Factors Influencing Degree of Hearing Loss at Presentation, Hearing Aid Choice and Usage in First Time Hearing Aid Users in Singapore

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Background

Singapore patients present late for hearing aid (HA).

Objectives

To evaluate the factors associated with late presentation for HA, HA choice and usage.

Methods

Retrospective cross-sectional study. 1068 subjects issued with HAs at a tertiary hospital from 2001–2013.

Results

Half the subjects presented with hearing loss (HL) >55 dB in their better ear. Older age, Malay ethnicity, conductive and mixed HL, were associated with worse HL at first presentation. Over 70% of subjects were >65 years.

		≤65 years	66–80 years	≥81 years	<i>p value</i>
Total subjects, n (%)		312 (29.2)	525 (49.2)	231 (21.6)	-
Ethnicity, n (%)	Chinese	268 (85.9)	466 (88.8)	195 (84.4)	0.195
	Malay	18 (5.8)	19 (3.6)	11 (4.8)	
	Indian	16 (5.1)	33 (6.3)	16 (6.9)	
	Others	10 (3.2)	7 (1.3)	9 (3.9)	
PTA of aided ear, dB	Median (IQR)	60.0 (19.4)	62.5 (16.3)	63.8 (13.8)	0.001
PTA of better ear, dB	Median (IQR)	53.2 (20.0)	56.3 (16.2)	60.0 (15.0)	<0.001
HL of aided ear ¹ , n (%)	Mild	23 (7.3)	15 (2.8)	2 (0.9)	0.002*
	Moderate	212 (68.0)	372 (70.9)	169 (73.1)	
	Severe	77 (24.7)	138 (26.3)	60 (26.0)	
HL of better ear ¹ , n (%)	Mild	62 (19.9)	41 (7.8)	10 (4.3)	<0.001
	Moderate	208 (66.7)	403 (76.8)	178 (77.1)	
	Severe	42 (13.5)	81 (15.4)	43 (18.6)	
Baseline type of HL, n (%)	Sensorineural	179 (57.4)	356 (67.9)	173 (74.9)	<0.001
	Conductive and mixed	70 (22.4)	77 (14.7)	25 (10.8)	
	Combination type	63 (20.2)	91 (17.4)	33 (14.3)	

Table 1. Comparison of subjects by age group (N=1068)
1 Mild (≤40 dB); Moderate (>40–70 dB); Severe (>70 dB)

Higher Pure-Tone-Audiometry (PTA) of better ear, gradual onset of HL and sensorineural HL were associated with older age presentation.

For unilaterally fitted subjects, PTA values were the only determinant of having better ear aided.

		Better ear aided			Worse ear aided		
		Better ear	Worse ear	<i>p value</i>	Better ear	Worse ear	<i>p value</i>
Total subjects, n (%)		421 (51.1)			403 (48.9)		
PTA, dB	Median (IQR)	62.5 (17.5)	78.8 (33.8)	<0.001	51.3 (17.5)	63.8 (17.5)	<0.001
Difference in PTA between better and worse ear, dB	Median (IQR)	12.5 (25.0)			8.8 (12.5)		

Table 2. breakdown of PTA values of subjects with unilateral HA fitting

Lower PTA values, younger age and sensorineural HL were associated with In-Ear HAs usage.

		Behind-the-ear HA	In-ear HA	<i>p value</i>
Total subjects, n (%)		765 (71.7)	302 (28.3)	-
Age, years	Mean (SD)	72 (12)	67 (15)	<0.001
PTA of aided ear, dB	Median (IQR)	65.0 (17.5)	56.3 (12.5)	<0.001
PTA of better ear, dB	Median (IQR)	58.8 (18.8)	51.3 (13.8)	<0.001
HL of aided ear ² , n (%)	Mild	26 (3.4)	14 (4.6)	<0.001
	Moderate	492 (64.3)	260 (86.1)	
	Severe	247 (32.3)	28 (9.3)	
HL of better ear ² , n (%)	Mild	64 (61.8)	49 (78.1)	<0.001
	Moderate	545 (18.2)	243 (10.6)	
	Severe	156 (20.0)	10 (11.3)	
Sensorineural		472 (61.8)	236 (78.1)	
Baseline type of HL, n (%)	Conductive and mixed	139 (18.2)	32 (10.6)	<0.001
	Combination type	153 (20.0)	34 (11.3)	

Table 3. Comparison of subjects with Behind the ear vs. In ear type of HA (N=1067¹)
1 One subject with different types of hearing hearing aid in the two ears was excluded
2 Mild (≤40 dB), Moderate (>40–70 dB), Severe (>70 dB)

Older patients and those with better hearing were less likely to use their HAs regularly.

Conclusion

Age, ethnicity and type of HL were important determinants for advanced HL at first HA fitting.