

Reasons for non-adoption of a hearing aid among elderly Chinese

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ABSTRACT

Background. This study examined possible reasons for non-adoption of a hearing aid among elderly Chinese persons residing in Hong Kong who had both hearing impairment and a self perception of hearing handicap/difficulty.

Methods. 95 Cantonese speakers with hearing impairment, who did not use hearing aids, were identified by pure-tone hearing screening and the Hearing Handicap Inventory for the Elderly-Screening. They were interviewed using a comprehensive 51-item questionnaire that listed possible reasons for hearing aid non-adoption.

Results. The most common reason for non-adoption of a hearing aid was that these participants considered their hearing impairment not severe enough to warrant using a hearing aid. Other common reasons included a belief that hearing loss was a normal aspect of ageing, that the better hearing ear provided adequate audition, that hearing aids were unaffordable, and that hearing aids were inconvenient to wear.

Conclusions. Greater public education regarding hearing impairment in the elderly and the positive impact of amplification may assist in the long-term to improve the usage rates of hearing instruments in elderly Chinese persons. When counselling such individuals regarding their hearing impairment, clinicians should be aware that the patient's assumptions regarding hearing aid use may differ markedly from professional views.

Key words: Aged; Asian Continental Ancestry Group; Attitude; Hearing aids; Hearing loss; Mass screening; Presbycusis

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INTRODUCTION

Presbycusis is gradual degradation of mid-to-high frequency hearing ability and speech discrimination ability associated with ageing. Impaired speech perception and discriminating abilities can adversely affect the quality of conversation, often making communication less effective. Communication breakdown can be made worse under noisy environments, because noise creates masking effects that cause further deterioration in the intelligibility of speech signals.¹ The disorder also limits social functioning, leading to medical, psychological and social problems,^{2,3} such as depression and withdrawal

from social interactions.^{4,5} As communication is an interactive process, the effects of hearing loss are felt not only by those with hearing impairment but also by those with whom they communicate.⁶

Many countries have ageing populations.⁷ China as a whole has a rapidly ageing society, in which its senior citizens account for one fifth of the global elderly population, and half that of Asia. More than 14 million Chinese residents aged over 60 years are estimated to have a hearing handicap.⁸ Minimising the impact of hearing loss can improve the quality of life of such people and the persons with whom they communicate.⁹ Hearing aids with appropriate

amplification are beneficial for the hearing-impaired elderly, including those with presbycusis.¹⁰ Despite this, only 20 to 30% of the elderly with binaural hearing loss use hearing aids in developed countries.^{11,12} A similar percentage has been reported in Taiwan,¹³ and it was between 1% and 8% in mainland China.^{14,15}

English-speaking people reported more hearing difficulties in communication than Cantonese speakers, even though the 2 groups had similar levels of hearing impairment.¹⁶ In Cantonese speakers who failed a 25 dB HL pure-tone screening test, 83%¹⁶ to 70%¹⁷ reported that they had no difficulty in conversation. Cantonese speakers tended to perceive themselves as having hearing difficulty only when their hearing levels reached 40 dB HL. The mean hearing level in the better ear for first-time hearing aid users in Hong Kong Cantonese speakers was 54 dB HL,¹⁸ similar to that reported in mainland China.¹⁹ Reasons for delay or non-adoption of hearing aids in the elderly have been investigated in the USA^{12,20} and elsewhere.²¹ No such study has been carried out in a Chinese community. The attitudes of the Chinese elderly who reject hearing aid use despite having a self-perceived hearing handicap/difficulty are of interest for local audiologists and other health professionals. Efforts can be made to mitigate negative attitudes through health education programmes and social marketing. The present study aimed to determine reasons for the non-adoption of a hearing aid among Hong Kong Chinese elderly.

METHODS

11 social centres for the elderly were targeted; 3 were located on Hong Kong Island, 4 in Kowloon, and 4 in the New Territories. Information about the purpose of the study, criteria for subject recruitment, the procedures, and the time needed for data collection were provided. 150 female and 158 male Chinese elderly were invited to participate. Informed consent from each participant and the appropriate institutional review board clearance were obtained.

Eligible participants were aged ≥ 65 years, native Cantonese speakers, with no apparent speech/language or cognitive problems, and had no personal experience of wearing hearing aids. Only those who failed pure-tone air-conduction hearing screening at 1000, 2000 and 4000 Hz at 40dB HL at all frequencies

in one or both ears were selected. Moreover, they also had to have scored >10 points in the Chinese version of the Hearing Handicap Inventory for the Elderly-Screening (HHIE-S),²² which indicated hearing impairment and a self perception of such a handicap/difficulty.²³ In addition, a question 'Do you feel you have a hearing problem now?'^{5,24} was asked to gauge each participant's overall self-perceived hearing ability. Reasons for their non-adoption of a hearing aid were investigated using a questionnaire.

Of the 308 elderly Chinese screened, 50 females and 45 males aged 65 to 92 years (mean, 76.4; standard deviation [SD], 7.1) were included. 39, 45, and 11 of the subjects were considered 'young old' (65 to 75 years), 'old old' (75 to 85 years), and 'oldest old' (≥ 85 years), respectively.²⁵ 77 of the subjects failed the hearing screening at 1000, 2000, and 4000 Hz at 40dB HL bilaterally, whereas 18 failed the screening test unilaterally. The mean HHIE-S score was 20.2 (SD, 6.9; range, 12-40). With regard to self-perceived hearing ability, 82 responded positively and 13 negatively. With regard to monthly income (in Hong Kong dollars), 50 earned $< \$2000$, 33 earned $\$2000$ to $< \$3000$, 6 earned $\$3000$ to $\$4000$, and 6 earned $\geq \$4000$. In most subjects, their main source of income was the Normal/Higher Old Age Allowance ($\$625/\705) granted to persons aged 65 years or above.²⁶ Other sources of income included the Normal/Higher Disability Allowance ($\$1120/\2240), Comprehensive Social Security Assistance, and financial support from their children and/or relatives. At the time of the study, the median monthly income from main employment in Hong Kong was approximately HK\$10 000.²⁶

Excluded participants were those aged < 65 years ($n=7$), not native Cantonese speakers ($n=3$), currently wearing hearing aids or had used hearing aids ($n=17$), not having responded reliably in the hearing screening and questionnaire ($n=5$), already considering hearing aids ($n=1$), having passed the 40 dB pure-tone hearing screening ($n=45$), and having failed the hearing screening but scored ≤ 10 in the HHIE-S ($n=135$). Thus, in total 44% of those screened were excluded.

Pure-tone hearing screening at 1000, 2000, and 4000 Hz at 40 dB HL was conducted in a quiet room of each centre with low background noise. The mean background noise level was 37.2 (range, 31.1-43.8)

dBa, according to a CESVA SC-30 sound level meter. A portable audiometer (Madsen Micromate 304) equipped with noise-excluding circumaural headphones was used. A questionnaire with 51 reasons for rejecting hearing aid use was developed with reference to a North American questionnaire,²⁰ literature review, and the clinical experience of the authors. The questionnaire was first generated in English and then translated into Chinese. Back translation was done by two bilingual university students who had no prior knowledge of the study.²⁷ Subsequently, the questionnaire was slightly revised by the authors after reviewing the process for optimal linguistic clarity, and the item order was randomised. A 5-point rating scale was adopted: 0 for no comment, 1 for strongly disagree, 2 for disagree, 3 for agree, and 4 for strongly agree.

Administration of the HHIE-S and the self-perceived question of hearing ability was counterbalanced to avoid an order effect. Subjects who failed the pure-tone hearing screening unilaterally or bilaterally, and had a HHIE-S score of >10 were followed up with the questionnaire. They were asked to respond to each of the questionnaire items presented verbally by the first author. The questions were asked in a cause-effect manner, e.g., "As hearing aids are expensive, you dislike/reject hearing aid use".

Debriefing of the hearing screening results and

recommendations (e.g., detailed hearing assessment, consideration of hearing aids) were provided for each subject and his/her centre for reference.

RESULTS

The distribution of ratings among the 10 commonest reasons for rejection of hearing aid use is shown in the **FIGURE**. The overall ranking of reasons for non-adoption of a hearing aid and the percentages of the negative, positive, and no comment responses are shown in the **TABLE**. The ranking was achieved by computing the mean score of each item. The sum of the rating scores was divided by the number of subjects giving negative and positive responses. The mean scores of the 51 items were arranged in descending order. Those who rated an item as no comment (0) were deleted from calculation for that item.

Most subjects with self-perceived hearing handicap/difficulty considered that they did not need hearing aids (93%), and that hearing aids were only for those with the most severe hearing impairment (92%), and that hearing loss was a normal ageing process (81%). Other common reasons for non-adoption of a hearing aid included the ability to rely on the better hearing ear (whether it had normal or residual hearing) [62%], unaffordability (52%), inconvenience (51%), and discomfort (43%) of a hearing aid. 56% considered that hearing

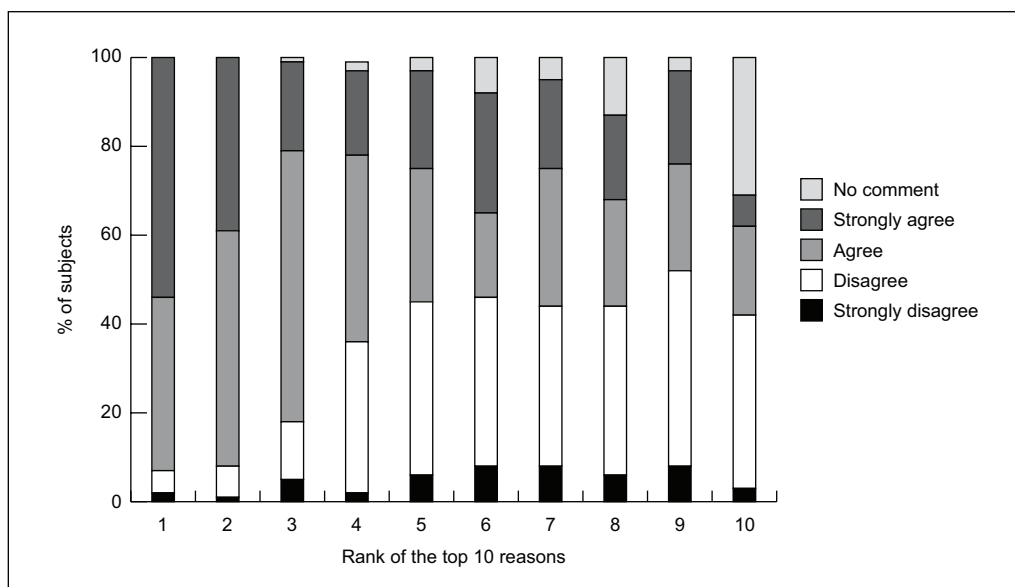


FIGURE. Distribution of ratings for the 10 commonest reasons for hearing aid non-adoption

TABLE
Reasons for non-adoption of hearing aids among 95 participants

Rank	Mean	Reason (questionnaire item no.)	Negative response (%)	Positive response (%)	No comment (%)
1	3.44	You do not think aids are needed (22)	7	93	0
2	3.30	Hearing aids are only for the most severe problems (32)	8	92	0
3	2.97	You think hearing impairment is normal for the elderly (51)	18	81	1
4	2.80	Other ear can help hearing (50)	36	62	2
5	2.70	You cannot afford to buy a hearing aid (28)	45	52	3
6	2.69	Hearing aids are troublesome to wear (6)	46	46	8
7	2.66	Hearing aids are inconvenient to wear (4)	44	51	5
8	2.64	Hearing aids are uncomfortable to wear (5)	44	43	13
9	2.60	Hearing aids are expensive (1)	52	45	3
10	2.46	Hearing aids will bring feedback (12)	42	27	31
11	2.45	Hearing aids will bring noise annoyance (14)	43	27	30
12	2.38	Hearing aids will make sounds unnatural (13)	44	28	28
13	2.37	Hearing aids will make sounds too loud and bring discomfort (11)	51	28	21
14	2.32	Hearing impairment is not a serious medical problem (46)	56	43	1
15	2.29	Hearing aids are difficult to manipulate (7)	54	26	20
16a	2.27	Hearing aids often have malfunctions (10)	55	22	23
16b	2.27	You think you will not live long enough (47)	65	33	2
18a	2.25	You are afraid of making the wrong choice (21)	69	28	3
18b	2.25	Hearing aids can only be used in particular environments (15)	60	20	20
18c	2.25	Your doctor does not think aids are needed (25)	51	22	27
21	2.23	You do not know how to choose a suitable hearing aid (18)	66	30	4
22	2.21	Hearing aids require expensive repair costs (9)	59	21	20
23	2.20	You do not know how to manipulate a hearing aid (20)	70	25	5
24	2.19	Hearing aids have an inflexible volume control (16)	61	21	18
25	2.19	Hearing aids are small and easy to lose (2)	71	24	5
26	2.18	You do not know where to buy (19)	75	23	2
27	2.17	Hearing aids require an expensive battery (8)	63	20	17
28	2.15	You have heard about poor experiences from others using hearing aids (40)	70	16	14
29a	2.09	Difficult to reach a hearing centre (48)	78	17	5
29b	2.09	Your family does not think aids are needed (23)	75	21	4
29c	2.09	Wearing hearing aids will make you feel nervous (49)	70	16	14
32	2.08	Dispensers are not professional enough (42)	73	17	10
33	2.07	You think words will still be unclear after wearing hearing aids (27)	61	17	22
34	2.06	There is insufficient information/instruction given by dispensers in store (41)	73	17	10
35a	2.05	Dispensers' service is not good (43)	74	15	11
35b	2.05	Dispensers use deceptive practices (45)	76	14	10
37	2.03	Wearing hearing aids can cause other ailments (17)	62	11	27
38	2.02	Dispensers use high pressure selling (44)	78	12	10
39a	1.99	Your friends do not think aids are needed (24)	84	13	3
39b	1.99	You do not think hearing aids can help (26)	70	13	17
41	1.97	Wearing hearing aids is a sign of handicap (31)	84	15	1
42	1.94	Wearing hearing aids will make you feel inferior to other elderly people (34)	83	16	1
43	1.93	Wearing hearing aids is a sign of weakness (30)	87	12	1
44a	1.92	Wearing hearing aids is a sign of ageing (29)	88	11	1
44b	1.92	You do not want to disclose having a hearing impairment (33)	84	15	1
46	1.89	Hearing aids are not good-looking (3)	86	10	4
47a	1.84	You worry family will think you are inferior after using a hearing aid (35)	87	12	1
47b	1.84	You worry friends will think you are inferior after using a hearing aid (36)	87	12	1
49	1.78	Wearing hearing aids will make you feel ashamed (37)	90	9	1
50	1.76	You worry wearing hearing aids will make your family feel ashamed (38)	93	6	1
51	1.75	You worry wearing hearing aids will make your friends feel ashamed (39)	93	6	1

impairment was a serious problem and could affect daily activities.

DISCUSSION

The mean background noise levels for hearing screening were lower in our study than in previous research in Hong Kong nursing homes (37.2 vs. 49.4 dBA).¹ With low background noise and the use of noise-excluding circumaural headphones, the hearing screening was valid when evaluated using ANSI S3.1-1999 maximum permissible ambient noise level standards for pure-tone audiometry.²⁸

In our study, 70% believed that hearing aids could help improve audition, but preferred not to use them. So long as they had enough residual hearing to communicate to their own satisfaction, they chose not to use a hearing aid. Some added that when they had difficulty in hearing during conversation, they tended to ignore speakers' speech or ask for clarification or greater vocal efforts from their communication partners. Thus, compensatory or avoidance strategies rather than hearing aids became the alternative to cope with hearing handicap/difficulty.

Most Hong Kong Chinese elderly are not motivated to seek help until their hearing problems become too severe to ignore, which is consistent to the findings in other studies.^{16,17,19} Financial issues were also a consideration for elderly Hong Kong residents. 88% of the participants reported a monthly income of <HK\$3000; financial assistance from the government was their main source of income. In Hong Kong, half of all hearing aid users had a relatively low socioeconomic status.¹⁹ Hence, hearing aids may be unaffordable for many Hong Kong elderly. Furthermore, at least 43% considered that hearing aids were troublesome, inconvenient and uncomfortable. Therefore, their non-adoption could have been reinforced by a negative image associated with using them. On the contrary, potential technical problems related to the hearing aids themselves are comparatively less important than subjective perceptions. The participants paid less attention to possible feedback, noise annoyance, unnaturally amplified sound quality, or possible loudness discomfort. A large number of the subjects had no comment on these questions (21 to 31% of responses), which may have resulted from not having fully considered the practical aspects associated with

hearing aid use. The subjects who responded to these items generally considered such problems not their concern.

Most Hong Kong Chinese elderly would not reject hearing aid use because of self-image issues and/or opinions of their family and friends. They claimed not to feel ashamed (90%) or inferior (87%) as a result of wearing hearing aids. Nor did they consider wearing hearing aids a sign of weakness (87%), ageing (88%) or handicap (84%). They considered that hearing aid use was a personal issue. 51% claimed not to depend on advice by doctors; 22% would reject hearing aid use even if recommended by doctors; and 27% had no comment because they had not received any such advice (likely owing to the lack of medical consultation on hearing difficulty, limited knowledge or means to seek help among Hong Kong elderly, or limited awareness of communication disorders among Hong Kong doctors).

In a North American study,²⁰ affordability was a less important concern than in our study, despite cost also being a major factor. These American elderly could afford a hearing aid, but chose not to buy it because of the high cost. The relatively lower socioeconomic status of Hong Kong elderly may have played a role in such decision making. Furthermore, in the North American study, items related to 'dispenser service' were ranked higher and within the commonest 10 reasons for rejection. Relatively more American participants responded positively to items related to the potential technical problems (noise, annoyance, loudness, and discomfort) of the hearing aid itself. These findings were consistent with a study reporting that Hong Kong pre-users had lower expectations regarding technical problems of the device and dispenser service than western pre-users.¹⁸ Western elderly persons were more concerned about the helpfulness of hearing aids and the signs of handicap when wearing hearing aids. Fewer American elderly thought hearing aids were only for those with the most severe hearing problems. This might be related to differences in education and general awareness of hearing aids. Cultural, psychosocial and socioeconomic differences may also have given rise to different attitudes towards hearing aids. It might be useful to systematically explore these issues in cross-cultural studies.

In order to examine whether the Hong Kong

elderly had a self-perception of hearing handicap/difficulty, HHIE-S²² was used to screen the participants. Some elderly were living alone and scored zero for the 2 HHIE-S items related to family communication issues. Thus, some elderly with hearing handicap may have been precluded from taking part in the study. The use of double consent (to both stages of initial hearing screening and follow-up questionnaire) may have introduced an element of sampling bias. In addition, as all participants were recruited from centres for the elderly, they were likely to have low-income levels, and the results might not reflect attitudes among elderly people who were not as socially active or those who had higher income levels. Moreover, education level, age, gender, and level of hearing loss were not controlled factors in this study. Persons having different levels of education may have different opinions on hearing aid issues. Western audiologists have suspected greater resistance to hearing aid use in males than females, probably because more men consider hearing aid use as a sign of weakness.²⁹ Age and gender could also be important factors in hearing aid rejection among elderly persons in Chinese communities, but these issues were not explored.

CONCLUSIONS

The most common reason for non-adoption of a hearing aid was that the participants considered their hearing impairment not severe enough to warrant such usage. Delayed use of hearing aids might also be related to the limited availability of audiological service, limited public knowledge about hearing loss and hearing aids, and limited publicity of the device in Hong Kong and China.¹⁹ Misconceptions about hearing aids may also hinder potential hearing users from gaining possible benefits. Social marketing to the public, raising awareness of audiological services (audiologists, hearing assessment, hearing centres), and clarification of misconceptions about hearing loss and hearing aids are recommended. Clinicians also need to be aware of patient attitudes toward hearing aid use, as these may differ from their professional views.

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