

Hearing difficulty and its psychological implications for the elderly

DEE A JONES, CHRISTINA R VICTOR, AND NORMAN J VETTER

From the Research Team for the Care of the Elderly, Welsh National School of Medicine, St David's Hospital, Cardiff, UK

SUMMARY A random sample of patients aged 70 and over from a general practice were interviewed in their own homes. Information was sought on their hearing difficulty and mental state: standardised measures of anxiety, depression, and memory loss were used. Of the 657 subjects interviewed, 33% reported having difficulty hearing normal conversations and 6% reported experiencing "much difficulty." Hearing difficulty was associated with both depression and anxiety, but the associations weakened when adjustment was made for physical disability. The association with memory loss disappeared when adjusted for physical disability. There was a close relationship both with age and physical disability.

For many years hearing loss has been reported as one of the many disabilities associated with increasing age.¹ Studies of the prevalence of hearing loss in the elderly in the community show that 30–40% of all people of retirement age report some degree of hearing difficulty.² More recently, using audiometric techniques, Herbst has reported a prevalence of 60%.³

It is generally accepted that deafness inevitably leads to a breakdown in communication and consequent physical and mental problems, and therefore a higher degree of social isolation. Nevertheless, few community based studies have been undertaken to examine both the mental and more general physical state of the elderly with hearing difficulty. This study therefore sought to examine the elderly living in the community in a general practice who reported experiencing difficulty with hearing, and also to investigate the relationships between this and their mental and physical disability.

Method

This study was based on a large urban six handed general practice in the centre of a medium sized town in South Wales. A random sample (40%) of the over 70s, extracted from the age-sex register, provided the names and addresses of 683 subjects. A team of five trained fieldworkers then interviewed 657 in their own homes (response rate 96%). The standardised interview schedule included questions on such topics

as physical and mental disabilities, social life, and housing.

Concerning hearing difficulty, each subject was asked "Do you have any difficulty hearing ordinary conversation (even when wearing your hearing aid)?" The answers were coded as "No," "a little difficulty," or "a lot of difficulty." The interviewers made their own assessment of the subject's hearing difficulty using the same categories.

The measurement of physical disability was based on the concept of disability and dependency—as difficulty with, or the inability to perform, certain basic functions essential to the maintenance of independent living. This provided an overall measure of functional physical disability⁴ and included questions on the ability of the old person to manage nine basic functions when alone. These ranged from activities such as carrying heavy shopping or catching buses to climbing stairs and cooking a meal. The overall score has a range of 0–18; Townsend regards people with a score of zero as having no disability, 1 or 2 slightly affected, 3–6 some, 7–10 appreciable, 11–18 severe and very severe. Three measures of mental disability—*anxiety, depression, and memory*—were included in the interview schedule. The items included in the anxiety and depression questionnaires were chosen from a larger set of questions⁵ and have been tested on the elderly at home and validated by comparing the scores with psychiatric opinions.⁶ They have been used and

validated in old people in general practice.⁷

The questionnaires consist of a series of questions about symptoms of anxiety and depression within the past month. For each question a score of 0–3 is possible. The scores were added for each of seven questions, giving a range of 0–21 for each scale. By comparison with a psychiatric opinion a score of 0–2 was designated normal, 3–5 borderline, and 6–12 pathological.⁷

The measure of memory was a standard questionnaire,⁸ the results of which have been shown at necropsy to be associated with brain damage relating to Alzheimer's disease.⁹

Results

Thirty three per cent of subjects reported having difficulty hearing normal conversation and 6% had "much difficulty" (table 1). The interviewers assessed 35% as having difficulty and 7% as "much difficulty."

When the fieldworkers' and the subjects' assessments were compared 82% were categorised similarly; only four people were classified as "no difficulty" and "much difficulty," and 17% as "no difficulty" and "some difficulty;" none was classified as "no difficulty" and "much difficulty."

Table 1 Hearing difficulty by sex

Hearing	Men		Women		Both sexes	
	No	%	No	%	No	%
No difficulty	162	65	279	69	441	67
Some difficulty	81	32	98	24	179	27
Much difficulty	7	3	30	7	37	6
Total	250	100	407	100	657	100

There was a very close association between age and hearing difficulty ($\chi^2 = 48.5$, $p < 0.0005$), 22% of the over 85s reported having "much difficulty" (table 2).

Table 2 Hearing difficulty by age (years)

Hearing	70–74		75–79		80–84		>85	
	No	%	No	%	No	%	No	%
No difficulty	195	76	152	68	68	59	26	44
Some difficulty	57	22	62	28	40	35	20	34
Much difficulty	6	2	10	5	8	7	13	22
Total	258	100	224	101	116	101	59	100

Those with hearing difficulty had an increasing likelihood of being scored as borderline or neurotic on the anxiety questionnaire (table 3) ($\chi^2 = 21.1$, $df = 4$, $p < 0.0005$); 55% of those with much difficulty scored as borderline or neurotic on the anxiety questionnaire.

Table 3 Anxiety score by hearing difficulty

Anxiety	No difficulty		Some difficulty		Much difficulty	
	No	%	No	%	No	%
Normal	308	72	106	62	14	45
Borderline	86	20	42	25	8	26
Neurotic	32	8	22	13	9	29
Total	426	100	170	100	31	100

There was also an increased prevalence of depression among those that had difficulty in hearing (table 4): 30% of those with much difficulty scored as abnormal. Once again the association was significant ($\chi^2 = 17.1$, $df = 4$, $p < 0.005$).

Table 4 Depression score by hearing difficulty

Depression	No difficulty		Some difficulty		Much difficulty	
	No	%	No	%	No	%
Normal	383	90	137	81	21	70
Borderline	24	6	21	12	6	20
Neurotic	19	4	12	7	3	10
Total	426	100	170	100	30	100

Hearing difficulty was not significantly associated with memory loss (table 5) ($\chi^2 = 1.3$, $df = 4$, $p < 0.90$).

The relationship between disability and hearing impairment was examined and there was a consistently strong association ($\chi^2 = 51.18$, $df = 6$, $p < 0.0005$) (table 6). There was also a significant relationship between dependency and hearing difficulty ($\chi^2 = 37.79$, $df = 2$, $p < 0.0005$).

As physical disability was closely associated with hearing difficulty it was considered necessary to examine further the inter-relationships between disability, hearing difficulty, and mental disability. Each of the relationships between hearing difficulty and mental disability was examined, adjusting for physical disability. There was still a consistent but not significant association between hearing difficulty and anxiety ($\chi^2 = 7.09$, $df = 4$, $p < 0.2$). There remained

Table 5 Memory score by hearing difficulty

Memory	No difficulty		Some difficulty		Much difficulty	
	No	%	No	%	No	%
Normal	404	95	160	94	29	91
Mild	18	4	8	5	2	6
Severe	5	1	3	2	1	3
Total	427	100	171	101	32	100

Table 6 Physical disability by hearing difficulty

Physical disability	No difficulty		Some difficulty		Much difficulty	
	No	%	No	%	No	%
None	207	47	59	33	3	8
Mild	151	34	73	41	12	32
Moderate	45	10	15	8	9	24
Severe	36	8	31	17	13	35
Total	439	99	178	99	37	99

a consistent association with depression, but again the adjusted chi-square was not significant ($\chi^2 = 6.86$, $df = 4$, $p < 0.2$). The relationship with memory loss disappeared almost completely when adjusted for disability and is reflected in the chi-square ($\chi = 1.19$, $df = 4$, $p < 0.9$).

Discussion

The finding that 33% of the sample reported experiencing difficulty hearing normal conversation is consistent with other studies using similar methods^{1,2}; Abrams reporting 36% among a population aged 75 and over.

The prevalence of hearing difficulty was found to be closely associated with age as has been reported previously.^{2,3} Not surprisingly, there was a positive association between hearing difficulty and disability. Consequently, in the investigation of the relationships between hearing loss, anxiety, and mental disability, physical disability needs to be controlled for.

Anxiety had an association with hearing difficulty, but the strength weakened with adjustment for disability. Anxious people are perhaps more likely to be aware of or to report hearing difficulties; alternatively, hearing difficulty and consequent difficulties with social interaction may in fact cause anxiety among the elderly.

Depression was more prevalent among the hard of hearing, but when disability was controlled for the relationship weakened. This differs from the findings of previous workers, who concluded that there was a significant relationship between hearing difficulty and depression.³ Herbst adjusted for age but not for physical disability. From the present study disability seems to be the intermediate variable relating hearing loss to depression and anxiety.

Memory loss was associated with hearing difficulty, but the association disappeared when adjusted for disability: this result agrees with recent work³ but not with the earlier study of Kay *et al* who considered the relationship to be independent of age and disability.¹⁰

Hearing difficulty among the over 70s is often an added problem to the physically disabled. It appears to be related to anxiety and depression. To discuss further the effects of such hearing difficulties on the psychological life of the elderly, and whether the relationships are causal, the issue needs to be studied using a longitudinal approach, rather than cross sectional. It can at least be said that hearing difficulty further reduces the quality of life of those elderly already suffering physical disabilities. Only 18% of subjects possessed a hearing aid. As hearing impairment is more readily ameliorated than physical disability, the treatment of such widespread impairment demands more attention.

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