of community-provided examinations increased over time, reaching 73.6% in 2015, 81.3% in 2018 and 87.5% in 2023 (Figure 1). In 2023, the proportions of reasons differed significantly across subgroups. Examinations provided free by the community accounted for the vast majority across all subgroups, and the proportion was higher among those living in rural and central areas, and those aged 75–79 years. Notably, with increasing educational level and annual per capita income (except for those unwilling to disclose), the proportion of community-provided examinations decreased, while the proportion of self-care increased. Residence-specific reasons are presented in Supplementary Figure S1 (available at <https://weekly.chinacdc.cn/>).

Individuals who had never undergone a health examination were more likely to be younger, living in rural and western areas, and receiving less education (Supplementary Table S1, available at <https://weekly.chinacdc.cn/>). In the multivariable logistic regression models, older adults aged 70–74 years [odds ratio (OR)=1.11, 95% CI: 1.03–1.20] and 75–79 years (OR=1.20, 95% CI: 1.09–1.31) had higher odds of undergoing a health examination within 1 year than their younger counterparts. Compared with those without medical insurance, individuals with urban and

TABLE 1. General characteristics of individuals aged  $\geq 65$  years in China, 2013–2023 [No. (%)].

| Characteristics               | 2013 (n=29,870) | 2015 (n=35,861) | 2018 (n=46,713) | 2023 (n=68,011) |
|-------------------------------|-----------------|-----------------|-----------------|-----------------|
| Sex                           |                 |                 |                 |                 |
| Man                           | 13,643 (45.7)   | 18,277 (51.0)   | 22,614 (48.4)   | 32,218 (47.4)   |
| Woman                         | 16,227 (54.3)   | 17,584 (49.0)   | 24,099 (51.6)   | 35,793 (52.6)   |
| Age group, years              |                 |                 |                 |                 |
| 65–69                         | 12,997 (43.5)   | 16,827 (46.9)   | 22,576 (48.3)   | 29,182 (42.9)   |
| 70–74                         | 8,320 (27.9)    | 9,967 (27.8)    | 13,430 (28.8)   | 22,337 (32.8)   |
| 75–79                         | 5,379 (18.0)    | 5,691 (15.9)    | 6,791 (14.5)    | 10,936 (16.1)   |
| $\geq 80$                     | 3,174 (10.6)    | 3,376 (9.4)     | 3,916 (8.4)     | 5,556 (8.2)     |
| Residence                     |                 |                 |                 |                 |
| Urban                         | 14,363 (48.1)   | 15,226 (42.5)   | 19,339 (41.4)   | 30,903 (45.4)   |
| Rural                         | 15,507 (51.9)   | 20,635 (57.5)   | 27,374 (58.6)   | 37,108 (54.6)   |
| Location                      |                 |                 |                 |                 |
| East                          | 12,750 (42.7)   | 15,468 (43.1)   | 21,026 (45.0)   | 31,149 (45.8)   |
| Central                       | 7,254 (24.3)    | 8,776 (24.5)    | 11,208 (24.0)   | 16,262 (23.9)   |
| West                          | 9,866 (33.0)    | 11,617 (32.4)   | 14,479 (31.0)   | 20,600 (30.3)   |
| Education                     |                 |                 |                 |                 |
| Primary school or lower       | 22,080 (73.9)   | 26,328 (73.4)   | 33,792 (72.3)   | 45,775 (67.3)   |
| Secondary school              | 4,672 (15.6)    | 5,964 (16.6)    | 8,725 (18.7)    | 14,177 (20.8)   |
| High school                   | 2,164 (7.2)     | 2,425 (6.8)     | 2,998 (6.4)     | 6,431 (9.5)     |
| College or above              | 954 (3.2)       | 1,144 (3.2)     | 1,198 (2.6)     | 1,628 (2.4)     |
| Ethnicity                     |                 |                 |                 |                 |
| Han                           | 27,354 (91.6)   | 32,788 (91.4)   | 42,710 (91.4)   | 62,461 (91.8)   |
| Other                         | 2,516 (8.4)     | 3,073 (8.6)     | 4,003 (8.6)     | 5,550 (8.2)     |
| Annual per capita income, CNY |                 |                 |                 |                 |
| <6,000                        | 6,385 (21.4)    | 10,003 (27.9)   | 10,837 (23.2)   | 14,099 (20.7)   |
| 6,000–11,999                  | 4,391 (14.7)    | 5,871 (16.4)    | 7,168 (15.3)    | 10,070 (14.8)   |
| 12,000–23,999                 | 5,306 (17.8)    | 6,868 (19.2)    | 8,024 (17.2)    | 10,538 (15.5)   |
| $\geq 24,000$                 | 4,707 (15.8)    | 6,321 (17.6)    | 9,187 (19.7)    | 13,325 (19.6)   |
| Refused/ do not know          | 9,081 (30.4)    | 6,798 (19.0)    | 11,497 (24.6)   | 19,979 (29.4)   |

Abbreviation: CNY=Chinese Yuan.

rural resident basic medical insurance were more likely to undergo health examinations ( $OR=1.47$ , 95%  $CI$ : 1.19–1.82). Additionally, the odds of undergoing health examinations were higher among individuals with 1 ( $OR=1.56$ , 95%  $CI$ : 1.44–1.69) or  $\geq 2$  ( $OR=1.95$ , 95%  $CI$ : 1.78–2.13) chronic diseases, former smokers and alcohol drinkers, but lower among current smokers, and physically inactive older adults (Figure 2).

## DISCUSSION

In this study, four rounds of a large, cross-sectional, nationally representative survey — including 180,455

older adults aged  $\geq 65$  years — were utilized to estimate the health examination rate, the reasons for examination, and the associated factors. The examination rate within 1 year more than tripled over the past decade, rising from 21.8% in 2013 to 66.6% in 2023, particularly among individuals in rural areas, central and western regions, and those with lower education level or income. Examinations provided free of charge by the community accounted for most responses.

Health examinations have long been a common element of healthcare in some high-income countries (e.g., the United States and the United Kingdom) (7), whereas such initiatives were implemented relatively

TABLE 2. Weighted health examination rate among individuals aged  $\geq 65$  years in China, 2013–2023. [% (95% CI)]

| Characteristics                        | 2013             | 2015             | 2018             | 2023             | Annual change* | AAPC (%) |
|----------------------------------------|------------------|------------------|------------------|------------------|----------------|----------|
| Examination within 5 years             | 31.0 (27.6–34.5) | 55.7 (52.5–58.9) | 63.9 (61.5–66.4) | 77.1 (75.1–79.1) | 5.8 (5.3–6.3)  | 5.23     |
| Examination within 3 years             | 30.3 (27.0–33.7) | 54.8 (51.6–58.0) | 63.1 (60.6–65.5) | 76.3 (74.3–78.4) | 5.8 (5.3–6.2)  | 5.33     |
| Examination within 1 year <sup>†</sup> | 21.8 (18.9–24.8) | 44.5 (41.5–47.5) | 52.7 (50.1–55.2) | 66.6 (64.4–68.8) | 5.6 (5.1–6.1)  | 6.49     |
| Sex                                    |                  |                  |                  |                  |                |          |
| Man                                    | 20.9 (18.1–23.8) | 44.0 (41.4–46.7) | 52.5 (49.9–55.1) | 65.8 (63.5–68.2) | 5.6 (5.2–6.1)  | 6.46     |
| Woman                                  | 22.6 (19.4–25.8) | 44.9 (41.4–48.4) | 52.8 (50.2–55.5) | 67.3 (65.1–69.5) | 5.6 (5.1–6.1)  | 6.59     |
| <i>P</i> for difference                | 0.019            | 0.400            | 0.667            | 0.017            |                |          |
| Age group, years                       |                  |                  |                  |                  |                |          |
| 65–69                                  | 21.5 (18.5–24.5) | 44.5 (41.9–47.1) | 51.7 (49.2–54.1) | 64.8 (62.6–67.1) | 5.4 (4.9–5.9)  | 6.01     |
| 70–74                                  | 23.5 (20.3–26.7) | 45.2 (42.3–48.1) | 55.0 (52.0–58.0) | 67.6 (65.0–70.2) | 5.5 (5.0–6.0)  | 6.30     |
| 75–79                                  | 21.2 (17.6–24.7) | 46.5 (42.4–50.7) | 53.6 (50.4–56.8) | 69.2 (66.5–71.9) | 6.0 (5.4–6.6)  | 6.83     |
| $\geq 80$                              | 20.5 (15.4–25.5) | 39.8 (33.9–45.8) | 49.0 (45.7–52.2) | 63.7 (60.8–66.6) | 5.4 (4.7–6.1)  | 6.87     |
| <i>P</i> for difference                | 0.336            | 0.045            | <0.001           | <0.001           |                |          |
| Residence                              |                  |                  |                  |                  |                |          |
| Urban                                  | 27.3 (23.5–31.0) | 51.1 (47.7–54.4) | 56.3 (53.3–59.2) | 68.6 (66.1–71.1) | 5.2 (4.6–5.7)  | 5.10     |
| Rural                                  | 17.7 (14.2–21.3) | 39.3 (35.6–43.0) | 49.9 (46.4–53.4) | 65.0 (62.2–67.8) | 5.9 (5.3–6.5)  | 7.61     |
| <i>P</i> for difference                | <0.001           | <0.001           | 0.002            | 0.024            |                |          |
| Location                               |                  |                  |                  |                  |                |          |
| East                                   | 28.5 (23.4–33.5) | 49.0 (44.5–53.5) | 56.1 (51.5–60.6) | 68.8 (65.7–71.8) | 5.0 (4.3–5.8)  | 5.51     |
| Central                                | 19.1 (14.9–23.4) | 44.8 (39.1–50.6) | 49.8 (46.1–53.5) | 67.4 (62.8–72.1) | 6.0 (5.3–6.8)  | 7.66     |
| West                                   | 13.3 (9.0–17.5)  | 36.4 (32.6–40.3) | 49.8 (46.0–53.6) | 62.1 (58.0–66.3) | 6.1 (5.4–6.8)  | 7.40     |
| <i>P</i> for difference                | <0.001           | 0.001            | 0.035            | 0.050            |                |          |
| Education                              |                  |                  |                  |                  |                |          |
| Primary school or lower                | 19.3 (16.4–22.1) | 41.7 (38.4–45.0) | 51.1 (48.3–53.9) | 66.1 (63.6–68.7) | 5.8 (5.4–6.3)  | 7.44     |
| Secondary school                       | 26.9 (22.8–31.0) | 48.6 (45.3–51.9) | 55.6 (52.5–58.7) | 67.0 (64.5–69.5) | 5.0 (4.4–5.6)  | 5.11     |
| High school                            | 33.2 (27.6–38.8) | 56.4 (52.7–60.1) | 56.7 (53.1–60.3) | 68.3 (65.8–70.8) | 4.4 (3.6–5.2)  | 3.52     |
| College or above                       | 42.6 (33.6–51.5) | 66.1 (60.6–71.6) | 66.0 (61.0–71.0) | 70.0 (66.4–73.5) | 3.4 (2.2–4.6)  | 1.56     |
| <i>P</i> for difference                | <0.001           | <0.001           | <0.001           | 0.158            |                |          |
| Ethnicity                              |                  |                  |                  |                  |                |          |
| Han                                    | 22.7 (19.7–25.7) | 45.3 (42.2–48.4) | 53.4 (50.7–56.2) | 67.6 (65.3–69.9) | 5.6 (5.1–6.1)  | 6.53     |
| Other                                  | 11.5 (5.2–17.7)  | 33.4 (29.3–37.5) | 43.7 (39.2–48.3) | 53.9 (46.6–61.3) | 5.3 (4.1–6.5)  | 6.95     |
| <i>P</i> for difference                | 0.008            | <0.001           | <0.001           | <0.001           |                |          |
| Annual per capita income, CNY          |                  |                  |                  |                  |                |          |
| <6,000                                 | 16.8 (13.8–19.8) | 42.6 (38.6–46.7) | 51.1 (48.2–53.9) | 64.9 (61.9–67.9) | 6.0 (5.5–6.5)  | 7.20     |
| 6,000–11,999                           | 20.6 (16.9–24.2) | 40.9 (37.0–44.9) | 52.3 (48.9–55.7) | 66.7 (63.6–69.9) | 5.8 (5.2–6.4)  | 7.43     |
| 12,000–23,999                          | 27.4 (23.1–31.6) | 49.8 (46.7–52.9) | 55.2 (51.3–59.1) | 68.8 (66.1–71.6) | 5.2 (4.5–5.8)  | 5.20     |
| $\geq 24,000$                          | 33.5 (28.4–38.5) | 57.2 (54.1–60.3) | 60.4 (56.7–64.1) | 70.6 (67.7–73.5) | 4.6 (3.9–5.4)  | 3.56     |
| Refused/ do not know                   | 18.2 (15.2–21.2) | 33.3 (29.1–37.5) | 46.3 (42.8–49.8) | 63.9 (60.7–67.2) | 5.7 (5.2–6.3)  | 9.71     |
| <i>P</i> for difference                | <0.001           | <0.001           | <0.001           | <0.001           |                |          |

Abbreviation: CI=confidence interval; AAPC=average annual percentage change; CNY=Chinese Yuan.

\* Annual changes were calculated as the absolute difference in the health examination rate between the start and end years divided by the total number of years covered.

<sup>†</sup> All subgroups below depict the health examination rate within 1 year.

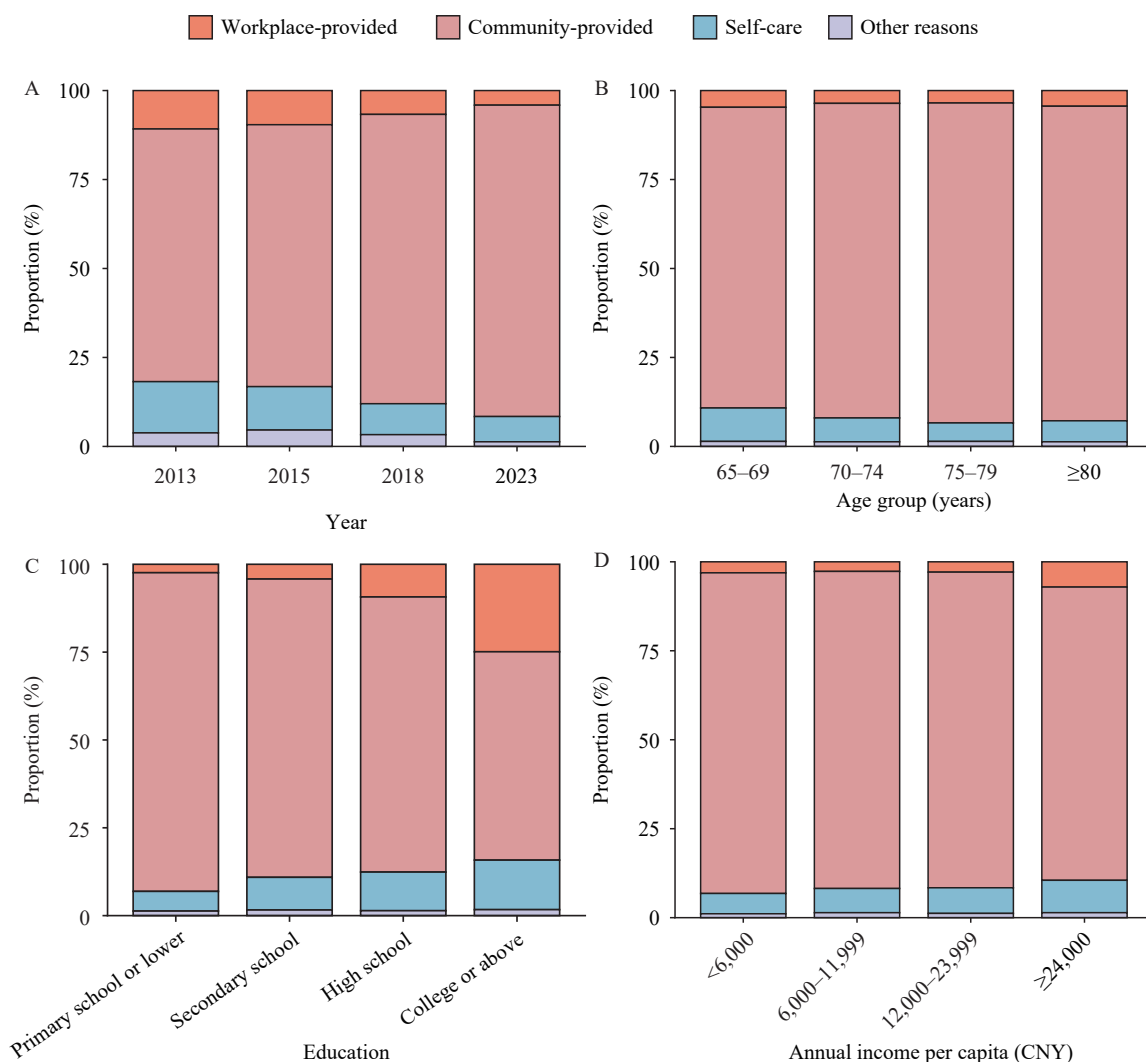


FIGURE 1. Reasons for undergoing health examinations among individuals aged  $\geq 65$  years in China. (A) by year, 2013–2023; (B) by age group in 2023; (C) by education in 2023; (D) by annual per capita income in 2023.

later in China. Although the value and effectiveness of health examinations in the general population have long been debated, evidence suggests that they are generally not associated with reductions in mortality, cardiovascular events, or cardiovascular disease incidence and might increase false-positive findings and overdiagnosis (8); health examinations for older adults are still recommended by most guidelines (9). The health examination rate varies in different countries; for example, attendance at the National Health Service Health Check Program in England was 52.6% between 2012 and 2017, and the rate in the Saudi Family Health Survey was 49.27% (10). However, few studies have reported the rate of health examinations among older adults.

The substantial increase in the health examination rate among older adults in China observed in the

present study can be largely attributed to the healthcare reforms in China and the gradual improvement in health literacy in the population (11). With the goal of providing of affordable and equitable basic healthcare for all by 2020, China unveiled an ambitious healthcare reform plan in April 2009 and committed to spending an additional 850 billion yuan in the ensuing 3 years (12). In 2009, the State Council of the People's Republic of China issued a notice requiring regular health examinations for adults aged  $\geq 65$  years (13). Subsequently, the National Health and Family Planning Commission, or later the National Health Commission, implemented the National Basic Public Health Service Program, and further emphasized the need to provide free annual health examinations for adults aged  $\geq 65$  years (14). Policy attention and financial support directed toward underdeveloped

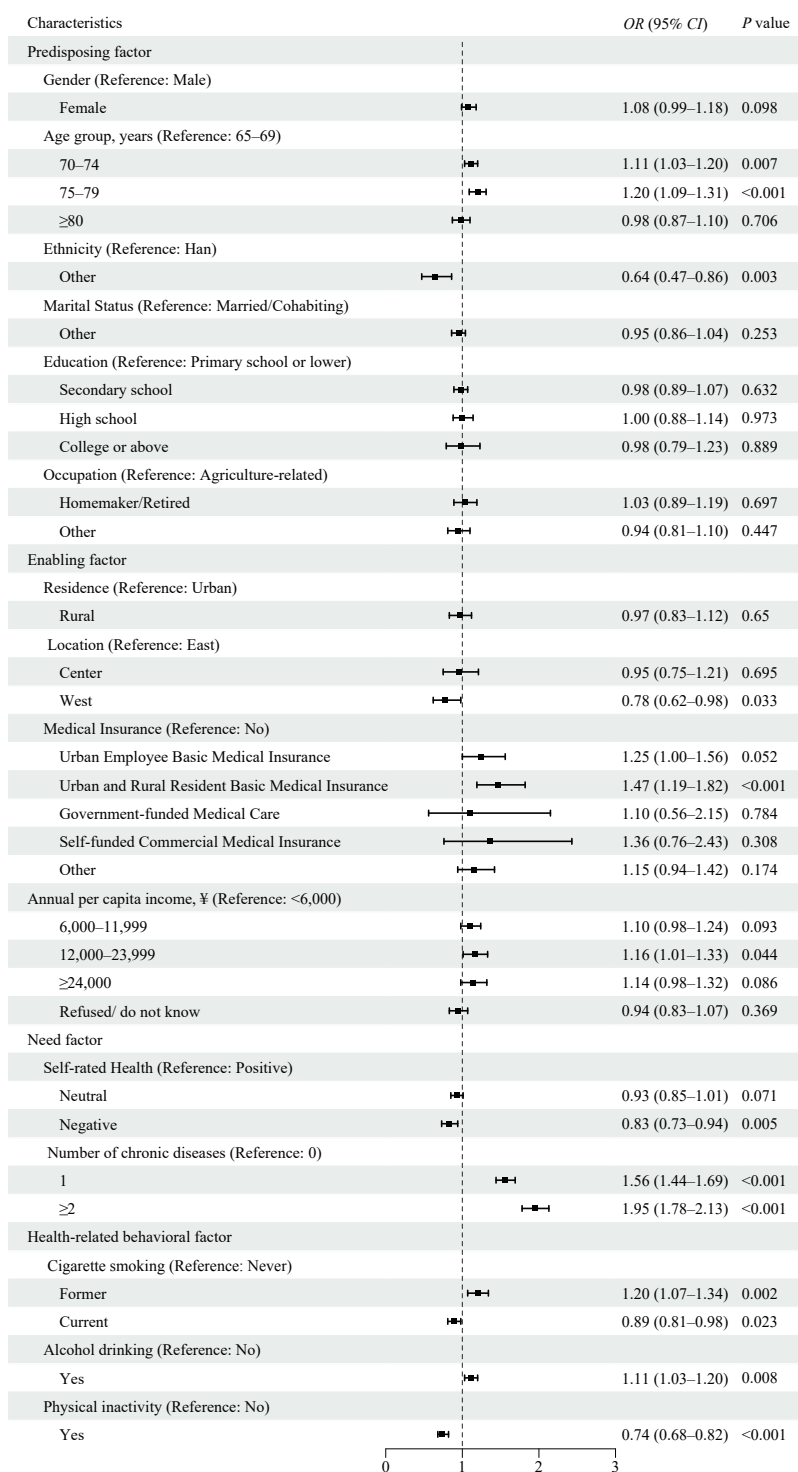


FIGURE 2. Multivariable logistic regression analysis of factors associated with undergoing a health examination among individuals aged  $\geq 65$  years in China.

Abbreviation: OR=odds ratio; CI=confidence interval.

regions and low-income populations help explain the rapid narrowing of disparities in these areas, as well as why the proportion of free community-provided health examinations is often higher in rural regions. As demonstrated in this study, since then, the overall

health examination rate among older adults has increased substantially, and remarkable progress has been achieved. Nevertheless, it must be acknowledged that a gap remains in achieving full coverage, and continued policy support is required.

Notably, need- and health-related behavioral factors were the most relevant, which is consistent with previous studies (15). Older adults with chronic diseases may have stronger health awareness owing to prolonged exposure to healthcare services. However, individuals with poor self-rated health, insufficient physical activity, and current smokers were less willing to participate in health examinations, which may have been related to lower awareness of health-related behaviors and insufficient health literacy. These findings suggest that targeted health education emphasizing the importance and necessity of health examinations for individuals with relatively poor self-rated health or unhealthy behaviors is warranted to further improve annual health examination coverage.

This study has several limitations. First, the CCDRFS was not intended primarily to examine health examination patterns. Questionnaires were limited to the timing and reason for the most recent examination and did not include information on examination frequency. Furthermore, the self-reported timing of the most recent examination may have been prone to recall bias. Additionally, the Anderson model used in this study includes relatively few variables, particularly those lacking macro-level regional factors, which may have limited its explanatory power.

In conclusion, this study demonstrates a substantial increase in health examination rates in China. However, the current rate falls short of the targets set by the Healthy China Initiative (2019–2030) and the National Basic Public Health Service Program, both of which aim to provide free annual health examinations for adults aged  $\geq 65$  years. To achieve this target, sustained policies and financial support are necessary to strengthen primary prevention efforts and ensure broader access to health examinations for older adults. However, given the limited resources, priority should be given to targeted health education for older adults with relatively low health awareness.

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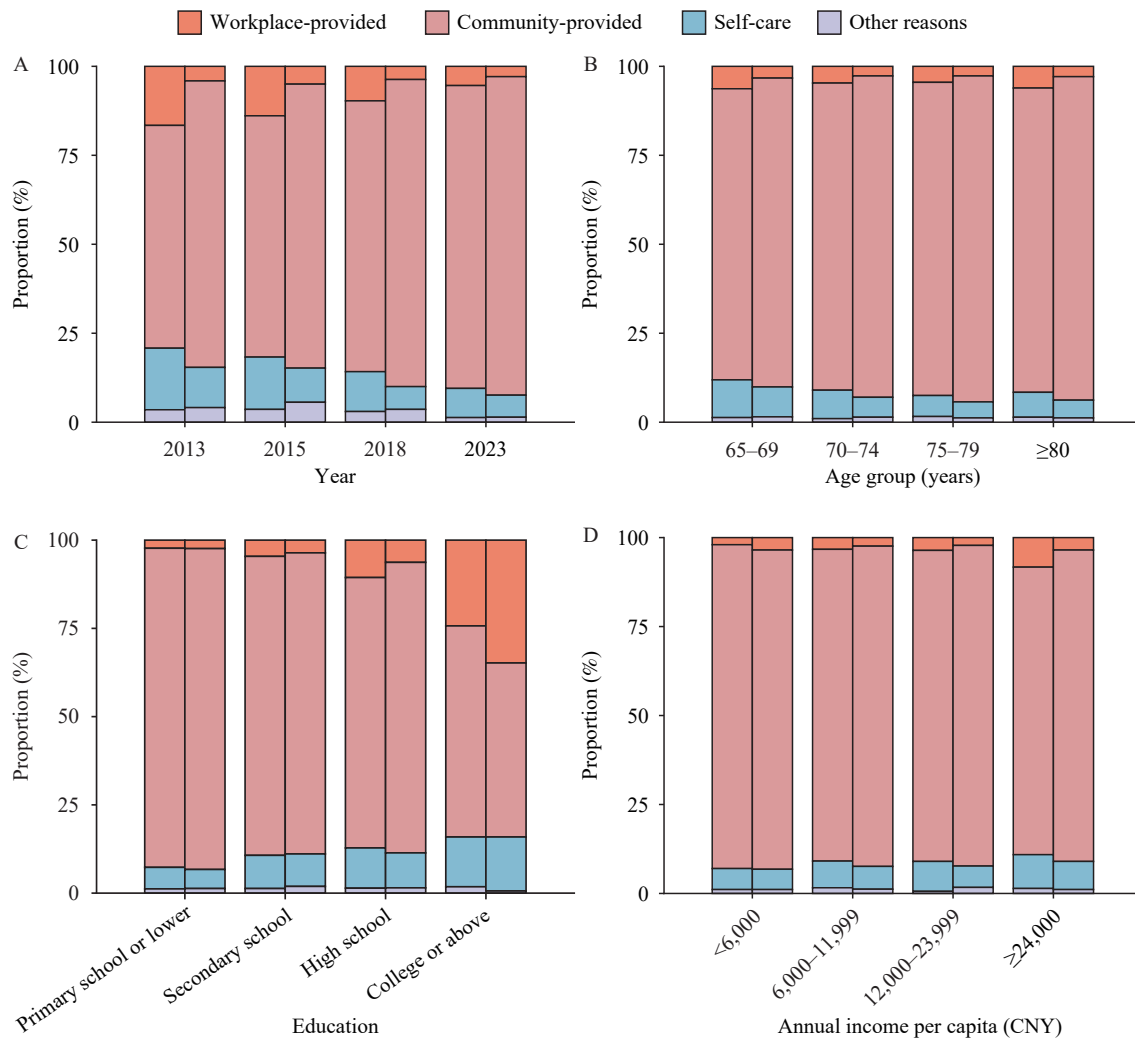
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## SUPPLEMENTARY MATERIAL



SUPPLEMENTARY FIGURE S1. Residence-specific reasons for undergoing health examinations among individuals aged  $\geq 65$  years in China. (A) by year and residence, 2013–2023; (B) by age group and residence in 2023; (C) by education and residence in 2023; (D) by annual per capita income and residence in 2023.

Note: For each category in each chart, the left column represents urban areas, and the right column represents rural areas. Abbreviation: CNY=Chinese Yuan.

SUPPLEMENTARY TABLE S1. General characteristics of individuals aged  $\geq 65$  years by history of health examination in China, 2023 [No. (%)].

| Characteristics               | Overall<br>( <i>n</i> =68,011) | Ever underwent a health<br>examination ( <i>n</i> =52,923) | Never underwent a health<br>examination ( <i>n</i> =15,088) | <i>P</i> |
|-------------------------------|--------------------------------|------------------------------------------------------------|-------------------------------------------------------------|----------|
| Sex                           |                                |                                                            |                                                             | 0.002    |
| Man                           | 32,218 (47.4)                  | 24,899 (47.0)                                              | 7,319 (48.5)                                                |          |
| Woman                         | 35,793 (52.6)                  | 28,024 (53.0)                                              | 7,769 (51.5)                                                |          |
| Age group, years              |                                |                                                            |                                                             | <0.001   |
| 65–69                         | 29,182 (42.9)                  | 22,188 (41.9)                                              | 6,994 (46.4)                                                |          |
| 70–74                         | 22,337 (32.8)                  | 17,787 (33.6)                                              | 4,550 (30.2)                                                |          |
| 75–79                         | 10,936 (16.1)                  | 8,720 (16.5)                                               | 2,216 (14.7)                                                |          |
| $\geq 80$                     | 5,556 (8.2)                    | 4,228 (8.0)                                                | 1,328 (8.8)                                                 |          |
| Residence                     |                                |                                                            |                                                             | <0.001   |
| Urban                         | 30,903 (45.4)                  | 25,339 (47.9)                                              | 5,564 (36.9)                                                |          |
| Rural                         | 37,108 (54.6)                  | 27,584 (52.1)                                              | 9,524 (63.1)                                                |          |
| Location                      |                                |                                                            |                                                             | <0.001   |
| East                          | 31,149 (45.8)                  | 24,899 (47.0)                                              | 6,250 (41.4)                                                |          |
| Central                       | 16,262 (23.9)                  | 12,847 (24.3)                                              | 3,415 (22.6)                                                |          |
| West                          | 20,600 (30.3)                  | 15,177 (28.7)                                              | 5,423 (35.9)                                                |          |
| Education                     |                                |                                                            |                                                             | <0.001   |
| Primary school or lower       | 45,775 (67.3)                  | 35,086 (66.3)                                              | 10,689 (70.8)                                               |          |
| Secondary school              | 14,177 (20.8)                  | 11,146 (21.1)                                              | 3,031 (20.1)                                                |          |
| High school                   | 6,431 (9.5)                    | 5,285 (10.0)                                               | 1,146 (7.6)                                                 |          |
| College or above              | 1,628 (2.4)                    | 1,406 (2.7)                                                | 222 (1.5)                                                   |          |
| Ethnicity                     |                                |                                                            |                                                             | <0.001   |
| Han                           | 62,461 (91.8)                  | 49,281 (93.1)                                              | 13,180 (87.4)                                               |          |
| Other                         | 5,550 (8.2)                    | 3,642 (6.9)                                                | 1,908 (12.6)                                                |          |
| Annual per capita income, CNY |                                |                                                            |                                                             | <0.001   |
| <6,000                        | 14,099 (20.7)                  | 10,755 (20.3)                                              | 3,344 (22.2)                                                |          |
| 6,000–11,999                  | 10,070 (14.8)                  | 7,750 (14.6)                                               | 2,320 (15.4)                                                |          |
| 12,000–23,999                 | 10,538 (15.5)                  | 8,460 (16.0)                                               | 2,078 (13.8)                                                |          |
| $\geq 24,000$                 | 13,325 (19.6)                  | 11,323 (21.4)                                              | 2,002 (13.3)                                                |          |
| Refused/ do not know          | 19,979 (29.4)                  | 14,635 (27.7)                                              | 5,344 (35.4)                                                |          |

Abbreviation: CNY=Chinese Yuan.