EVALUATION OF TELEPHONE FOLLOW-UP PROCEDURES IN HEARING AID FITTING

Kay M. Pusakulich, Robyn M. Cox*, Jane A. Brucks, and Allison W. Lane
Department of Veterans Affairs Medical Center *and Memphis State University, Memphis, TN.

INTRODUCTION

Several investigators have shown that post-fitting counselling on use and care of hearing aids is an effective method of increasing hearing aid use and benefit (eg., Brooks, *Scand. Aud.*, 8:101, 1979). However, it is sometimes difficult for hearing aid patients to comply with recommendations for follow-up counselling because of distance or other constraints. A solution for some patients might be to use telephone contacts for follow-up counselling. This approach would have the advantage of eliminating the need for patients to travel to the clinic for follow-up and would, in addition, more efficently utilize the time of the audiologist. This study was undertaken to evaluate the effectiveness of three different types of telephone follow-up programs.

FIGURE 1: NEW USERS

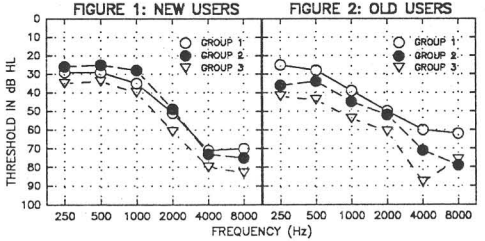


FIGURE 2: OLD USERS

TELEPHONE HEARING AID FOLLOW-UP PROGRAM

Module 1: Care and Maintenance of hearing aid.
- Clean Earmold.
- Insert and remove earmold.
- Insert and remove battery.
- Manipulate volume control.

Module 2: Initial adjustment.
- Telephone practice.
- Increase wearing time.

Module 3: Listening in the home environment.
- Environmental sounds.
- Speech.
- Listening for content.

Module 4: Localization of sound.
- Direction in quiet and low noise
  a. One aid.
  b. Two aids.

Module 5: Understanding speech in noise.
- One voice/low noise.
- Group in quiet.
- Group in noise.

Module 6: Listening in various environments.
- increase wearing time in different situations.

METHODS

SUBJECTS: Three groups of 20 hearing-impaired men who were receiving new or replacement hearing aids at a Department of Veterans Affairs Medical Center served as subjects. The groups were matched according to age, previous hearing aid experience, and monaural/binaural use. Figures 1 and 2 give composite audiograms for the 13 new and 7 experienced (old) hearing aid users in each group. The Table below further summarizes the groups.

	Grp 1	Grp 2	Grp 3
Mean age	61	63	62
mon/bin aids	11/9	11/9	11/9
ITE/BTE aids	19/1	18/2	17/3

PROCEDURE: Hearing aid fitting was accomplished using a prescriptive method verified by functional gain measurements. Initial hearing aid orientation was performed using standard clinical procedures. At that time, subjects were assigned to one of the 3 groups for follow-up counselling.

Group 1 was assigned a program of home exercises intended to aid with adjustment to the hearing aid. The program was adapted from a structured follow-up program designed by Cox, Zapala, and Ferguson. Exercises for the first module were provided to the subject on the day the hearing aid was issued. Each subject subsequently received six scheduled phone calls 7-14 days apart. During the telephone contacts the clinician reviewed the subject's progress on the exercises, discussed problems that may have arisen, assigned and mailed new exercises, and scheduled the next telephone call.

Group 2 received six scheduled telephone calls 7-14 days apart. However, this group was not given the home exercise program. In each phone call, subjects were asked to describe how they were doing with their hearing aid and to identify any problems they were having. They were given any assistance that was needed to facilitate their adjustment to the aid.

Group 3 did not receive the home exercise program or scheduled telephone calls. Instead, after the inital orientation when the hearing aid was issued, they were instructed to call the clinic if they had any problems adjusting to the instrument. If they did call, they were given any assistance that was needed to facilitate their adjustment to the aid.

Each subject's performance with the hearing aid was measured using the Profile of Hearing Aid Performance (PHAP). This 66-item inventory produces a profile of scores reflecting the frequency of problems in different daily life situations (Cox & Gilmore, *JSHR*, 33:343, 1990). During the hearing aid fitting process, baseline data were obtained for each subject by asking him to complete the PHAP to indicate the frequency of problems experienced **without** a hearing aid. The PHAP was subsequently administered after 7 weeks of hearing aid use and again after 6 months of hearing aid use to reflect the frequency of problems experienced **with** the newly fitted hearing aid.

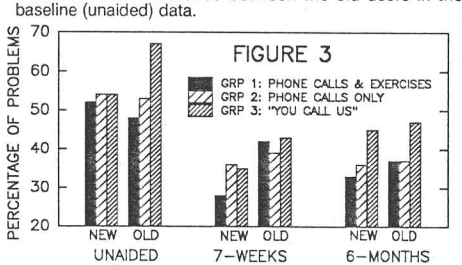
RESULTS

The PHAP responses were tallied to produce 4 scale scores reflecting the frequency of daily-life problems: (1) without amplification, (2) after 7 weeks of amplification, and (3) after 6 months of amplification (6-month data have not yet been collected for 10 subjects). Data analyses indicated that there were no significant interactions between the benefit for the 4 scales and the 3 experimental groups. Therefore, data for the 4 scales were averaged for each subject to yield a single figure reflecting overall frequency of problems in daily life for each of the 3 measurement occasions.

Figure 3 illustrates the frequency of problems unaided, after 7 weeks, and after 6 months for all three experimental groups. These data indicate:

1. The new users in all three groups reported about the same percent of problems without amplification (the unaided data). However, despite the random assignment of subjects to groups, the experienced (old) users in group 3 reported significantly more problems than those in groups 1 and 2. Perhaps this was related to their somewhat poorer hearing thresholds as seen in Figure 2.
2. After 7 weeks of hearing aid use, all subjects reported a large reduction in daily problems. However, the new users reported fewer problems than the old users and group 1 new users reported the fewest problems.
3. After 6 months of hearing aid use, old users reported about the same proportion of problems as at 7 weeks but new users reported somewhat more problems than they had at 7 weeks. Overall, the new and old user groups reported about the same extent of problems after 6 months.
4. After 6 months of hearing aid use, the 3 groups of new users showed a clear trend for group 1 to report the fewest problems and group 3 to report the most problems, with group 2 in between. Although a similar pattern was seen in the 3 groups of old users, this was difficult to interpret because of the difference between the old users in the baseline (unaided) data.

FIGURE 3



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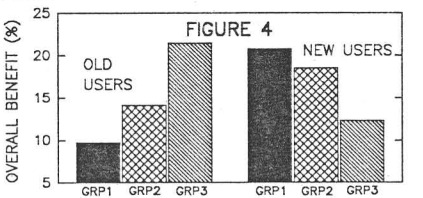
Hearing aid benefit was computed by subtracting the percent of problems in the aided conditions from the percent of problems in the unaided conditions.

Figure 4 depicts the mean reported benefit averaged across 7-week and 6-month data. These data revealed that:

1. The new users showed a clear pattern for group 1, which received the home exercise program, to report the most benefit, followed by group 2, which received phone calls but no exercises. Group 3 subjects, who received no specific follow-up assistance unless they requested it, reported the least benefit.
2. The experienced (old) users showed an opposite pattern with group 1 subjects reporting the least benefit and group 3 subjects reporting the most benefit, on average.
3. None of these effects reached statistical significance at the .05 level.

FIGURE 4



CONCLUSIONS

1. There was no clear evidence that the 3 different telephone follow-up programs resulted in different hearing aid benefit.

2. For new hearing aid users, the trend of the data was in the hypothesized direction, suggesting that data for a larger number of subjects might show a clear superiority for the telephone follow-up program encompassing structured home exercises.

3. For experienced hearing aid users, there was no indication that a telephone follow-up program including structured home exercises improved the benefit obtained from their hearing aids. These data support the use of a "call us if you have problems" follow-up procedure for experienced hearing aid users who are obtaining a replacement hearing aid.

4. The new users reported significantly more benefit after 7 weeks of hearing aid use than they reported after 6 months. This "rebound" in self-assessed benefit has been reported by other investigators (Malinoff & Weinstein, *J. Amer. Acad. Aud.*, 1:54, 1990). After 6 months, the new and old users reported about the same average benefit, suggesting that self-assessed benefit typically levels off by the time the hearing aid has been used for 6 months.

5. Finally, it should be noted that these data do not allow an evaluation of the effectiveness of telephone follow-up versus in-clinic follow-up in maximizing hearing aid benefit.