

Awareness Status of Chronic Disabling Neurological Diseases among Elderly Veterans

Ji-Ping Tan¹, Lin-Qi Zhu², Jun Zhang³, Shi-Min Zhang¹, Xiao-Yang Lan¹, Bo Cui¹, Yu-Cheng Deng⁴, Ying-Hao Li⁵, Guang-Hua Ye⁶, Lu-Ning Wang¹

¹Department of Geriatric Neurology, Chinese PLA General Hospital, Beijing 100853, China

²Outpatient Clinic, The Fourth Veteran Community of Political Department of Beijing Military Command, Beijing 100142, China

³Department of Cadre, West Beijing Branch of the Military General Hospital of Beijing PLA, Beijing 100144, China

⁴Outpatient Clinic, Veteran Community of Armament Department of Beijing Military Command, Beijing 100144, China

⁵Outpatient Clinic, The Fourth Veteran Community of Headquarters of Beijing Military Command, Beijing 100071, China

⁶Outpatient Clinic, The Xiangshan Veteran Community of Chinese PLA Navy, Beijing 100093, China

Abstract

Background: The awareness, treatment and prevention of chronic diseases are generally poor among the elderly population of China, whereas the prevention and control of chronic diseases in elderly veteran communities have been ongoing for more than 30 years. Therefore, investigating the awareness status of chronic disabling neurological diseases (CDND) and common chronic diseases (CCD) among elderly veterans may provide references for related programs among the elderly in the general population.

Methods: A cross-sectional survey was conducted among veterans ≥ 60 years old in veteran communities in Beijing. The awareness of preventive strategies against dementia, Alzheimer's disease (AD), Parkinson's disease (PD), sleep disorders, cerebrovascular disease (CVD) and CCD such as hypertension, and the approaches used to access this information, including media, word of mouth (verbal communication among the elderly) and health care professionals, were investigated via face-to-face interviews.

Results: The awareness rates for CCD and CVD were approximately 100%, but that for AD was the lowest at $<10\%$. The awareness rates for sleep disorders, PD and dementia, were 51.0–89.4%. Media was the most commonly selected mode of communication by which veterans acquired knowledge about CCD and CVD. Media was used by approximately 80% of veterans. Both health care professionals and word of mouth were used by approximately 50% of veterans. With respect to the source of information about CDND excluding AD, the rates of the use of health care professionals, word of mouth and media were 10.6–28.2%, 56.5–76.5%, and approximately 50%, respectively.

Conclusions: The awareness of CDND among elderly veterans was significantly lower than that of CCD. More information about CDND should be disseminated by health care professionals. Appropriate guidance will promote the rapid and extensive dissemination of information about the prevention of CDND by media and word-of-mouth peer education.

Key words: Awareness; Chronic Disabling Neurological Diseases; Chronic Diseases; Health Care Professionals; Prevention and Treatment Knowledge

INTRODUCTION

Studies have demonstrated that although the prevalence of chronic diseases in the elderly population of China is high, resulting in a heavy disease burden, the awareness, treatment and prevention of chronic diseases are generally poor in China.^[1-4] Although knowledge concerning the prevention of hypertension has been most extensively popularized, the awareness of this information in economically poor regions and rural areas is $<10\%$.^[3,4] The control rate of hypertension in rural areas of China is only 2.3%, which is lower than that in rural India (8.6%).^[3,4] However, the burden of chronic

diseases will continuously increase due to the aging of the Chinese population. In addition, the high disabling potential of chronic neurological diseases such as dementia will also cause an enormous social and economic burden because of the huge population base of elderly individuals in China. Therefore, the prevention and control of chronic diseases in China are very important.

The prevention and control of chronic diseases have been the focus of military health services in elderly veteran communities. Related tasks have been performed for more than 30 years, and a complete prevention and control system has been established. Thus, is the chronic disease awareness status among elderly veterans higher than that of the elderly in the general population? Can the years of experience in the

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Address for correspondence: Prof. Lu-Ning Wang,
Department of Geriatric Neurology, Chinese PLA General Hospital,
Beijing 100853, China
E-Mail: lnw_301@163.com

prevention and control of chronic diseases in elderly veteran communities provide valuable references? Currently, most Chinese veterans have entered the advanced aging stage. The huge burden caused by dementia and other chronic disabling neurological diseases (CDND) has gradually attracted our attention, and information and education about disease prevention have gradually been introduced. However, does the current awareness of strategies for the prevention and control of these diseases correspond to their high degree of disablement? To address this issue, a survey of the popularization and awareness status of chronic disease prevention knowledge was submitted to elderly veteran communities in Beijing to summarize the experiences and shortcomings of these individuals regarding their knowledge about the prevention and control of chronic diseases. The survey results are expected to provide a valuable reference for the future prevention and control of chronic diseases among the elderly in the general population.

METHODS

Research design

A cross-sectional cluster sampling method was applied to survey veterans living in elderly veteran communities in Beijing. The study protocol was reviewed and approved by the Ethics Committee of Chinese PLA General Hospital, and the investigation was initiated after obtaining informed consent from the subjects or their guardians.

Study subjects

Veterans were included if they met the following criteria: (1) At least 60 years old; (2) continuous residence in a veteran community in Beijing for at least 1 month; and (3) a history of working in the military system before retirement. Most Chinese veterans live in fixed veteran communities composed of stable elderly populations after retirement. The fixed healthcare management system, including community outpatient clinics, provides support and professional healthcare services to these veterans and stores long-term medical records. All of the above characteristics of veterans reduce the rate of missing data and facilitate epidemiological research. The working staff in the veteran communities and the spouses of the retired veterans were not included in this study.

Investigation of the popularization and awareness status of chronic diseases

Using a unified questionnaire, via face-to-face interviews, the baseline characteristics of the veterans were collected, and the popularization and awareness status of chronic disease prevention knowledge was investigated by qualified geriatric neurology graduate students after standardized training. The survey covered five CDND, including dementia, Alzheimer's disease (AD), Parkinson's disease (PD), sleep disorder and cerebrovascular disease (CVD), and three common chronic diseases (CCD), including hypertension, diabetes, and coronary heart disease (CHD); CVD was considered as a common chronic neurological disease. The survey

investigated the current status of the veterans' awareness of the disease name, their knowledge about the prevention and treatment of these chronic diseases and the approaches used by the veterans to access this information, including media (books, newspapers, magazines, radio, and television), word of mouth (verbal communication among the elderly), and health care professionals (hospital seminar and medical staff in the elderly veteran communities). The prevalence of the above chronic diseases in the veterans was also recorded.

Statistical analysis

EpiData 3.1 software (The EpiData Association, Odense, Denmark) developed by Lauritsen JM and Bruus M. was used to establish a database, and SPSS 19.0 (SPSS Inc., Chicago, IL, USA) was used for the statistical analysis of the data. The differences in the total awareness rates of various chronic diseases among veterans were compared with that of hypertension using the McNemar paired Chi-square test. Alternatively, the awareness rates of veterans with or without different chronic diseases were compared to that of hypertension using the Chi-square test. The demographic differences in the awareness and the veterans' approaches to access knowledge about a chronic disease were compared using the Chi-square test, the Fisher exact test, and the Chi-square trend test. Differences between groups were considered statistically significant when $P < 0.05$. Due to the varying number of subjects who responded regarding their awareness of different chronic diseases, the sample sizes of each surveyed item were recorded; only complete data were analyzed, and any subjects for whom data were missing were omitted.

RESULTS

A total of 3473 veterans aged ≥ 60 years living in 44 elderly veteran communities in Beijing completed this survey in 2008; their average age was 77.97 ± 5.10 years. Among them, 30.8% were in the oldest old category (aged ≥ 80 years), 94.4% were males, and their average education duration was 9.93 ± 4.18 years.

The awareness status of strategies for the prevention of chronic diseases

The prevalence of hypertension and CHD among veterans was higher than 60.0%, which was the highest among CCD; the prevalence of PD, AD and dementia were low among CDND, whereas the prevalence of CVD and sleep disorders were relatively high [Table 1].^[5] The awareness statuses of the disease name and of strategies for the prevention of CDND in all surveyed veterans, those with CDND, and those without CDND were significantly worse than those with CCD such as hypertension. The awareness rates for hypertension, CHD, and diabetes were approximately 100%; hypertension displayed the highest awareness rate. The awareness rate for CVD was the highest among CDND and was close to that for hypertension and the other CCD. The awareness rate for AD was the lowest at $< 10\%$, followed by those for sleep disorders, PD, and dementia. The differences

in the awareness rates between the veterans with CDND and those with hypertension were statistically significant [Table 1 and Figure 1].

Differences in the awareness rates of chronic diseases based on the demographic characteristics

The awareness statuses of the disease name and prevention and treatment knowledge about chronic diseases varied with age, years of education, and gender. Except for hypertension and CHD, the awareness rates of the name of chronic diseases in the oldest-old group (aged ≥ 80 years) were significantly lower than those in the younger elderly group (aged 60–79 years). The awareness rates of the prevention and treatment knowledge about dementia, CVD, and hypertension among the oldest-old group were remarkably lower than those among the younger elderly group. Except for hypertension, with increasing years of education, the awareness rate of the name of chronic diseases exhibited an increasing trend. Except for AD and PD, awareness status of the prevention and treatment knowledge about chronic diseases increased significantly

with increasing years of education based on the Chi-square trend test. Except for dementia, the awareness status of the name of chronic diseases among females was significantly higher than that among males. Additionally, the awareness statuses of the prevention and treatment knowledge about AD among females were significantly higher than those among males based on the Chi-square test [Tables 2 and 3].

Approaches used to access knowledge about the prevention of chronic diseases

Regarding the approaches used to access knowledge about CCD such as hypertension, diabetes, CHD and CVD, media was the most frequently selected mode of communication, displaying the highest rate of nearly 80%. The rate of the use of health care professionals was 46.1–58.6%, which was similar to or higher than that of the word of mouth [48.6–51.9%; Table 4]. Compared with CCD such as hypertension, among the approaches to access knowledge about CDND, the rates of the use of health care professionals were significantly reduced to 10.6–28.2%. Excluding AD, the rates of the use of the word of mouth

Table 1: Prevalence rates of chronic diseases and awareness rates of prevention knowledge about chronic diseases among veterans (%(n/N))

Disease type	Prevalence rate	Awareness rate of disease name	Awareness rate of prevention knowledge		
			Veterans with chronic diseases	Veterans without chronic diseases	All veterans
Dementia	6.5 (224/3423)	98.3 (3327/3384)*	67.1 (114/170)*	89.4 (2853/3192)*	88.2 (2986/3384)*
AD	3.4 (117/3423)	7.3 (246/3381)*	3.3 (3/92)*	4.3 (141/3267)*	4.3 (144/3381)*
PD	2.0 (70/3473)	80.3 (2718/3385)*	76.1 (51/67)*	61.8 (2052/3267)*	62.1 (2103/3385)*
Sleep disorders	35.8 (1237/3454)	66.6 (2254/3385)*	54.8 (660/1205)*	51.0 (1112/2179)*	52.3 (1772/3385)*
CVD	20.1 (699/3473)	99.5 (3365/3381)†	96.1 (619/644)†	93.6 (2561/2736)	94.1 (3180/3381)*
Diabetes	24.1 (837/3470)	99.7 (3371/3380)	98.0 (789/805)	92.6 (2384/2574)†	93.9 (3173/3380)*
CHD	64.5 (2238/3468)	99.8 (3373/3379)	96.9 (2097/2165)†	94.2 (1141/1211)	95.9 (3240/3379)*
Hypertension	62.3 (2163/3470)	99.9 (3377/3381)	98.2 (2065/2102)	95.1 (1216/1278)	97.0 (3281/3381)

* $P < 0.001$; † $P < 0.01$; the P value reflects differences in the awareness rates of various chronic diseases relative to hypertension among veterans. The numbers in parentheses correspond to the numbers of veterans with the disease or who knew the disease name and prevention knowledge divided by the total numbers of veterans. AD: Alzheimer's disease; PD: Parkinson's disease; CVD: Cerebrovascular disease; CHD: Coronary heart disease.

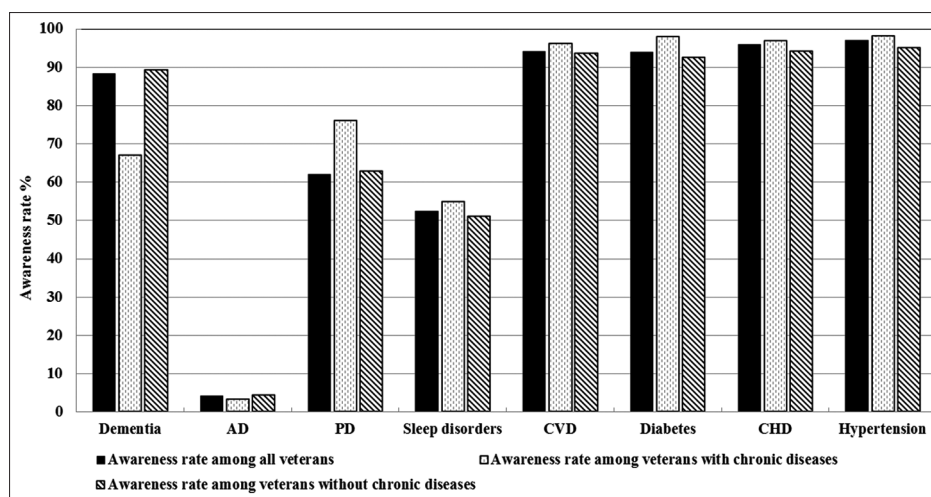


Figure 1: Awareness rates of prevention knowledge about chronic diseases among veterans. AD: Alzheimer's disease; PD: Parkinson's disease; CVD: Cerebrovascular disease; CHD: Coronary heart disease.

Table 2: Awareness rates of chronic disease names among veterans based on different demographic characteristics

Disease type	Age (%(n/N))		Education duration			Gender (%(n/N))	
	60–79 years	≥80 years	<1 year (n/N)	1–6 years (%(n/N))	≥7 years(%(n/N))	Male	Female
Dementia	98.9 (2354/2380)	96.9 (973/1004) [‡]	15/18	96.6 (677/701)	99.0 (2625/2652) [‡]	98.3 (3138/3191)	97.9 (189/193)
AD	8.0 (191/2376)	5.5 (55/1005) [†]	0/18	2.7 (19/700)	8.5 (225/2650) [‡]	6.6 (210/3188)	18.7 (36/193) [‡]
PD	84.4 (2008/2380)	70.6 (710/1005) [‡]	11/18	67.0 (470/701)	84.0 (2229/2653) [‡]	79.5 (2538/3192)	93.3 (180/193) [‡]
Sleep disorders	69.6 (1657/2380)	59.4 (597/1005) [‡]	8/18	58.2 (408/701)	68.9 (1829/2653) [‡]	65.8 (2101/3192)	79.3 (153/193) [‡]
CVD	99.8 (2372/2376)	98.8 (993/1005) [‡]	17/18	99.3 (695/700)	99.6 (2640/2650) [*]	99.5 (3172/3188)	100.0 (193/193)
Diabetes	99.9 (2375/2377)	99.3 (996/1003) [†]	18/18	99.6 (696/699)	99.8 (2644/2650)	99.7 (3179/3188)	100.0 (192/192)
CHD	99.9 (2375/2377)	99.6 (998/1002)	18/18	99.3 (693/698)	100.0 (2649/2650) [†]	99.8 (3181/3187)	100.0 (192/192)
Hypertension	100.0 (2376/2377)	99.7 (1001/1004)	18/18	99.6 (697/700)	100.0 (2649/2650) [*]	99.9 (3185/3189)	100.0 (192/192)

* $P < 0.05$; [†] $P < 0.01$; [‡] $P < 0.001$; the P value reflects differences in the awareness rates of various chronic diseases among veterans grouped by age, education level and gender. The Chi-square trend test was used to explore the educational differences in the awareness rate of chronic diseases among veterans. The numbers in parentheses correspond to the numbers of veterans who knew the disease name divided by the total numbers of veterans. AD: Alzheimer's disease; PD: Parkinson's disease; CVD: Cerebrovascular disease; CHD: Coronary heart disease.

Table 3: Awareness rates of chronic disease prevention knowledge among veterans based on different demographic characteristics

Disease type	Age (%(n/N))		Education duration			Gender (%(n/N))	
	60–79 years	≥80 years	<1 year (n/N)	1–6 years (%(n/N))	≥7 years (%(n/N))	Male	Female
Dementia	90.7 (2134/2353)	87.6 (852/973) [†]	13/15	88.3 (597/676)	90.3 (2370/2625)	89.7 (2813/3137)	91.5 (173/189)
AD	58.6 (112/191)	58.2 (32/55)	0/0	10/19	58.7 (132/225)	54.8 (115/210)	80.6 (29/36) [†]
PD	78.3 (1572/2008)	74.8 (531/710)	8/11	75.3 (354/470)	77.9 (1737/2229)	77.1 (1958/2538)	80.6 (145/180)
Sleep disorders	78.2 (1296/1657)	79.7 (476/597)	6/8	74.0 (302/408)	79.7 (1458/1829) [*]	78.7 (1653/2101)	77.8 (119/153)
CVD	95.4 (2264/2372)	92.2 (916/993) [‡]	14/17	93.5 (650/695)	94.9 (2505/2640) [*]	94.5 (2998/3172)	94.3 (182/193)
Diabetes	94.4 (2239/2373)	94.0 (934/994)	14/18	92.4 (641/694)	94.9 (2508/2642) [‡]	94.2 (2991/3175)	94.8 (182/192)
CHD	96.1 (2281/2374)	96.1 (959/998)	14/18	94.5 (654/692)	96.6 (2560/2649) [‡]	96.1 (3056/3180)	95.8 (184/192)
Hypertension	97.7 (2320/2374)	96.1 (961/1000) [†]	14/18	95.3 (662/695)	97.9 (2592/2648) [‡]	97.2 (3094/3182)	97.4 (187/192)

* $P < 0.05$; [†] $P < 0.01$; [‡] $P < 0.001$; the P value reflects differences in the awareness rates of various chronic diseases among veterans grouped by age, education level and gender. The Chi-square trend test was used to explore the educational differences in the awareness rate of chronic diseases among veterans. The numbers in parentheses correspond to the numbers of veterans with prevention knowledge divided by total numbers of veterans. AD: Alzheimer's disease; PD: Parkinson's disease; CVD: Cerebrovascular disease; CHD: Coronary heart disease.

for CDND were 56.5–76.5%, which were higher than those for CCD. Additionally, the rates of the use of media for CDND were 46.2–56.2%, which were lower than those for CCD [Tables 4, 5, and Figure 2].

The approaches used to access knowledge about most chronic diseases were not significantly affected by age, years of education or gender [Tables 4 and 5]. Except for AD, PD, and sleep disorders, the proportions of the oldest-old group that obtained knowledge about chronic diseases using media were significantly lower than those of the younger elderly group. The proportion of the oldest-old group that obtained prevention and treatment knowledge about dementia through word of mouth was significantly higher than that of the younger elderly group. The approaches used to access prevention and treatment knowledge about dementia, PD, CVD, diabetes, CHD, and hypertension were affected by the number of years of education. The proportions of females who accessed prevention and treatment information about dementia, AD, PD, and sleep disorders using health care professionals were significantly higher than those of males [Tables 4 and 5].

DISCUSSION

This study demonstrated that the chronic disease awareness status among elderly veterans with or without chronic diseases was relatively good, but the awareness status of strategies for the prevention of CDND was far lower than that of CCD. The health care professionals played a limited role in the popularization of knowledge about CDND. The propagation of knowledge about CDND greatly relied on nonmedical professional media and peer education by word of mouth; thus, the accuracy and guiding significance of the information obtained are not assured.

Compared with CCD, the awareness status of CDND, particularly dementia, among elderly veterans was significantly lower. Although the prevalence of CDND was lower than that of CCD, CDND are the primary chronic disabling diseases in the elderly population, resulting in the heaviest disease burden, including huge costs.^[2,6] However, regardless of the income level of a country (high or middle income), public awareness of

Table 4: Rates of the use of different approaches to access prevention knowledge about chronic disabling neurological diseases among veterans

Items	Age (%(n/N))		Education duration			Gender (%(n/N))		Total (%(n/N))
	60–79 years	≥80 years	<1 year (n/N)	1–6 years (%(n/N))	≥7 years (%(n/N))	Male	Female	
Dementia								
Media	48.7 (1039/2134)	40.0 (339/848) [‡]	5/13	42.6 (254/596)	47.1 (1116/2367)	45.9 (1289/2811)	52.0 (89/171)	46.2 (1378/2982)
Word of mouth	75.1 (1602/2134)	80.2 (680/848) [‡]	10/13	80.9 (482/596)	75.5 (1786/2367) [‡]	76.7 (2157/2811)	73.1 (125/171)	76.5 (2282/2982)
Health care professionals	11.0 (234/2134)	9.7 (82/848)	1/13	8.7 (52/596)	11.1 (262/2367)	10.2 (288/2811)	16.4 (28/171)*	10.6 (316/2982)
AD								
Media	78.4 (87/111)	80.6 (25/31)	0/0	8/10	79.2 (103/130)	77.0 (87/113)	86.2 (25/29)	78.9 (112/142)
Word of mouth	23.4 (26/111)	25.8 (8/31)	0/0	2/10	24.6 (32/130)	23.0 (26/113)	27.6 (8/29)	23.9 (34/142)
Health care professionals	31.5 (35/111)	16.1 (5/31)	0/0	3/10	27.7 (36/130)	23.9 (27/113)	44.8 (13/29)*	28.2 (40/142)
PD								
Media	53.5 (840/1571)	50.4 (267/530)	3/8	47.2 (167/354)	53.9 (935/1735)*	52.8 (1033/1958)	51.7 (74/143)	52.7 (1107/2011)
Word of mouth	71.4 (1121/1571)	74.2 (393/530)	8/8	78.2 (277/354)	70.7 (1227/1735) [‡]	72.3 (1415/1958)	69.2 (99/143)	72.1 (1514/2011)
Health care professionals	11.7 (184/1571)	12.1 (64/530)	0/8	11.0 (39/354)	11.9 (207/1735)	11.3 (222/1958)	18.2 (26/143)*	11.8 (248/2011)
Sleep disorders								
Media	55.6 (719/1294)	58.1 (276/475)	4/6	52.0 (157/302)	57.0 (830/1455)	56.2 (929/1653)	56.9 (66/116)	56.2 (995/1769)
Word of mouth	56.0 (724/1294)	58.1 (276/475)	4/6	58.6 (177/302)	56.0 (815/1455)	56.6 (936/1653)	55.2 (64/116)	56.5 (1000/1769)
Health care professionals	14.5 (187/1294)	13.9 (66/475)	0/6	12.9 (39/302)	14.6 (212/1455)	13.8 (228/1653)	21.6 (25/116)*	14.3 (253/1769)
CVD								
Media	79.0 (1787/2262)	72.9 (666/913) [‡]	8/14	73.2 (475/649)	78.4 (1962/2501) [‡]	77.1 (2312/2997)	79.2 (141/178)	77.3 (2453/3175)
Word of mouth	50.4 (1139/2262)	52.5 (479/913)	6/14	53.9 (350/649)	50.3 (1258/2501)	51.0 (1528/2997)	50.6 (90/178)	51.0 (1618/3175)
Health care professionals	46.7 (1056/2262)	45.7 (417/913)	8/14	47.5 (308/649)	46.1 (1153/2501)	46.7 (1399/2997)	41.6 (74/178)	46.4 (1473/3175)

* $P < 0.05$; [‡] $P < 0.01$; [‡] $P < 0.001$; the P value reflects differences in the use of different approaches to access prevention knowledge about chronic disabling neurological diseases among veterans grouped by age, education level and gender. The Chi-square trend test was used to explore the educational differences in the use of different approaches to access prevention knowledge about chronic disabling neurological diseases among veterans. The numbers in parentheses correspond to the numbers of veterans who used the indicated approach divided by the total numbers of veterans. AD: Alzheimer's disease; PD: Parkinson's disease; CVD: Cerebrovascular disease; CHD: Coronary heart disease.

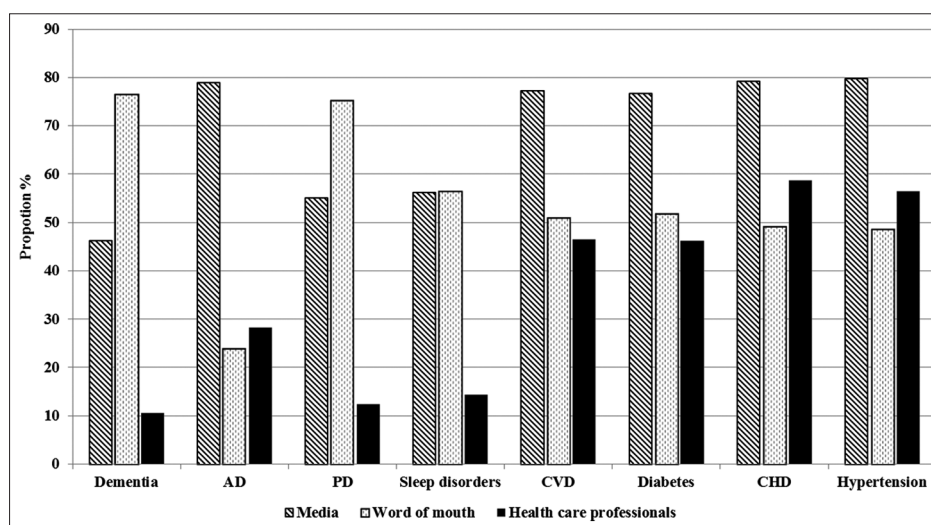


Figure 2: Rates of the use of different approaches to access prevention knowledge about chronic diseases among veterans. AD: Alzheimer's disease; PD: Parkinson's disease; CVD: Cerebrovascular disease; CHD: Coronary heart disease.

Table 5: Rates of the use of different approaches to access prevention knowledge about common chronic diseases among veterans

Items	Age (%(n/N))		Education duration			Gender (%(n/N))		Total (%(n/N))
	60–79 years	≥80 years	<1 year (n/N)	1–6 years (%(n/N))	≥7 years (%(n/N))	Male	Female	
Diabetes								
Media	78.3 (1753/2239)	73.0 (681/933) [†]	10/14	73.6 (471/640)	77.6 (1945/2508)	76.7 (2296/2993)	77.1 (138/179)	76.7 (2434/3172)
Word of mouth	51.4 (1151/2239)	52.9 (494/933)	7/14	54.4 (348/640)	51.3 (1286/2508)	52.0 (1555/2993)	50.3 (90/179)	51.9 (1645/3172)
Health care professionals	46.7 (1045/2239)	44.8 (418/933)	8/14	50.5 (323/640)	45.1 (1130/2508) [†]	46.4 (1389/2993)	41.3 (74/179)	46.1 (1463/3172)
CHD								
Media	81.0 (1846/2279)	75.1 (719/957) [‡]	9/14	76.0 (496/653)	80.1 (2049/2557) [*]	79.3 (2422/3055)	79.0 (143/181)	79.3 (2565/3236)
Word of mouth	49.5 (1127/2279)	48.5 (464/957)	6/14	51.1 (334/653)	48.7 (1245/2557)	49.1 (1500/3055)	50.3 (91/181)	49.2 (1591/3236)
Health care professionals	58.1 (1325/2279)	59.7 (571/957)	9/14	62.6 (409/653)	57.6 (1472/2557)	59.0 (1801/3055)	52.5 (95/181)	58.6 (1896/3236)
Hypertension								
Media	81.6 (1891/2318)	75.3 (722/959) [‡]	9/14	75.0 (495/660)	81.0 (2099/2590) [†]	79.8 (2467/3093)	79.3 (146/184)	79.7 (2613/3277)
Word of mouth	48.3 (1119/2318)	49.4 (474/959)	7/14	51.1 (337/660)	48.0 (1243/2590)	48.8 (1508/3093)	46.2 (85/184)	48.6 (1593/3277)
Health care professionals	56.9 (1318/2318)	55.3 (530/959)	8/14	59.5 (393/660)	55.6 (1440/2590)	56.7 (1754/3093)	51.1 (94/184)	56.4 (1848/3277)

* $P < 0.05$; [†] $P < 0.01$; [‡] $P < 0.001$; the P value reflects differences in the use of different approaches to access prevention knowledge about common chronic diseases among veterans grouped by age, education level and gender. The Chi-square trend test was used to explore the educational differences in the use of different approaches to access prevention knowledge of chronic diseases among veterans. The numbers in parentheses correspond to the numbers of patients who used the indicated approach divided by the total numbers of veterans. CHD: Coronary heart disease.

dementia is generally poor, and this limited understanding delays the early diagnosis and treatment of patients.^[6] Although the prevention and control of chronic diseases in elderly veteran communities are implemented earlier than in the general population, the poor awareness status of CDND has maintained a huge gap with respect to its heavy social and economic burden. Therefore, extensive popularization should be implemented to raise awareness of these diseases, thus contributing to the efficient treatment of CDND and reducing the burden of these diseases.

Regarding the approaches used to access information about the prevention of CDND, the rates of the use of health care professionals were only 10.6–28.2%, whereas those for CCD were approximately 50%. Compared with CCD, the role of health care professionals in the dissemination of information about CDND was significantly lacking, and this weakness should be strengthened. According to a report from World Health Organization (WHO), regardless of economic development level of a country, the awareness of dementia is generally lacking not only among the public but also among health care and social service providers.^[6] Some physicians even look down on dementia patients and their families, increasing the patients' sense of shame and hindering the efficient treatment of patients.^[6] Therefore, the WHO advocates that countries worldwide should learn from the experience of the national dementia programs such as those of Japan and the UK to improve the awareness status of dementia among health care workers and the public.^[6]

The health care professionals in geriatric neurology should provide professional training to medical personnel working in veteran communities and general population to improve their capability of preventing and controlling CDND.

Although the Chinese government had strengthened chronic disease prevention program, the awareness rates of CCD were generally low.^[7,8] The awareness rate of hypertension was 70–80% in Beijing and Shanghai, whereas that in low economic status regions and rural areas was lower than 10%, and the awareness rates for CHD and CVD among those of low economic status were <1%.^[3,4,9-14] The awareness status for CDND was worse than that for hypertension regardless of the economic development level. The awareness rates of the early symptoms and nursing knowledge of dementia were only approximately 15% and 5%, respectively.^[15-17] The awareness rates of prevention knowledge about CCD, dementia and CDND among elderly veterans were significantly higher than those among the general elderly population. Notably, the veterans without chronic diseases also exhibited a higher awareness status of chronic diseases, improving the efficient diagnosis and effective treatment of chronic diseases. Since veteran communities were established more than 30 years ago, the prevention and control of CCD and CDND have been the focus of health care for veterans of advanced age.^[18,19] This survey also documented the excellent accomplishments regarding the prevention and control of chronic diseases among veterans.

The proportions of elderly veterans who accessed knowledge about CCD or CDND from health care professionals were approximately 50% and 10%, respectively. This finding indicated that medical personnel played an effective role in the popularization of chronic disease prevention knowledge. Although the proportion of the oldest-old group and the prevalence of chronic diseases among veterans were significantly higher than those among the elderly in the general population,^[1,3,5,8-10,14,20-22] the overall health and functional status of veterans were significantly superior to those of the elderly in the general population.^[5,21-24] These results reflected the higher awareness status of chronic diseases among veterans and the active provision of education about chronic diseases by medical personnel. Therefore, referring to the experience in veteran communities, education about chronic diseases in the general population by medical personnel should be strengthened to improve the currently poor awareness status of chronic disease prevention and control in China.

Similar to the findings in the general population,^[25] the most common approach used by elderly veterans to access prevention knowledge of chronic diseases was nonmedical professional media. The overall level of education among veterans was significantly higher than that among the elderly in the general population,^[21,22] and more than 90% of veterans regularly read books and newspapers, watch TV, and listen to the radio.^[26] Accordingly, media plays an important role in the control of chronic diseases among veterans. However, information propagated through the media should be released after revision by healthcare professionals to avoid the dissemination of inaccurate information.

Concerning the popularization of the prevention knowledge about CDND, the role of media was not as significant as that about CCD, whereas the role of word of mouth was nearly the leading approach for the dissemination of information about CDND. These results suggested that media did not sufficiently address CDND and that the popularization of this knowledge through media should be strengthened. Although the word of mouth may not provide accurate information, numerous leisure activities at veteran communities^[26] enable frequent communication between veterans, such that prevention knowledge about chronic diseases can rapidly spread through peer education by word of mouth. Because the knowledge about CDND is highly technical, media and word of mouth should be guided to rapidly spread truthful prevention information to improve the currently poor awareness status of CDND and their prevention.

There are some limitations to this study. The subjects were predominantly male veterans with advanced age and high education. Few female subjects, young subjects or subjects with low education were included. Areas with poor medical conditions were not addressed. This study only investigated the awareness status of the prevention knowledge about chronic diseases, and the status of the correct understanding

and the control of these diseases among veterans should be further investigated.

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