



# Associated factor analysis on demands satisfactory of services for older adults with visual disability

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## Background & Objective

### Background

1. The health of the elderly has become the common concern and research question of medicine, sociology and psychology. Visual disability greatly affect the elderly's quality of life.
2. With the continuous increase of the population life expectancy, the elderly population aged over 60 years in China has reached 178 million, which accounted for 13.26% of the total population[1]. People living with visual disability has more than 20 million [2], the elderly aged 60+ accounted for 74%.
3. The increasing elderly population with visual disability puts forward new challenges to the public services system on rehabilitation, economic assistance and environmental support et al. At present, the demands satisfactory of services of China's elderly persons was 59.6%, of which 12.7% people utilized the service without relevant requirements [3].
4. At the same time, few studies pay attention to the associated factors of demands satisfactory of services for older adults with visual disability, which directly affect the supply and demand of services in China[6-10].

### Objective

To investigate the status and associated factors of demands satisfactory (DS) of services for older adults with visual disability (OAVD).

### Method

#### Data

1. We obtained data from the 2006 national survey of the non-institutionalized population of China. The survey used multistage, stratified random cluster sampling, with probability proportional to size, to derive nationally representative samples. The survey was approved by the State council and conducted in all province-level administrative regions of mainland China by the Leading Group of China National Sample Survey on Disability and the National Bureau of Statistics. Within each region, sampling strata were defined based on subordinate administrative areas, local geographical characteristics or local gross domestic product, where appropriate, to allow for anticipated regional variability. Within each stratum, a four-stage sampling strategy was followed involving four natural administrative units (i.e. county, town, village and community), and sampling was conducted with probability proportional to cluster size. The sampling interval (i.e. the total population divided by the number of units at each stage) used the most up-to-date population and address information from the Ministry of Civil Affairs and Public Security in Beijing. The survey excluded the institutionalized population and together comprised a total of 734 counties (5964 communities) in 2006, figures representing 1.9 per thousand non-institutionalized inhabitants of China [11-12].
2. All survey respondents provided consent to participate to the Chinese government.
3. Totally 24,017 cases of OAVD were included. The associated relationship among demographic, health, social, economic factors and DS of services, which were health demand (Type I), basic livelihood demand (Type II), and environmental support demand (Type III) were analyzed.

### Method

All data were entered into a custom-designed database and analyzed using SPSS version 19.0. Allowing for the complex sampling design, we constructed sample weights using standard weighting procedures. For each cause we calculated the weighted proportion of its contribution to a particular disability, and we ranked the proportions thus obtained to determine the five leading causes separately a given cause's contribution to different disabilities. We used the SURVEYFREQ procedure[13] to estimate the weighted prevalence of disability of various types, with 95% confidence interval (CIs), for the over all population and for difference population segments.

## Results & Conclusions

### Results

The proportion of DS of type I, II, III services for OAVD were 35.1%, 9.3% and 4.3%. 8 factors associated such as had pension insurance (OR=1.64), living in urban (OR=1.54), per capita household income at 5000+ yuan (OR=1.46) were favorable factors of OAVD's DS; 80+ age group (OR=0.90) and male (OR=0.93) were adverse factors of Type I. 4 factors associated such as male (OR=1.43), living in urban (OR=1.15), defined as grade II (OR=1.36) and grade I (OR=1.70) were favorable factors of OAVD's DS; and 5 factors associated such as 15-59 discovery age group (OR=0.57), 60+ age group (OR=0.45), per capita household income at 1000-1999yuan (OR=0.77), 2000-4999yuan (OR=0.58) and 5000+ yuan (OR=0.39) were adverse factors of Type II. Living in urban (OR=1.23), defined as grade II (OR=1.38) and grade I (OR=1.34), had pension insurance (OR=1.62) and per capita household income at 5000+ yuan (OR=1.42) were favorable factors of Type III.

Table 1 Demands satisfactory of different types of services for older adults with visual disability

| Character                          | Type I<br>n (%)<br>n=8428 | $\chi^2$  | Type II<br>n (%)<br>n=2233 | $\chi^2$  | Type III<br>n (%)<br>n=1041 | $\chi^2$ |
|------------------------------------|---------------------------|-----------|----------------------------|-----------|-----------------------------|----------|
| Age                                |                           | 20.45***  |                            | 5.24*     |                             | 1.09     |
| 60-79                              | 6275(35.9)                |           | 1669(9.6)                  |           | 742(4.3)                    |          |
| 80+                                | 2153(32.8)                |           | 564(8.6)                   |           | 299(4.6)                    |          |
| Age of discovering disability      |                           | 23.16***  |                            | 126.50*** |                             | 0.94     |
| 0-14                               | 217(32.6)                 |           | 138(20.7)                  |           | 33(5.0)                     |          |
| 15-59                              | 1715(38.1)                |           | 483(10.7)                  |           | 201(4.5)                    |          |
| 60+                                | 6496(34.5)                |           | 1612(8.6)                  |           | 807(4.3)                    |          |
| Sex                                |                           | 0.93      |                            | 44.73***  |                             | 0.10     |
| female                             | 5404(35.3)                |           | 1278(8.4)                  |           | 668(4.4)                    |          |
| male                               | 3024(34.7)                |           | 955(11.0)                  |           | 373(4.3)                    |          |
| Residence                          |                           | 566.72*** |                            | 27.78***  |                             | 52.20*** |
| rural                              | 5647(31.0)                |           | 1797(9.9)                  |           | 693(3.8)                    |          |
| urban                              | 2781(38.1)                |           | 436(7.5)                   |           | 348(6.0)                    |          |
| Grade of disability                |                           | 18.11***  |                            | 158.18*** |                             | 13.76**  |
| Grade I                            | 1990(33.6)                |           | 776(13.1)                  |           | 294(5.0)                    |          |
| Grade II                           | 891(36.4)                 |           | 252(10.3)                  |           | 124(5.1)                    |          |
| Grade III                          | 909(32.9)                 |           | 247(8.9)                   |           | 106(3.8)                    |          |
| Grade IV                           | 4638(36.0)                |           | 958(7.4)                   |           | 517(4.0)                    |          |
| Spouse                             |                           | 41.57***  |                            | 17.24***  |                             | 0.24     |
| without                            | 4131(33.2)                |           | 1251(10.0)                 |           | 532(4.3)                    |          |
| with                               | 4297(37.2)                |           | 982(8.5)                   |           | 509(4.4)                    |          |
| Middle school and higher education |                           | 198.72*** |                            | 20.36***  |                             | 19.43*** |
| No                                 | 7479(33.8)                |           | 2111(9.5)                  |           | 921(4.2)                    |          |
| Yes                                | 949(49.9)                 |           | 122(6.4)                   |           | 120(6.3)                    |          |
| Has pension insurance              |                           | 550.52*** |                            | 38.79***  |                             | 72.92*** |
| No                                 | 7324(33.0)                |           | 2137(9.6)                  |           | 890(4.0)                    |          |
| Yes                                | 1104(60.2)                |           | 96(5.2)                    |           | 151(8.2)                    |          |
| Has Medical insurance              |                           | 176.16*** |                            | 0.000     |                             | 1.63     |
| No                                 | 5314(32.3)                |           | 1529(9.3)                  |           | 694(4.2)                    |          |
| Yes                                | 3114(41.1)                |           | 704(9.3)                   |           | 347(4.6)                    |          |
| per capita household income (yuan) |                           | 494.08*** |                            | 177.67*** |                             | 66.55*** |
| 0-499                              | 346(29.1)                 |           | 155(13.0)                  |           | 45(3.8)                     |          |
| 500-999                            | 1156(29.3)                |           | 495(12.6)                  |           | 145(3.7)                    |          |
| 1000-1999                          | 2277(31.1)                |           | 772(10.5)                  |           | 264(3.6)                    |          |
| 2000-4999                          | 2763(35.5)                |           | 617(7.9)                   |           | 333(4.3)                    |          |
| 5000+                              | 1886(49.9)                |           | 194(5.1)                   |           | 254(6.7)                    |          |

Table 2 Multiple associated factor analysis on demands satisfactory of services for older adults with visual disability

| Dependent variable   | Model 1 |             | Model 2 |             | Model 3 |             |
|--|---------|-------------|---------|-------------|---------|-------------|
|  | OR      | 95%CI       | OR      | 95%CI       | OR      | 95%CI       |
| Whether the demand of type I services had been satisfied (health related services) |         |             |         |             |         |             |
| Age group (60-79)  |         |             |         |             |         |             |
| 80+  | 0.90**  | 0.843-0.963 | 0.86**  | 0.767-0.955 | 1.04    | 0.894-1.209 |
| Age group of discovering disability (0-14)   |         |             |         |             |         |             |
| 15-59  | 1.22*   | 1.021-1.456 | 0.57*** | 0.456-0.702 | 0.92    | 0.629-1.348 |
| 60+  | 1.13    | 0.950-1.337 | 0.45*** | 0.367-0.553 | 0.93    | 0.643-1.333 |
| Sex (female)   |         |             |         |             |         |             |
| male   | 0.93*   | 0.878-0.989 | 1.43*** | 1.299-1.568 | 0.98    | 0.855-1.126 |
| Residence (rural)  |         |             |         |             |         |             |
| urban  | 1.54*** | 1.430-1.651 | 1.15*   | 1.019-1.306 | 1.23*   | 1.047-1.452 |
| Grade of Disability (Grade IV)   |         |             |         |             |         |             |
| Grade III  | 0.98    | 0.899-1.074 | 1.15    | 0.994-1.336 | 1.04    | 0.835-1.283 |
| Grade II   | 1.14**  | 1.037-1.247 | 1.36*** | 1.176-1.580 | 1.38**  | 1.125-1.688 |
| Grade I  | 1.02    | 0.948-1.087 | 1.70*** | 1.534-1.892 | 1.34*** | 1.154-1.565 |
| Marriage (without spouse)  |         |             |         |             |         |             |
| With spouse  | 1.11**  | 1.041-1.172 | 0.74*** | 0.674-0.817 | 1.02    | 0.891-1.173 |
| Middle school and higher education (No)  |         |             |         |             |         |             |
| Yes  | 1.25*** | 1.126-1.391 | 0.79*   | 0.648-0.971 | 1.15    | 0.920-1.428 |

### Conclusions

DS degree of older adults with visual disability is generally very low, per capita household income, social insurance participation, age, disability, age, age of disability discovery, residence, gender, disability grade, marriage, education level were significantly associated with service DS.

## References

- [1] Chen, Nancy; Huang, Tzu-Lun; Tsai, Rong-Kung; Sheu, Min-Muh. Relevance and causes of visual impairment in elderly Amis aborigines in eastern Taiwan (the Amis Eye Study) [J]. *Japanese Journal of Ophthalmology*. 2012, 56 (6): 624-630.
- [2] Atsushi Araki, Tadasumi Nakano, Kenzo Oba, et al. Low well-being, cognitive impairment and visual impairment associated with functional disabilities in elderly Japanese patients with diabetes mellitus [J]. *Geriatrics and Gerontology International*. 2004, 4: p15-24.
- [3] Rovner, Barry W., Shmueli-Dulitzki, Yochi. Screening for Depression in Low-vision Elderly [J]. *International Journal of Geriatric Psychiatry*. 1997, 12 (9): p955-959.
- [4] Yueh-Han Hsu, Wen-Chen Tsai, Pei-Tseng Kung. Health examination utilization in the visually disabled population in Taiwan, a nationwide population-based study [J]. *BMC Health Services Research*. 2013, 13 (1): p1-18.
- [5] Dahlin-Ivanoff, S; Sonn, U. Use of assistive devices in daily activities among 85-year-olds living at home focusing especially on the visually impaired [J]. *Disability & Rehabilitation*. 2004, 26(24): 1423-1430.
- [6] La Grow, Steven; Alpass, Fiona; Stephens, Christine; Towers, Andrew. Factors affecting perceived quality of life of older persons with self-reported visual disability [J]. *Quality of Life Research*. 2011, 20(3): 407-413.
- [7] Gretchen A. Good, Steven LaGrow, and Fiona Alpass. An Age-Cohort Study of Older Adults With and Without Visual Impairments: Activity, Independence, and Life Satisfaction [J]. *Journal of Visual Impairment & Blindness*. 2008, 102(9): p517-527.
- [8] La Grow, Steven; Sudnongbua, Supaporn; Boddy, Julie. The Impact of Visual Disability on the Quality of Life of Older Persons in Rural Northeast Thailand [J]. *Journal of Visual Impairment & Blindness*. 2011, 105 (6): 361-369.
- [9] Manna A. Alma, Sijrke F. Van der Mei, Johan W. Groothoff, Theo P. B. M. Suurmeijer W. Determinants of social participation of visually impaired older adults [J]. *Quality of Life Research*. 2012, 21:87-97.
- [10] S. Dahlin Ivanoff, U. Sonn, B. Lundgren-lindqvist, J. Sjöstrand, B. Steen. Disability in Daily Life Activities and Visual Impairment: A population study of 85-year-old people living at home [J]. *Scandinavian Journal of Occupational Therapy*. 2000, 7:148 - 155.
- [11] Evans, Jennifer R.; Fletcher, Astrid E.; Wormald, Richard P.L. Depression and Anxiety in Visually Impaired Older People [J]. *Ophthalmology*. 2007, 114(2): 283-288.
- [12] Parodi, G., Sciulli, D. Disability and low income persistence in Italian households [J]. *International Journal of Manpower*. 2012, 33 (1): 9-26.
- [13] Xiaoying Zheng, Gong Chen, Xinming Song, Jufen Liu, Lijing Yan, Wei Du, Lihua Pang, Lei Zhang, Jilei Wu, Bingzi Zhang, Jun Zhang. Twenty-year trends in the prevalence of disability in China, WHO Bulletin. 2011, 89: 788-797.