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Hearing Loss, Hearing Handicap, and Functional Health Status between African American and Caucasian American Seniors

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Abstract

This investigation examined the relations among hearing loss, handicap perception, and functional health status of 152 African American and Caucasian American seniors ranging in age from 60 to 89 years. Subjective measures were obtained from self-report scores on the Hearing Handicap Inventory for the Elderly (HHIE), the Medical Outcomes Study 36-Item Short Form Health Survey (SF-36), and demographic profiles. Results indicated the following: (1) both subject groups exhibited nearly identical degrees of sensorineural hearing loss consistent with presbyacusis; (2) African American seniors reported significantly lower levels of completed education than did Caucasian American seniors; (3) differences between groups in self-report scores of hearing handicap (HHIE) were not statistically significant; (4) differences across groups in self-report scores of functional health status (SF-36) were not statistically significant; and (5) increasing levels of hearing loss produced significantly higher HHIE scores and significantly lower SF-36 scores in each group. These findings are discussed.

Key Words: African American, Caucasian American, elderly, functional health, hearing handicap, hearing loss, quality of life

Abbreviations: HHIE = Hearing Handicap Inventory for the Elderly; SF-36 = Medical Outcomes Study 36-Item Short Form Health Survey

Sumario

Esta investigación examinó las relaciones entre hipoacusia, percepción de discapacidad y estado funcional de salud en 152 adultos mayores afro-americanos y caucásico-americanos con un rango de edades entre 60 y 89 años. Se obtuvieron medidas subjetivas por medio de puntajes de auto-reporte del Cuestionario de Discapacidad Auditiva para Viejos (HHIE), de la Encuesta Corta de Salud de 36 items del Estudio de Resultados Médicos, y de perfiles demográficos. Los resultados indicaron lo siguiente: (1) ambos grupos de sujetos exhibieron grados casi idénticos de hipoacusia sensorineural consistente con presbiacusia; (2) los adultos mayores afro-americanos reportaron niveles significativamente más bajos de educación completa que los adultos mayores caucásico-americanos; (3) las diferencias entre los grupos en los puntajes de auto-reporte sobre discapacidad auditiva (HHIE) no fueron estadísticamente significativas; (4) las diferencias entre los grupos en los puntajes de auto-reporte del estado funcional de salud (SF-36) no fueron estadísticamente significativas; y (5) los niveles crecientes de hipoacusia produjeron puntajes en el HHIE significativamente más altos y puntajes SF-36 significativamente más bajos en cada grupo. Se discuten las implicaciones clínicas.

Palabras Clave: Afro-americano, caucásico-americano, adulto mayor, hipoacusia, discapacidad auditiva, salud funcional, calidad de vida

Abreviaturas: HHIE = Cuestionario de Discapacidad Auditiva para Viejos; SF-36 = Encuesta Corta de Salud de 36 items del Estudio de Resultados Médicos

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Despite previous studies that have demonstrated a relation between sensorineural hearing loss and psychosocial/physical health and overall quality of life among elderly populations (Oyer and Oyer, 1979; Weinstein and Ventry, 1982; Dye and Peak, 1983; Herbst, 1983; Lichtenstein et al, 1988; Bess et al, 1989; Christian et al, 1989; Mulrow et al, 1990; Carabellese et al, 1993; Crandell, 1996, 1997, 1998), there remains a paucity of empirical data that have attempted to examine this relation in other than Caucasian American seniors (Marcus-Bernstein, 1986; Lavizzo-Mourey et al, 1994). Stated otherwise, limited data remain concerning the psychosocial/physical health effects of presbyacusis among elderly populations such as African Americans. To date, only Marcus-Bernstein (1986) has attempted to explore the relative contributions of audiologic and other factors (medical, socioeconomic, and psychological) to perceived hearing handicap in African American (Black) seniors. Subjects in that study consisted of 100 African American seniors (35 male; 65 female) between the ages of 65 and 95 years. Each subject underwent a complete audiologic evaluation followed by a battery of speech recognition tests under varied noise conditions. Self-assessed hearing handicap was measured using the Hearing Handicap Scale (HHS) (High et al, 1964) and the Hearing Handicap Inventory for the Elderly (HHIE) (Ventry and Weinstein, 1982). The Older Americans Resources and Services (OARS) Multidimensional Functional Assessment questionnaire (Duke University, 1978) was administered to all subjects to assess individual functioning on several dimensions, including social resources, economic resources, mental health, physical health, and activities of daily living. Results revealed that perception of hearing handicap was only partially explained by audiologic (i.e., objective) measures, whereas the nonaudiologic (i.e., subjective) factors played a substantial role in determining hearing handicap. These findings suggest that a multidimensional approach is key to understanding and remediating hearing handicap among African American elderly persons.

The present investigation sought to examine hearing loss, hearing handicap perception, and functional health status among 152 African American and Caucasian American seniors ranging in age from 60 to 89 years. Pure-tone audiometry was used to obtain estimates of peripheral hearing function. Self-report measures were obtained from demographic profiles, scores on the HHIE, and scores on the Medical Outcomes Study 36-Item Short Form Health Survey (SF-36).

METHOD

Subject Selection

Subjects were recruited based on 500 printed announcements detailing the project that were distributed throughout the North Central Florida area. The following inclusion criteria were used for determining eligibility for the study: (1) age between 60 and 89 years; (2) ear inspection via otoscopy within normal limits; (3) English as a first language as reported by the subject; (4) living at home and active enough to travel to their audiologic appointment independently; (5) middle ear function within normal limits bilaterally (±100 decaPascals [daPa]) as indicated by tympanometry; (6) negative history of hearing aid use (no more than 30 days) as reported by the subject; (7) no chronic history of being bedfast/chairfast as reported by the subject; (8) no history of chronic terminal illness or senile dementia as reported by the subject; (9) no history of stroke or other significant cerebral vascular disorder with paresis or aphasia as reported by the subject; (10) self-description of race/ethnic origin as African American or Caucasian American as indicated on the case history/demographic profile; (11) sufficient literacy to read and/or comprehend the language of the test instruments written in English; and (12) ability to complete the self-report instruments without assistance as reported by the subject. From the 500 distributed announcements, 152 seniors met the inclusion criteria and represented the study sample.

The characteristics of the 152 seniors are presented in Table 1. Subjects ranged in age from 60 to 89 years, with Caucasian American seniors representing 53 percent (n = 81) and African American seniors representing 47 percent (n = 71) of the total sample. Sixty-three percent (n = 96) of the total sample was female and 37 percent (n = 56) of the total sample was male. Forty-five percent (n = 68) of the total sample reported "high school" as their highest level of completed education. Fifty-three percent (n = 81) of the total sample reported that their income was in the $0 to $20,000 range; however, there were 22 individuals (10 African American, 12 Caucasian American) who did not provide information on their reported income. A majority of the sample (74 percent) reported "retired" as their current employment status. Although not

Table 1 Summary of Demographic Data (N = 152)

Variable	Race/Ethnic Origin: African American n (%)	Race/Ethnic Origin: Caucasian American n (%)
Age (yr)		
60–69	38 (33)	38 (47)
70–79	24 (34)	26 (32)
80–89	9 (12)	17 (21)
Gender		
Male	24 (34)	32 (40)
Female	47 (66)	49 (60)
Education level*		
≤ Junior high school	23 (32)	5 (6)
High school	31 (43)	37 (46)
College	12 (17)	27 (33)
College (postgraduate)	5 (7)	12 (14)
Income level		
$0–$20,000	45 (63)	36 (44)
$20,001–$40,000	13 (18)	23 (28)
≥ $40,001	3 (4)	10 (12)
No response	10 (14)	12 (15)
Work status		
Unemployed	7 (10)	3 (4)
Part time	2 (3)	4 (5)
Full time	7 (9)	16 (19)
Retired	55 (77)	58 (72)

*$p < .05$.

shown, reported number of medical conditions (1.98 vs 2.24) and reported number of medications currently in use (2.30 vs 2.75) were recorded for the African American and Caucasian American seniors, respectively.

Self-Report Measures

Perceived hearing handicap was obtained via self-administered paper-and-pencil versions of the HHIE (Ventry and Weinstein, 1982), a 25-question assessment tool designed to quantify the effects of hearing impairment on the emotional and social adjustment of elderly individuals. The HHIE has a 13-item subscale that explores the emotional consequences of hearing impairment and a 12-item subscale that explores both social and situational effects of hearing impairment. Subjects were instructed to answer "yes," "sometimes," or "no" for each item. Responses were allocated 4, 2, and 0 points, respectively, and the scores of each subscale were combined to produce a total HHIE score. Total HHIE scores range from 0 percent (0 points), suggesting no handicap, to 100 percent (100 points), suggesting total handicap. Higher HHIE scores indicate increased emotional, social, and situational difficulties associated with hearing loss (Ventry and Weinstein, 1982).

Functional health status was measured via self-administered paper-and-pencil versions of the SF-36 (Stewart et al, 1988; Ware and Sherbourne, 1992), a well-established self-report measure in the medical and health care literature used to assess the influence of chronic health-related conditions in terms of physical and mental health functioning (e.g., see Greenfield et al, 1995; Stucki et al, 1995; Kusek et al, 1996; Lawrence et al, 1996; Essink-Bot et al, 1997; Martin et al, 1997; Merkus et al, 1997; Lindley et al, 1998; Psaila et al, 1998). The SF-36 Health Survey is a standardized 35-item questionnaire that assesses physical and mental health functioning across eight health-related dimensions (Ware, 1993): (1) physical functioning, (2) role limitations owing to physical problems, (3) bodily pain, (4) general health, (5) energy/vitality, (6) social functioning, (7) role limitations owing to emotional problems, and (8) mental health. The 36th item of the Survey is a health transition rating that asks respondents to rate their current health status compared with 1 year previously. This item was neither included in the present investigation nor used when scoring any of the eight subscales. Subjects who completed the SF-36 Health Survey were instructed to endorse those items that corresponded to their functional health status at the time of measurement. Scoring algorithms by Ware (1993) can be used to compute raw (total) scores, which are then transformed to a 0 to 100 scale for each of the eight health-related dimensions. Lower raw scores and transformed scores across subscales suggest greater levels of perceived physical and/or mental health difficulties. Higher scores on the Bodily Pain subscale represent freedom from pain. Additionally, the SF-36 Health Survey exhibits high levels of test–retest reliability (Ruta et al, 1998) and high levels of internal consistency reliability across race/ethnic boundaries (Johnson et al, 1995).

Procedure

Audiologic assessment procedures (pure-tone air-conduction audiometry and tympanometry) were completed at a university speech and hearing clinic, a community health practice, and quiet rooms in local churches when religious services were not in session. Prior to obtain-

ing pure-tone audiometry and tympanometry measures, otoscopic assessment of each pinna, external auditory canal, and tympanic membrane was conducted visually and with a handheld otoscope. No notable irregularities obtained from the ear inspection procedures (e.g., evidence of ear surgery, tympanic membrane perforations, excessive cerumen accumulation, impacted cerumen, foreign bodies and/or unspecified ear canal obstructions) excluded any of the subjects in the sample.

Pure-tone air-conduction audiometry (Carhart and Jerger, 1959) was conducted in a sound-treated booth (IAC Model 403-A) using a Grason-Stadler (GSI-61) audiometer. Pure-tone signals were presented via TDH-49 headphones mounted in MX-41/AR supra-aural cushions. Estimates of peripheral hearing sensitivity were measured bilaterally at octave frequencies from 0.5 to 8 kHz using an adaptive ascending method of limits. Interoctave frequencies above 1 kHz were tested when there was a > 15-dB difference between adjacent octave frequencies. Similar audiometric procedures were conducted at the community health practice and the off-site locations using a Grason-Stadler (GSI-38) portable audiometer. In an effort to account for potentially confounding effects of low-frequency ambient room noise during pure-tone testing at the community health practice and the off-site locations, a Quest (Model 215) portable sound-level meter with a built-in octave band filter set was used to survey the ambient room noise of all test locations. Maximum permissible ambient noise levels to obtain audiometric thresholds as low as 10 dB HL were met across all test locations (re: ANSI 3.1, 1991) throughout the investigation. Tympanometry procedures were administered with a Grason-Stadler (GSI-33) Middle-ear Analyzer using a 226 Hz probe tone. The GSI-38 portable audiometer, which has additional acoustic immitance capabilities (i.e., middle ear analysis using a 226 Hz probe tone), was used to determine middle ear function of subjects at the community health practice and the off-site locations. All tympanometry measures were considered normal if they exhibited a Type A configuration (Jerger, 1970).

The informed consent document, HHIE, and SF-36 Health Survey were combined into a single packet. All subjects were provided with the packet along with printed instructions. Subjects signed the informed consent document and completed all questionnaires prior to audiologic assessment. To provide appropriate responses on each document, it was required that all subjects possess the ability to read and/or understand material written in the English language. Documentation of sufficient literacy to read and/or comprehend the language of the self-report instruments used in this investigation was obtained via direct inquiry by the first author or by additional research personnel involved in data collection. When subjects presented questions concerning unfamiliar items, verbal explanations and/or clarifications were provided. Subjects who met the inclusion criteria for this investigation completed all questionnaires within 10 to 20 minutes. Potential subjects unable to complete the self-administered questionnaires or who provided partial information were considered ineligible to participate, and their data were excluded from the study.

RESULTS

Pure-Tone Thresholds

Numeric summaries of mean behavioral pure-tone data in the right and left ears of the African American and Caucasian American seniors across octave frequencies from 0.5 to 8 kHz are shown in Table 2. As expected, both groups exhibited a mild-to-moderate degree of hearing impairment consistent with presbyacusis. Analysis of variance (ANOVA) procedures, with one between-subjects factor (group) and one within-subjects factor (audiometric frequency), indicated that estimates of peripheral hearing sensitivity obtained at 8 kHz were significantly poorer in the right ($F = 3.92$, $df = 1, 148$, $p = .03$) and left ($F = 6.57$, $df = 1, 148$, $p = .01$) ears of Caucasian American seniors than African American seniors. Significant differences across ears and across groups from 0.5 to 4 kHz were not found (all p values > .05).

Subject Demographics

Categorical analysis using chi-square statistical test procedures revealed significant differences in education level ($\chi^2 = 20.18$, $df = 3$, $p = .001$) across race/ethnic boundaries. African American seniors reported significantly lower ($p < .05$) education levels than Caucasian American seniors (see Table 1). No significant differences across race/ethnic boundaries were found in age, gender, reported income level, number of medical conditions, number of medications currently in use, or current employment status.

Table 2 Means and SDs of Pure-Tone Audiometric Measures across Octave Frequencies 0.5 to 8 kHz in African American and Caucasian American Seniors

	*Frequency (Hz)**				
	500	*1000*	*2000*	*4000*	*8000*
Race/Ethnic Origin	*Mean (SD)*	*Mean (SD)*	*Mean (SD)*	*Mean (SD)*	*Mean (SD)*
African American (n = 71)					
Right ear	31 (12)	32 (11)	37 (14)	45 (18)	53 (22)†
Left ear	30 (12)	29 (12)	34 (15)	43 (19)	51 (23)†
Caucasian American (n = 81)					
Right ear	29 (10)	32 (12)	38 (18)	52 (19)	64 (19)†
Left ear	26 (10)	27 (11)	33 (15)	50 (18)	65 (17)†

*Measures of peripheral hearing sensitivity presented in decibels hearing level (dB HL) re: ANSI (1992).
†$p < .05$.

Hearing Handicap

Table 3 provides summary scores of self-perceived hearing handicap in African American and Caucasian American seniors. African American seniors reported mean social HHIE scores of 7.08, mean emotional HHIE scores of 6.09, and mean total HHIE scores of 13.17. Caucasian American seniors reported mean social HHIE scores of 9.04, mean emotional HHIE scores of 7.35, and mean total HHIE scores of 16.39. The significance of differences in group measures was determined by one-way analysis of variance (ANOVA) tests. The ANOVA revealed that differences across social, emotional, and total scores of self-perceived hearing handicap owing to race/ethnic origin were not significant (social HHIE: $F = 0.08$, $df = 2, 148$, $p = .77$; emotional HHIE: $F = 0.49$, $df = 2, 148$, $p = .48$; total HHIE: $F = 0.27$, $df = 2, 148$, $p = .60$).

Influence of Hearing Loss on Hearing Handicap

Because the influence of hearing loss on self-report scores of hearing handicap (total HHIE score) may be confounded by external factors such as age, income, employment status, and education, analysis of covariance (ANCOVA) procedures were conducted to identify differences in self-perceived hearing handicap owing to hearing loss. The ANCOVA tests were constructed with the total HHIE score as the dependent variable. Behavioral data obtained from the better hearing ear were used to represent the level of hearing loss. Covariates entered into the ANCOVA model were age, reported income level, current employment status, and highest level of completed education. Statistical interaction between race/ethnic origin and gender on the influence of hearing loss and self-reported scores of hearing handicap were not significant (total HHIE: $F = 0.51$, $df = 1, 137$, $p = .47$).

Because no significant interaction between race/ethnic origin and gender was found, ANCOVA procedures were conducted to identify main effects in self-perceived hearing handicap owing to hearing loss. The resulting ANCOVA measures produced significant differences in self-reported scores of hearing handicap in both African American (total HHIE: $F = 3.76$, $df = 4, 67$, $p = .01$) and Caucasian American (total HHIE: $F = 2.72$, $df = 4, 77$, $p = .03$) seniors. Figure 1 shows total HHIE score plotted as a function of hearing loss (i.e., no loss, 16–25 dB HL, 26–40 dB HL, ≥ 41 dB HL), with error bars representing +1 standard error from the mean. Post hoc analysis using the Tukey Multiple Comparison Test procedure indicated that hearing handicap scores increased progressively as a function of hearing loss, with the most significant perception of hearing handicap occurring when the hearing loss reached more than 40 dB HL in both African American and Caucasian American seniors. Significant race/ethnic

Table 3 Means and SDs Obtained from the Hearing Handicap Inventory for the Elderly in African American and Caucasian American Seniors

	African American (n = 71)	*Caucasian American (n = 81)*
Self-Report Inventory	*Mean (SD)*	*Mean (SD)*
Social	7.08 (10.50)	9.04 (7.81)
Emotional	6.09 (11.18)	7.35 (7.78)
Total	13.17 (21.68)	16.39 (15.59)

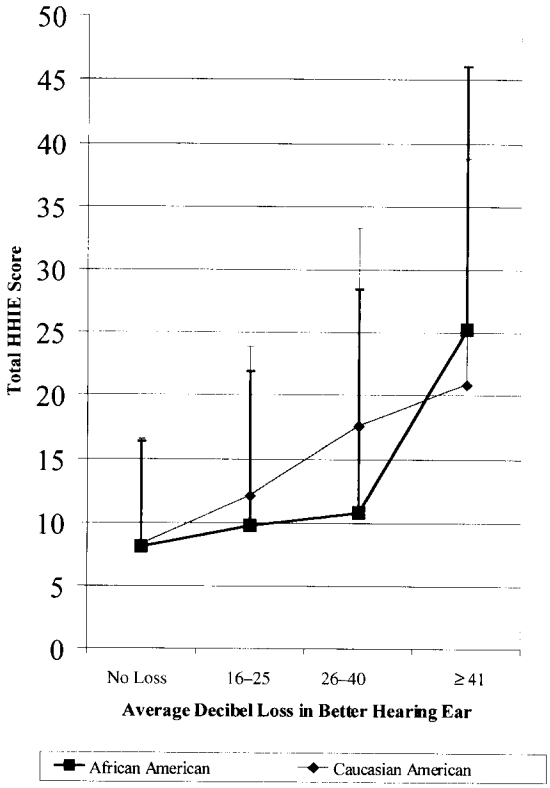

Figure 1 Total Hearing Handicap Inventory for the Elderly (HHIE) score (+1 standard error) as a function of hearing loss in African American (n = 71) and Caucasian American (n = 81) seniors.

differences in self-perceived hearing handicap owing to increasing hearing loss were not found.

Functional Health

Means and standard deviations of SF-36 scores in African American and Caucasian American seniors are shown in Table 4. The mean total (raw) SF-36 score of African American seniors was 108.11 points, whereas the mean total SF-36 score of Caucasian American seniors was 110.84. One-way ANOVA test procedures revealed that differences in mean total (raw) SF-36 scores between the two groups were not significant ($F = 2.45$, $df = 1, 148$, $p = .11$). An examination of individual subscale data indicated that African American seniors scored lower on six of the eight subscales (Physical Functioning, Social Functioning, General Health, Role Limitations—Physical, Role Limitations—Emotional, and Mental Health), yet the one-way ANOVA test procedures revealed that differences in mean scores of functional health status owing to race/ethnic origin were not significant (all p values > .05). It should be noted that functional health scores obtained from African American and Caucasian American seniors were consistent with the national SF-36 norms reported by Ware (1993) that account for the influence of age and gender on reported functional health status.

Influence of Hearing Loss on Functional Health

The influence of hearing loss on self-report scores of functional health status may also be confounded by external factors such as age, income, employment status, and education. Hence, ANCOVA procedures were conducted to identify the influence of hearing loss on functional health. The ANCOVA tests were constructed similar to the model used to examine the influence of hearing loss on self-perceived hearing handicap, except the total (raw) SF-36 score was used as the dependent variable. Behavioral data obtained from the better hearing ear and similar covariates were also used in the statistical model. Interaction between race/ethnic origin and gender was not significant (total SF-36: $F = 2.56$, $df = 1, 137$, $p = .11$), so further ANCOVA procedures were conducted to identify

Table 4 Means and SDs of Functional Health Status Obtained from the 36-Item Short Form Health Survey in African American and Caucasian American Seniors

	African American (n = 71)	*Caucasian American (n = 81)*
Self-Report Inventory	*Mean (SD)*	*Mean (SD)*
Physical Function	58.22 (27.74)	66.79 (25.66)
Social Function	78.69 (22.69)	84.49 (22.08)
Bodily Pain	67.04 (26.55)	64.16 (21.82)
General Health	62.29 (20.16)	66.95 (19.18)
Energy/Vitality	58.70 (21.65)	58.45 (19.09)
Role Limitation—Physical	65.40 (41.58)	67.28 (37.63)
Role Limitation—Emotional	70.36 (39.74)	78.19 (33.43)
Mental Health	76.33 (21.16)	76.98 (18.71)

main effects. When controlling for experimental confounds (i.e., age, income level, current employment status, and highest level of completed education), increasing hearing loss produced significantly lower total SF-36 scores in both African American (total SF-36: $F = 4.33$, $df = 4, 56$, $p = .02$) and Caucasian American (total SF-36: $F = 6.11$, $df = 4, 64$, $p < .01$) seniors, which suggests that increasing levels of hearing loss produced greater perceived deficits in functional health. Figure 2 illustrates SF-36 score as a measure of change in hearing loss, with error bars representing ± 1 standard error from the mean. Post hoc analysis using the Tukey Multiple Comparison Test procedure indicated that increasing levels of hearing loss produced lower functional health scores, with the most significant deficit in perception of functional health status occurring when the hearing loss reached more than 40 dB HL.

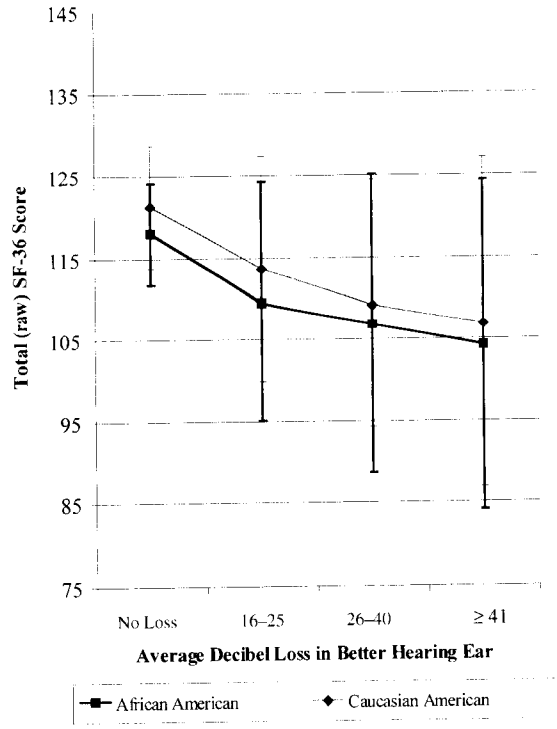

Figure 2 Total (raw) 36-Item Short Form Health Survey (SF-36) score (± 1 standard error) as a function of hearing loss in African American (n = 71) and Caucasian American (n = 81) seniors.

DISCUSSION

Results from this investigation indicated the following trends: (1) both subject groups exhibited nearly identical degrees of sensorineural hearing loss consistent with presbyacusis; (2) African American seniors reported significantly lower levels of completed education than did Caucasian American seniors; (3) differences between groups in self-reported scores of hearing handicap (HHIE) were not significant; (4) differences between groups in self-reported scores of functional health status (SF-36) were not significant; and (5) increasing levels of hearing loss produced significantly higher hearing handicap scores and significantly lower functional health scores in both groups. Each of these findings is addressed.

First, this investigation found that mean audiometric configurations of the two groups of seniors illustrated nearly identical mild to moderately severe degrees of hearing loss. These data are consistent with previous investigations that have examined hearing loss in Caucasian American and African American male and female seniors (Marcus-Bernstein, 1986; Jerger et al, 1993; Garstecki and Erler, 1998, 1999). The statistically different thresholds that occurred at 8 kHz in the Caucasian American seniors in the present study remain unexplained at this time but in all likelihood represent a true occurrence and not one caused by differing test environments.

A second finding of this investigation was that African American seniors reported significantly lower levels of completed education than did Caucasian American seniors. As expected, this difference in education level across race/ethnic boundaries is a common occurrence with demographic trends found in the literature. For example, Guralnik and Leveille (1997) reported that unequal opportunities throughout the life span of African American and Caucasian American seniors are frequent contributors to differences often seen in demographic profiles. Kington and Smith (1997) also reported that demographic conditions such as education level, income, and work status play a role in explaining race/ethnic differences, with African Americans consistently placed at a socioeconomic disadvantage. Harris (1998) indicated that socioeconomic differences that frequently occur among under-represented population subgroups (e.g., Asian and Pacific Islanders, Hispanic Americans [Latinos], American Indians, and African Americans) may be attributed to the reduced number of individuals, such as African American seniors, who have completed high school. Such differences in completed education level often result in reduced employment opportunities and lower wages.

Third, this investigation examined whether differences existed in the perception of hearing handicap, determined by self-reported scores on

the HHIE, between African American and Caucasian American seniors. The data obtained from HHIE scores across race/ethnic boundaries in this investigation indicated no statistically significant difference in HHIE scores, which suggests that both African American and Caucasian American seniors reported mild-to-moderate levels of hearing handicap (Weinstein and Ventry, 1983). This investigation also examined the relation between hearing loss and hearing handicap across both groups. Results of past studies from Weinstein and Ventry (1982), Dye and Peak (1983), Christian and colleagues (1989), and Carabellese and colleagues (1993) infer that the handicapping effects of hearing loss place seniors at higher risk for depression, detachment (loneliness), and social isolation, which has the potential to negatively impact physical and mental health function. However, data by Jackson (1986), Guralnik and Leveille (1997), and Kington and Smith (1997) emphasize the importance of considering confounds (i.e., income level, employment status, and education level) in determining health conditions because they reflect socioeconomic disadvantages that often exist across race/ethnic boundaries. Owing to these prevailing issues, ANCOVA procedures were conducted to determine the influence of hearing loss on perceived hearing handicap, while controlling the covariates of age, reported income, current work status, and highest level of completed education. Although no statistically significant differences existed between groups, the most significant perception of hearing handicap occurred when the hearing loss surpassed 40 dB HL. These data are consistent with those of Weinstein and Ventry (1983), who reported that seniors with a pure-tone average > 40 dB HL exhibited a significant degree of perceived hearing handicap.

Finally, this investigation used the SF-36 Health Survey to examine functional health status between African American and Caucasian American seniors. The SF-36 Health Survey is a global health instrument that is widely used in medical and health care literature as a self-report inventory for physical and mental health functioning associated with chronic conditions. Self-reported scores of functional health status obtained from the entire sample of seniors were consistent with the national SF-36 norms reported by Ware (1993) that account for the influence of age and gender on functional health status. When the data were segmented across African American/Caucasian American seniors, no significant differences were found in the SF-36 scores across the eight domains of physical and mental health functioning. Similar to the analysis used to determine the influence of hearing loss on self-perceived hearing handicap, ANCOVA procedures were conducted to determine the influence of hearing loss on functional health status. Functional health perception progressively decreased as a function of hearing loss, with the most significant deficit in perceived functional health status occurring when the hearing loss reached more than 40 dB HL. This trend occurred in both African American and Caucasian American seniors. Moreover, race/ethnic differences in self-perceived functional health status owing to increasing hearing loss were not statistically significant. These data imply that hearing loss places both African American and Caucasian American male and female seniors at risk for higher prevalence of quality of life (i.e., physical and psychosocial) difficulties.

In summary, this investigation revealed that hearing loss contributes equally to hearing handicap and functional health difficulties in African American and Caucasian American seniors. It must be noted that generalizations based on data contained in this study are most germane to elderly individuals with mild-to-moderate degrees of hearing loss. However, it is logical to assume from these data that African American and Caucasian American seniors with more pronounced degrees of hearing loss may exhibit greater levels of self-perceived hearing handicap and/or greater reductions in functional health status.

Given the results of this investigation, these data suggest the need for future studies in the following areas: (1) effects of hearing aid use on hearing handicap and functional health status in various ethnic/racial populations; (2) influence of locus of control among different socioeconomic populations, which may govern whether older persons choose to consult hearing health care practitioners; (3) cultural factors that might suggest greater (or lesser) effects of hearing loss among race/ethnic and gender populations; and (4) influence of other factors, such as finances, transportation, and specific illness, on seeking audiologic rehabilitation for different ethnic/racial populations.

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