

## Preplanned Studies

## The Utilization of Health Examination by Menopausal and Older Women — 6 Provinces, China, 2018

Bo Song<sup>1</sup>; Jiangli Di<sup>1,‡</sup>; Gengli Zhao<sup>2</sup>; Yu Ma<sup>1</sup>; Linhong Wang<sup>3,\*</sup>

### Summary

#### What is already known about this topic?

Improving their utilization of health examination is important for improving the health of menopausal and older women.

#### What is added by this report?

Only 32.3% and 29.7% of women had been screened for cervical cancer and breast cancer, respectively. The overall utilization rate of health examination for menopausal and older women is low. The health examination services for menopausal and older women were utilized less in the western regions and in rural areas than in the eastern and central regions and in urban areas.

#### What are the implications for public health practice?

The imbalance of development is an important factor affecting the utilization of health examination for menopausal and older women. It is necessary to take effective measures to improve the level of service utilization in the western region and rural areas, in order to narrow the gap in health between different regions.

With the extension of human life expectancy and the intensification of the aging of the population, the number of menopausal and older women in China has increased sharply. According to the sixth census in 2010, the number of women aged 40–65 years old in China has reached 220 million (1). Menopause is a special period in a woman's life. With the gradual decline of ovarian function and the decline of hormone levels, menopausal women are prone to cardiovascular disease, diabetes, osteoporosis and other chronic diseases, which will affect their health and quality of life (2). Health examination is not only an important part of health care for menopausal and older women, but also an important means of detecting a variety of age related diseases in the early stages (3). In order to provide a scientific basis for targeted health care for older women and to promote the health of older

women, a cross-sectional survey involving 5,049 women aged 50–70 years was conducted across eastern, central and western China. The main result of this study showed that the utilization rate of health examination for older women is low. The imbalance of development is an important factor affecting the utilization of health examination for menopausal and older women. The study was a cross-sectional survey in Jiangsu and Shandong, Hunan and Anhui, and Shaanxi and Sichuan provinces, which were selected to represent the three socio-economic regions of China: Eastern, Central and Western China. In each province one urban and one rural area was selected as investigation sites. Face-to-face interview questionnaires were completed by 5,049 women aged 50–70 years in the 6 provinces.

The average age of the respondents was 58.94±6.195 years. The main occupation of the cohort was farming, accounting for 55.2%, followed by retirees, accounting for 17.1%. Most of the participants (55.0%) had only primary school education or were illiterate, followed by those who had junior and senior high school education, accounting for 42.0%. The monthly income of the family was low — less than RMB 3,000 Yuan for 52.9%, followed by RMB 3,000–4,999 Yuan for 27.1%. The majority (89.9%) of the women were postmenopausal (Table 1).

Among the 5,049 women, 46.4% (95% CI: 45.0%–47.8%) of them reported never having undergone a regular physical examination (including examination of ultrasound, electrocardiogram, blood pressure, blood biochemistry, X-ray, bone mineral density, etc.) except for cervical cancer or breast cancer screening. The proportion in the western region (52.3%, 95% CI: 49.8%–54.8%) was higher than that in the eastern region (39.4%, 95% CI: 37.0%–41.8%) and the central region (47.8%, 95% CI: 45.4%–50.3%). There was significantly statistical difference among different regions ( $p<0.001$ ). The proportion of women who had had a regular physical examination within one year in the eastern region (40.9%, 95% CI: 38.5%–43.3%) was significantly

higher than that in the central and western regions (28.2%, 95% CI: 26.0%–30.4% and 28.2%, 95% CI: 26.0%–30.5%, respectively) ( $p<0.001$ ). The proportion in rural areas (36.8%, 95% CI: 34.9%–38.7%) was significantly higher than that in urban areas (28.1%, 95% CI: 26.3%–30.0%) ( $p<0.001$ ) (Table 2).

Of the 5,049 women, 64.2% (95% CI: 62.9%–65.6%) of them reported never having undergone breast or cervical cancer screening. The proportion of women who had never undergone breast or cervical cancer screening was highest in the western region (73.9%, 95% CI: 71.8%–76.0%), followed by the central region (60.5%, 95% CI: 58.1%–62.9%) and the eastern region (58.3%, 95% CI: 56.0%–60.7%) ( $p<0.001$ ). Only 27.8% (95% CI: 26.6%–29.0%) of women reported having undergone both breast and cervical cancer screening. The proportion in the western region (14.7%, 95% CI: 13.0%–16.3%) was significantly lower than that in the central (35.5%, 95% CI: 33.2%–37.8%) and eastern

regions (33.3%, 95% CI: 31.0%–35.5%) ( $p<0.001$ ). The proportion in rural areas (26.5%, 95% CI: 24.8%–28.2%) was lower than that in urban areas (29.1%, 95% CI: 27.3%–30.9%) ( $p=0.015$ ) (Table 2).

The proportion of women who had never undergone breast cancer screening (70.3%, 95% CI: 69.0%–71.6%) was higher than the proportion of women who had never undergone cervical cancer screening (67.7%, 95% CI: 66.4%–68.9%). The proportions of women in the western region who had never undergone cervical cancer screening (77.6%, 95% CI: 75.6%–79.6%) or breast cancer screening (83.8%, 95% CI: 82.0%–85.6%) were significantly higher than for those in the central (63.2%, 95% CI: 60.9%–65.5% and 62.5%, 95% CI: 60.2%–64.9%, respectively) and the eastern regions (62.3%, 95% CI: 60.0%–64.6% and 64.6%, 95% CI: 62.4%–66.9% respectively) ( $p<0.001$ ). The proportion of women who had never been screened for cervical cancer in urban areas (69.6%, 95% CI: 67.8%–71.4%) was higher than that in rural areas (65.8%, 95% CI:

TABLE 1. Comparison of demographic characteristics of the respondents by region and area type — 6 provinces, China, 2018.

Demographic characteristic	Total n (%)	Region			Area type	
		Eastern n (%)	Central n (%)	Western n (%)	Urban n (%)	Rural n (%)
Age (years)						
50–55	1,949(38.6)	675(39.6)	669(40.1)	605(36.0)	915(36.3)	1,034(40.9)
56–60	968(19.2)	333(19.6)	328(19.7)	307(18.3)	502(19.9)	466(18.4)
61–65	1,140(22.6)	367(21.6)	367(22.0)	406(24.2)	612(24.3)	528(20.9)
≥66	992(19.6)	328(19.3)	303(18.2)	361(21.5)	494(19.6)	498(19.7)
Education degree						
Primary school education or illiterate	2,766(55.0)	1,094(64.3)	795(48.0)	877(52.5)	937(37.3)	1,829(72.7)
Junior and senior high school	2,109(42.0)	564(33.2)	789(47.7)	756(45.3)	1,425(56.8)	684(27.2)
College or above	151(3.0)	43(2.5)	71(4.3)	37(2.2)	147(5.9)	4(0.2)
Occupation						
Farmers	2,764(55.2)	898(53.1)	772(46.7)	1,094(65.9)	598(24.1)	2,166(86.0)
Retirees	856(17.1)	383(22.6)	238(14.4)	235(14.1)	627(25.2)	229(9.1)
Workers	470(9.4)	211(12.5)	152(9.2)	107(6.4)	424(17.1)	46(1.8)
Business and service staff	244(4.9)	68(4.0)	122(7.4)	54(3.3)	197(7.9)	47(1.9)
Professional and technical personnel	156(3.1)	46(2.7)	79(4.8)	31(1.9)	138(5.6)	18(0.7)
Others	515(10.3)	85(5.0)	290(17.5)	140(8.4)	502(20.2)	13(0.5)
Monthly income of the family (RMB)						
<3,000	2,644(52.9)	731(43.2)	744(44.8)	1,169(71.1)	1,062(42.7)	1,582(63.0)
3,000–4,999	1,355(27.1)	479(28.3)	537(32.3)	339(20.6)	768(30.9)	587(23.4)
5,000–7,999	586(11.7)	244(14.4)	250(15.1)	92(5.6)	379(15.2)	207(8.2)
≥8,000	412(8.2)	237(14.0)	130(7.8)	45(2.7)	277(11.1)	135(5.4)

63.9%–67.6%) ( $p=0.037$ ). However, the proportion of women who had never had breast cancer screening in rural areas (72.9%, 95% CI: 71.1%–74.6%) was significantly higher than in urban areas (67.7%, 95% CI: 65.8%–69.5%) ( $p=0.001$ ). (Table 2).

Of the reasons for not taking physical examination, absence of anybody to organize them accounted for the majority (52.9%, 95% CI: 50.8%–54.9%). The proportion of women in the western region reporting nobody to organize (57.9%, 95% CI: 54.6%–61.2%) was higher than the proportions in the eastern (47.6%, 95% CI: 43.7%–51.5%) and the central regions (51.7%, 95% CI: 48.2%–55.3%) ( $p<0.001$ ). The other reasons included thinking it was not necessary (25.1%, 95% CI: 23.4%–26.9%) and unwilling (18.5%, 95% CI: 16.9%–20.1%). The proportion of women who were unwilling in the eastern region (26.6%, 95% CI: 23.2%–30.0%) and rural areas (22.5%, 95% CI: 20.1%–25.0%) were higher than in the central (17.2%, 95% CI: 14.5%–19.8%) and the western regions (13.7%, 95% CI: 11.4%–16.0%), and in urban areas (14.6%, 95% CI: 12.6%–16.7%) ( $p<0.001$ ) (Table 3).

Most of the women (53.7%, 95% CI: 51.9%–55.6%) were organized by village committees or community workers to participate in physical examination. Only 27.5% (95% CI: 25.8%–29.1%) of them went to hospitals for physical examination on their own initiative. The proportion of women organized by village committees or community workers in the eastern region (64.3%, 95% CI: 61.4%–67.2%) was significantly higher than that in the central (50.6%, 95% CI: 47.3%–53.9%) and the western regions (43.9%, 95% CI: 40.5%–47.2%) ( $p<0.001$ ). The proportion of women going to hospitals on their own initiative in urban areas (35.9%, 95% CI: 33.3%–38.4%) was significantly higher than in the rural areas (19.0%, 95% CI: 16.9%–21.0%) ( $p<0.001$ ). (Table 3).

## DISCUSSION

The overall utilization rate of health examination by older women was low. Breast and cervical cancer screening and regular physical examination are one of the important elements of health care for menopausal and older women. However, this study found that the utilization of health examination services by menopausal and older women was low. Only 32.5% of women had received a regular physical examination within one year, which was lower than the overall

result of the Fifth National Health Service Survey (43.3%) (4). Only 27.8% of women reported having been screened for both breast and cervical cancer in the past, and 32.3% and 29.7% of women had been screened for cervical cancer or breast cancer, respectively. The breast and cervical cancer screening rates were slightly higher than the results of the national sample survey in 2013 (22.5% and 26.7%, respectively) (5). However, the screening rate for breast (16.4%) and cervical cancer (15.2%) within one year were lower than those of the Fifth National Health Service Survey (26.5% and 24.3%, respectively) (4).

The village committee and community workers should play a greater role in organizing health examination to increase the participation rate. This study showed that a few (only 27.5%) menopausal and older women took the initiative to obtain health examination services. Many studies have shown that the lack of awareness was a major obstacle for women to participate in the examination. Women with older age, low education level, underemployment, low family income and lack of health insurance are less likely to take the initiative to seek a health examination (6–7). In this study, the most common reasons for not having a regular physical examination were the lack of organization, and feeling it was unnecessary or being unwilling. It reminds us that in order to enhance the service utilization of menopausal and older women and improve the participation rate, it is critical to encourage the village committee and community workers to play a role in organizing health examination, to carry out targeted health education for different groups of women.

The imbalance of regional economic development is an important factor affecting the utilization of services for menopausal and older women. Many studies have shown that the imbalance of regional economic development is an important factor restricting the utilization of services by menopausal and older women (5,8). The results of this study showed that menopausal and older women in the western region and in rural areas were less likely to utilize the health examination services than those in the eastern and central regions and in urban areas. This pattern may be related to the health awareness, education level, economic conditions of women and level of development of the health system (7). Therefore, we need to take effective measures to effectively improve the level of service utilization in the western region and rural areas, in order to narrow the gap in health between different age groups of women.

TABLE 2. Comparison of health examination among women aged 50-70 years by region and area type — 6 provinces, China, 2018.

Health examination	Total		Region				Area type				
	n (%)	95% CI	Eastern n (%)	Central n (%)	Western n (%)	χ <sup>2</sup>	P	Urban n (%)	Rural n (%)	χ <sup>2</sup>	P
Regular physical examination											
Never had	2,245 (46.4, 45.0-47.8)	648 (39.4, 37.0-41.8)	771 (47.8, 45.4-50.3)	826 (52.3, 49.8-54.8)	33.299	<0.001	1,103 (46.1, 44.1-48.1)	1,142 (46.7, 44.7-48.7)	1.355	0.244	
Ever had within 1 year	1573 (32.5, 31.2-33.8)	673 (40.9, 38.5-43.3)	454 (28.2, 26.0-30.4)	446 (28.2, 26.0-30.5)	94.934	<0.001	673 (28.1, 26.3-30.0)	900 (36.8, 34.9-38.7)	65.517	<0.001	
Ever had within 1-3 years	945 (19.5, 18.4-20.7)	303 (18.4, 16.5-20.3)	366 (22.7, 20.7-24.8)	276 (17.5, 15.6-19.4)	20.314	<0.001	569 (23.8, 22.1-25.5)	376 (15.4, 13.9-16.8)	78.834	<0.001	
Ever had >3 years	73 (1.5, 1.2-1.9)	21 (1.3, 0.7-1.8)	21 (1.3, 0.7-1.9)	31 (2.0, 1.3-2.6)	3.976	0.137	46 (1.9, 1.4-2.5)	27 (1.1, 0.7-1.5)	9.890	0.002	
Breast and cervical cancer screening											
Never had	3,230 (64.2, 62.9-65.6)	991 (58.3, 56.0-60.7)	1,003 (60.5, 58.1-62.9)	1,236 (73.9, 71.8-76.0)	53.154	<0.001	1,618 (64.4, 62.5-66.3)	1,612 (64.0, 62.2-65.9)	0.022	0.881	
Had screening for one cancer	401 (8.0, 7.2-8.7)	143 (8.4, 7.1-9.7)	67 (4.0, 3.1-5.0)	191 (11.4, 9.9-12.9)	87.741	<0.001	163 (6.5, 5.5-7.5)	238 (9.5, 8.3-10.6)	28.055	<0.001	
Had screening for both cancers	1,398 (27.8, 26.6-29.0)	565 (33.3, 31.0-35.5)	588 (35.5, 33.2-37.8)	245 (14.7, 13.0-16.3)	236.672	<0.001	731 (29.1, 27.3-30.9)	667 (26.5, 24.8-28.2)	5.860	0.015	
Cervical cancer screening											
Never had	3,388 (67.7, 66.4-68.9)	1,056 (62.3, 60.0-64.6)	1,044 (63.2, 60.9-65.5)	1,288 (77.6, 75.6-79.6)	50.253	<0.001	1,737 (69.6, 67.8-71.4)	1,651 (65.8, 63.9-67.6)	4.366	0.037	
Ever had within 1 year	822 (16.4, 15.4-17.4)	365 (21.5, 19.6-23.5)	284 (17.2, 15.4-19.0)	172 (10.4, 8.9-11.8)	102.898	<0.001	344 (13.8, 12.4-15.1)	478 (19.0, 17.5-20.6)	43.689	<0.001	
Ever had within 1-3 years	516 (10.3, 9.5-11.1)	168 (9.9, 8.5-11.3)	220 (13.3, 11.7-15.0)	128 (7.7, 6.4-9.0)	37.116	<0.001	268 (10.7, 9.5-11.9)	248 (9.9, 8.7-11.0)	1.550	0.213	
Ever had >3 years	282 (5.6, 5.0-6.3)	106 (6.3, 5.1-7.4)	104 (6.3, 5.1-7.5)	72 (4.3, 3.4-5.3)	11.617	0.003	148 (5.9, 5.0-6.9)	134 (5.3, 4.5-6.2)	1.390	0.238	
Breast cancer screening											
Never had	3,523 (70.3, 69.0-71.6)	1,097 (64.6, 62.4-66.9)	1,034 (62.5, 60.2-64.9)	1,392 (83.8, 82.0-85.6)	93.312	<0.001	1,690 (67.7, 65.8-69.5)	1,833 (72.9, 71.1-74.6)	11.609	0.001	
Ever had within 1 year	760 (15.2, 14.2-16.2)	325 (19.2, 17.3-21.0)	307 (18.6, 16.7-20.4)	128 (7.7, 6.4-9.0)	140.475	<0.001	396 (15.9, 14.4-17.3)	364 (14.5, 13.1-15.8)	2.695	0.101	
Ever had within 1-3 years	444 (8.9, 8.1-9.6)	158 (9.3, 7.9-10.7)	210 (12.7, 11.1-14.3)	76 (4.6, 3.6-5.6)	92.514	<0.001	253 (10.1, 8.9-11.3)	191 (7.6, 6.6-8.6)	17.315	<0.001	
Ever had >3 years	285 (5.7, 5.0-6.3)	117 (6.9, 5.7-8.1)	103 (6.2, 5.1-7.4)	65 (3.9, 3.0-4.8)	22.863	<0.001	158 (6.3, 5.4-7.3)	127 (5.0, 4.2-5.9)	6.744	0.009	

TABLE 3. Comparison of participation status of the regular physical examination among women aged 50–70 years by region and area type — 6 provinces, China, 2018.

Item	Total n(%, 95% CI)	Region				Area type		P	
		Eastern n(%, 95% CI)	Central n(%, 95% CI)	Western n(%, 95% CI)	X <sup>2</sup>	Urban n(%, 95% CI)	Rural n(%, 95% CI)		X <sup>2</sup>
Reasons for not participating in physical examination									
Nobody to organize	1,201(52.9, 50.8–54.9)	306(47.6, 43.7–51.5)	401(51.7, 48.2–55.3)	494(57.9, 54.6–61.2)	66.217	683(59.4, 56.6–62.3)	518(46.2, 43.2–49.1)	45.337	<0.001
Thinking it was not necessary	571(25.1, 23.4–26.9)	136(21.2, 18.0–24.3)	226(29.2, 26.0–32.4)	209(24.5, 21.6–27.4)	36.037	260(22.6, 20.2–25.1)	311(27.7, 25.1–30.3)	9.110	0.003
Unwilling	421(18.5, 16.9–20.1)	171(26.6, 23.2–30.0)	133(17.2, 14.5–19.8)	117(13.7, 11.4–16.0)	16.447	168(14.6, 12.6–16.7)	253(22.5, 20.1–25.0)	34.323	<0.001
Other	78(3.4, 2.7–4.2)	30(4.7, 3.0–6.3)	15(1.9, 1.0–2.9)	33(3.9, 2.6–5.2)	10.731	38(3.3, 2.3–4.3)	40(3.6, 2.5–4.7)	0.103	0.749
Forms of participating									
On their own initiative	759(27.5, 25.8–29.1)	169(16.2, 13.9–18.4)	276(31.4, 28.3–34.5)	314(37.4, 34.1–40.7)	67.032	499(35.9, 33.3–38.4)	260(19.0, 16.9–21.0)	150.516	<0.001
Organized by work institution	363(13.1, 11.9–14.4)	139(13.3, 11.3–15.4)	137(15.6, 13.2–18.0)	87(10.4, 8.3–12.4)	21.521	312(22.4, 20.2–24.6)	51(3.7, 2.7–4.7)	375.322	<0.001
Organized by village committees or community worker	1,484(53.7, 51.9–55.6)	671(64.3, 61.4–67.2)	445(50.6, 47.3–53.9)	368(43.9, 40.5–47.2)	150.418	535(38.5, 35.9–41.0)	949(69.2, 66.8–71.7)	230.992	<0.001
Others (public welfare projects, et al.)	156 (5.6, 4.8–6.5)	65 (6.2, 4.8–7.7)	21 (2.4, 1.4–3.4)	70 (8.3, 6.5–10.2)	41.942	45 (3.2, 2.3–4.2)	111 (8.1, 6.7–9.5)	55.846	<0.001

There were some limitations in this study. Firstly, self-reported information might be subjected to biases. Secondly, the study used convenience sampling, and data were collected in 12 counties/districts in 6 provinces, so the results might not be representative of the regional and national levels.

**Acknowledgments:** Appreciation is expressed to all the women who participated in the study. We also express our thanks to the efforts of all staff in the data collection in Jiangsu and Shandong, Hunan and Anhui, and Shaanxi and Sichuan provinces.

doi: [10.46234/ccdcw2020.185](https://doi.org/10.46234/ccdcw2020.185)

# Corresponding authors: Jiangli Di, [dijiangli@chinawch.org.cn](mailto:dijiangli@chinawch.org.cn); Linhong Wang, [linhong@chinawch.org.cn](mailto:linhong@chinawch.org.cn).

<sup>1</sup> National Center for Women and Children's Health, Chinese Center for Disease Control and Prevention, Beijing, China; <sup>2</sup> Women and Children's Health Center of the First Hospital of Peking University, Beijing, China; <sup>3</sup> National Center for Chronic and Non-communicable Disease Control and Prevention, Chinese Center for Disease Control and Prevention, Beijing, China.

Submitted: March 06, 2020; Accepted: July 16, 2020

## REFERENCES

1. National Bureau of Statistics of the People's Republic of China. 2010 national census main data bulletin (No. 1). <http://www.stats.gov.cn/tjsj/pcsj/rkpc/6rp/html/fu03.htm>. [2020-02-12]. (In Chinese).
2. Ebtekar F, Dalvand S, Gheshlagh RG. The prevalence of metabolic syndrome in postmenopausal women: A systematic review and meta-analysis in Iran. *Diabetes Metab Syndr* 2018;12(6):955 – 60. <http://dx.doi.org/10.1016/j.dsx.2018.06.002>.
3. Women's Health Branch of Chinese Medical Association, Climacteric Health Care Group. Menopausal women's health care guide (2015). *J Pract Gynecol Endocrinol* 2016;3(2):21 – 32. <http://dx.doi.org/10.16484/j.cnki.issn2095-8803.2016.02.012>. (In Chinese).
4. Center for Health Statistics and Information. An analysis report of national health services survey in China, 2013. <http://www.nhc.gov.cn/mohwsbwstjxxzx/s8211/201610/9f109ff40e9346fca76dd82cecf419ce.shtml>. [2020-02-12]. (In Chinese).
5. Bao HL, Wang LH, Wang LM, Fang LW, Zhang M, Zhao ZP, et al. Study on the coverage of cervical and breast cancer screening among women aged 35-69 years and related impact of socioeconomic factors in China, 2013. *Chin J Epidemiol* 2018;39(2):208 – 12. <http://dx.doi.org/10.3760/cma.j.issn.0254-6450.2018.02.014>. (In Chinese).
6. Ogunwale AN, Sangi-Haghpeykar H, Montealegre J, Cui YW, Jibaja-Weiss M, Anderson ML. Non-utilization of the Pap test among women with frequent health system contact. *J Immigr Minor Health* 2016;18(6):1404 – 12. <http://dx.doi.org/10.1007/s10903-015-0287-9>.
7. Romli R, Shahabudin S, Saddki N, Mokhtar N. Cervical cancer and pap smear screening: knowledge, attitude and practice among working women in northern state of Malaysia. *Med J Malaysia* 2019;74(1):8-14. <https://pubmed.ncbi.nlm.nih.gov/30846655/>.
8. Gong WY, Feng GY, Yuan F, Ding CC, Song C, Liu AL. Status of medical checkup among Chinese populations aged 15 years and above, 2010-2012. *Chin J Public Health* 2018;34(5):660 – 4. <http://dx.doi.org/10.11847/zgggws1115351>. (In Chinese).