

Media use by older adults with hearing loss: An exploratory survey

Vinaya Manchaiah,^{1,2} Monica L. Bellon-Harn,¹ Rebecca J. Kelly-Campbell,³ Eldré W. Beukes,^{1,4} Abram Bailey⁵ & Ilmari Pyykkö⁶

1. Department of Speech and Hearing Sciences, Lamar University, Beaumont, Texas, USA

2. Department of Speech and Hearing, School of Allied Health Sciences, Manipal University, Manipal, Karnataka, India

3. School of Psychology, Speech and Hearing, University of Canterbury, Christchurch, New Zealand

4. Department of Vision and Hearing Sciences, Anglia Ruskin University, Cambridge, United Kingdom

5. Hearing Tracker Inc, Austin, TX

6. Department of Otolaryngology, Hearing and Balance Research Unit, University of Tampere, Finland

Corresponding author: Dr. Vinaya Manchaiah

Communication address: Department of Speech and Hearing Sciences,
Lamar University, Beaumont, Texas 77710, USA

Email: vinaya.manchaiah@lamar.edu

Tel: +1 (409) 880 8927

Fax: +1 (409) 880 2265

25 **Conflict of Interest**

26 No relevant conflicts of interest

27

28 **Funding**

29 No funding as received for this study.

30

31 **Abstract**

32 **Objectives:** There has been a substantial increase in people with health conditions seeking
33 health-related information online. The aim of this study was to examine the media usage by older
34 adults with hearing loss.

35 **Method:** The study used a cross-sectional survey design. A total of 556 older adults with hearing
36 loss (Hearing Tracker website users) completed the survey which was focused on (a)
37 demographic information, (b) general electronic media usage (c) sources of hearing health
38 information, and (d) social media use for hearing health information. Data were analyzed using
39 descriptive statistics and Chi square tests.

40 **Results:** When seeking hearing health care information the majority of the participants turned to
41 the Internet (54%) followed by health professionals (34%) as the first response to their
42 symptoms. Both these sources were also rated as the easiest means of obtaining hearing health
43 information. The information from health care providers was rated as more reliable and
44 important for decision making than that from the Internet. Facebook and YouTube were the most
45 frequently used social media platforms with over 40% of the respondents using them 'most of
46 the time' or 'sometimes.' All the social media platforms were rated less favorably than other
47 sources for ease of finding information, reliability, and importance in decision making.

48 **Conclusion:** Older adults with hearing loss use various forms of electronic media for seeking
49 hearing health information. They place the most trust on the information obtained from hearing
50 health care professionals. These professionals need to be aware of the quality of information
51 available on the Internet and social media sources in order to direct patients to credible sources.

52

53 **Key Words**

54 Hearing loss, Media, Internet, Health information, Health communication

55

56 **Introduction**

57 Patient involvement in their health care has transformed dramatically over the last decade.

58 Patients are more likely to seek health information, make informed decisions about rehabilitation
59 choices, and self-manage their condition than in previous decades. There has also been a shift in
60 where this information is sought. Traditionally people with disabilities and health conditions
61 consulted health professionals or discussed their health conditions with their friends and family.

62 In recent years there has been a rise in people using the Internet and social media to gather
63 information about health conditions (Marton & Wei Choo, 2012; Zhao & Zhang, 2017; Pew
64 Research Center, 2019).

65

66 Electronic media (i.e., news media, social media, and the Internet) provides easy and free access
67 to information on various health conditions including hearing loss. Patients can access
68 information when and where they want just by searching the Internet using their personal
69 computer or smartphone. Patients can assess information on issues they perceive as relevant.
70 Moreover, patients can interact with others with similar conditions to hear their opinion and

71 experiences or to share their own experiences with others. Hence, patients may feel more
72 empowered (Oh & Lee, 2012) and may be more motivated to be involved in health decision
73 making and management (Broom, 2005). This is unlike clinical settings where health
74 professionals may control the conversation (Antheunis, Tates, & Nieboer, 2013). These factors
75 have contributed to the changes observed regarding the way in which patients seek and use
76 information and the way in which they interact with health professionals.

77

78 Despite the obvious benefits of electronic media in improving the accessibility of health
79 information, there are some limitations (Finn, 2019; George, Rovniak, & Kraschnewski, 2013).
80 For instance, (mis)information about health on the Internet and social media is suggested to be
81 one of the biggest threats (Hill et al., 2019). Online health information, in particular information
82 shared through social media, may do more harm than good (George et al., 2013). Shared
83 (mis)information may provide inappropriate health care choices. Moreover, the use of electronic
84 media for health information seeking has also influenced the patient-physician relationship
85 (Smailhodzic, Hooijsma, Boonstra, & Langley, 2016). For instance, patients can be more aware
86 of issues and may ask questions about various myths they have. Alternatively they may have
87 preference for a particular management strategy as a result of reading about it on the Internet.
88 For these reasons, it is essential that health professionals are aware of the type of electronic
89 media used by people with different health conditions and the quality of information available on
90 those sources. This will help them to be better prepared to address the questions or concerns
91 raised by patients.

92

93 There has been increasing interest in understanding the Internet and social media use by people
94 with hearing related conditions. Henshaw, Clark, Kang, and Ferguson (2012) explored the use of
95 computers and the Internet in a sample of older adults (50-74 years) in the United Kingdom.
96 Their study suggested that older adults experiencing slight hearing difficulty have increased odds
97 of greater computer skill and Internet use than those reporting no hearing difficulty. Thorén,
98 Oberg, Wänström, Andersson, and Lunner (2013) found that over 60% of participants with
99 hearing loss used computers and the Internet. This proportion was higher than that of the general
100 Swedish population. Higher Internet usage was associated with more male hearing impaired
101 adults of a younger age and higher educational status. There was no association between Internet
102 usage and the degree of hearing loss. More recently studies have examined social media use by
103 people with hearing loss and tinnitus (e.g., Choudhury, Dinger, & Fichera, 2017; Deshpande,
104 Deshpande, & O'Brien, 2018; Manchaiah, Ratinaud, & Andersson, 2018). While these studies
105 have examined the frequency of electronic media use, they have been limited by either focusing
106 on a specific domain (e.g., the Internet), and/or by focusing on the content and frequency of
107 information. These studies highlight that people with hearing related disorders often use
108 electronic media including social media for hearing health information. However, we do not
109 know users' perception of ease in gathering online information, users' perception of reliability of
110 information gathered, and if users' ease and trust influences decision making. Hence, there is a
111 gap in the literature in terms of what kind of electronic media people with hearing loss use, how
112 they perceive the information obtained and how it influences their health management decisions.
113
114 The aim of this study was to examine media usage by older adults with hearing loss to:

- 115 a) Determine how frequently different electronic media sources are used by older adults
116 with hearing loss to search for general information.
- 117 b) Identify the initial sources used to seek health information as a result of a health symptom
118 and whether these choices are associated with any personal characteristics.
- 119 c) Compare the frequency of use of non-media sources (i.e., health care provider, family
120 and friends) and media sources (i.e., Internet, television, news media, radio) for hearing
121 health information, perception of ease of finding hearing health information, perception
122 of reliability of the source providing the hearing health information and the importance
123 the source decision making.
- 124 d) Compare the frequency of use of social media (i.e., Facebook, YouTube, Twitter,
125 LinkedIn, Instagram) for hearing health information, perception of ease of finding
126 hearing health information, perception of reliability of the source providing the hearing
127 health information and the importance the source decision making.

128

129 **Method**

130 **Study Design**

131 The study used a cross-sectional survey design. Ethical approval (IRB-FY19-106) was obtained
132 from the Institutional Review Board at Lamar University, Beaumont, Texas, USA.

133

134 The aim of the sampling strategy was to recruit a wide range of older adults with hearing
135 impairment who regularly used the Internet. Hearing Tracker is a private entity which serves as a
136 consumer-led website to promote best practice in audiology and provides comprehensive and
137 unbiased information about hearing instruments and practices. There are over 12,000 registered

138 users (mainly people with hearing loss) who subscribe to their mailing list. As such, this was
 139 identified as an appropriate means of recruiting Internet users with impaired hearing. An email
 140 with the web-based survey link using the Qualtrics platform was sent to all registered users of
 141 Hearing Tracker. The email was delivered to 12,682 members. Of those, 5,797 members opened
 142 the email, and 896 members clicked on the survey link. Of those that clicked on the survey, 620
 143 registered to complete the survey. The participants self-selected themselves to participate in the
 144 study. The inclusion criteria included: adults over 18 years of age with hearing impairment,
 145 ability to read and write English, and resident of the United States. The response from those who
 146 did not meet these criteria were excluded. The survey title stated that the survey was about the
 147 electronic media usage.

148

149 **Participants**

150 The survey resulted in 620 responses, of which 64 responses were incomplete with missing data
 151 on 5 or more questions. Hence, responses with missing data were excluded and remaining 556
 152 responses from individuals with hearing impairment were included in the analyses. Table 1
 153 provides the demographic details of the study participants. The participants had a mean age of 67
 154 years and 62% of the participants were males. A large number of the participants were retired
 155 (64%), of white ethnicity (90%), and had hearing loss in both ears (96%). Over 70% used the
 156 Internet for more than 10 hours a week and nearly 15% used the Internet for more than 30 hours
 157 a week.

158 **Table 1: Demographics (n=556)**

Variable	N (%)	Mean (SD)
Age (in Years)	-	67.73 (12.6)

Duration of hearing loss (in Years)	-	21.85 (17.0)
Gender		
▪ Male	342 (61.5)	
▪ Female	205 (36.9)	-
▪ Gender diverse	9 (1.6)	
Work		
▪ Entry level or unskilled	10 (1.8)	
▪ Skilled or professional	172 (30.9)	-
▪ Retired	354 (63.7)	
▪ Not working	20 (3.6)	
Education		-
▪ Less than high school	8 (1.4)	
▪ High school or GED	34 (6.1)	
▪ College, but no degree	101 (18.2)	
▪ Associate degree	48 (8.6)	
▪ Bachelor degree	175 (31.5)	
▪ Graduate degree	190 (34.2)	
Ethnicity		-
▪ American Indian or Alaska Native	16 (2.9)	
▪ Asian	20 (3.5)	
▪ Black or African American	7 (1.3)	
▪ Hispanic or Latino	10 (1.8)	
▪ Native Hawaiian or Other Pacific Islander	2 (0.4)	

▪ White	501 (90.1)	
Hearing Loss		-
▪ One ear	23 (4.1)	
▪ Both ears	533 (95.9)	
Self-reported hearing disability		-
▪ Very easy	4 (0.7)	
▪ Fairly easy	149 (26.8)	
▪ Fairly hard	275 (49.5)	
▪ Very hard	128 (23.0)	
Hearing aids		-
▪ One ear	50 (9.0)	
▪ Both ears	454 (81.7)	
▪ No	52 (9.3)	
Other hearing devices		-
▪ None	362 (65.1)	
▪ Cochlear Implants	24 (4.3)	
▪ Bone Anchored Hearing Aid (BAHA)	4 (0.7)	
▪ Phone amplifier	90 (16.2)	
▪ Other	76 (13.7)	
Family history of hearing loss		-
▪ Yes	285 (51.3)	
▪ No	271 (48.7)	

160

161 Questionnaire

162 An electronic survey was used to identify the best method to answer the research aims. As no
163 appropriate standardized questionnaire was found, a 22-item questionnaire was developed (see
164 Supplemental Materials). The questionnaire focused on (a) demographic information, (b) general
165 electronic media usage, (c) sources of hearing health information, and (d) social media use for
166 hearing health information. Items were derived primarily through discussion among the research
167 team members and by considering previous literature on media use related to health information.
168 Questions were related to the frequency and ease of use as well as reliability and usefulness for
169 decision making of different sources of information. The response scale varied based on the
170 questions. However, the key questions about the ‘source of information’ and ‘electronic media
171 use’ were rated in a four-point Likert-scale (e.g., most of the time, sometimes, rarely, never) .

172

173 We wanted to ensure that the questionnaire was easily readable and comprehensible to the study
174 participants. Readability is the ease with which a person can read and understand written
175 materials (Davidson, 1984). The use of readability formulas determine the ease with which
176 materials can be comprehended (Doak, Doak, & Root, 1996). Guidelines from the US Health and
177 Human Services and the American Medical Association recommend that health material are
178 written in plain language at or below the 6th reading grade level (Doak et al., 1996). Reading
179 Grade Level (RGL) scores were calculated using Readability Studio (version 2012.1). The
180 original questionnaire had a reading grade level of 8.9 in the Flesch-Kincaid grade level formula.
181 Hence, the questionnaire was revised to achieve the desired reading grade level. This involved
182 reducing the sentence length to less than 21 words, reducing the word complexity to no more

183 than 3 syllables per words, increasing word familiarity by removing complex words, and
184 reducing the word length to 66 characters or less where appropriate. The readability assessment
185 following these changes resulted in a reading grade level of 5 in the Flesch-Kincaid grade level
186 formula in the final questionnaire.

187

188 **Data Analysis**

189 Statistical analyses were conducted using the IBM SPSS Software Version 24. Descriptive
190 statistics were used to examine answers to most of the questions. In addition, Chi square test was
191 performed to examine the association between demographics variables (i.e., age, gender,
192 education, and work status) and Internet use and initial response to symptoms. The continuous
193 variable age was split into two categories using the median age as the cut-off point. For all
194 analyses, an alpha level of < 0.05 was used as statistical significance.

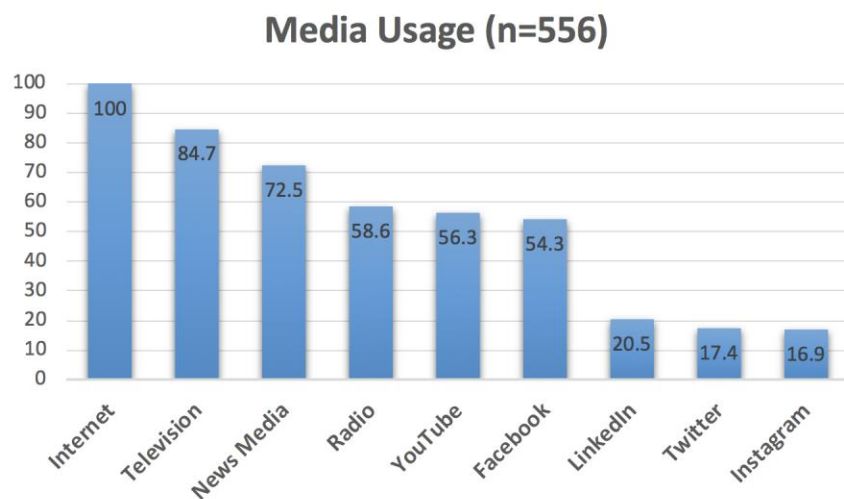
195

196 **Results**

197 **General Electronic Media Usage**

198 Participants were asked to indicate the type of electronic media they used of the nine different
199 sources of electronic media listed. They were asked to rate their general usage of these sources,
200 not specifically related to obtaining health-related information. Internet (100%), television (85%)
201 and news media (73%) were the most frequently used media outlets followed by the radio (59%)
202 as seen in Figure 1. The respondents also used social media for information with over half of
203 them using Facebook (54%) and YouTube (56%). However, the use of Twitter, LinkedIn and

204 Instagram was used by less than a quarter of the study respondents.



205

206

207

Figure 1

208

209 **Initial Source of Information for Health-Related Symptoms**

210 Participants were asked to identify their initial source of information when searching for health-

211 related symptoms. Figure 2 showed that the majority turned to the Internet (54%) or health

212 professionals (34%). Consulting friends and family (4%) and use of other sources (8%) were the

213 least used sources. Chi square test was performed to examine the relationship between

214 demographics variables (i.e., age, gender, education and work status) and the type of initial

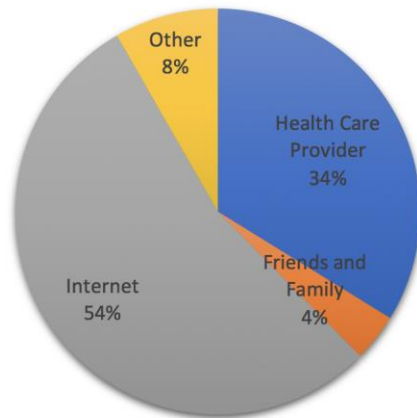
215 response to health symptoms (i.e., source was used). There was no significant association

216 between initial response to symptoms and age [$\chi^2 (5, 556) = 8.3, p = .14$], and gender [$\chi^2 (10,$

217 $556) = 7.4, p = .69$], work status [$\chi^2 (15, 556) = 16.8, p = .33$], or education [$\chi^2 (25, 556) = 17.4,$

218 $p = .46$].

First Response to Health Symptoms



■ Health Care Provider ■ Friends and Family ■ Internet ■ Other

219

220

Figure 2

221

222 Weekly Internet Use

223 Over 70% of the respondents use the Internet more than 10 hours a week (see Figure 3).

224 Interestingly, nearly 15% of the respondents use the Internet more than 30 hours a week. Chi

225 Square testing indicated that there was no significant associations between weekly internet use

226 and variables age [$\chi^2 (5, 556) = 3.8, p = .57$] and gender [$\chi^2 (10, 556) = 5.2, p = .88$]. A

227 significant association was found for variables work status [$\chi^2 (15, 556) = 43.4, p < .0001$] and

228 education [$\chi^2 (25, 556) = 61.3, p < .0001$].

Weekly Internet Use

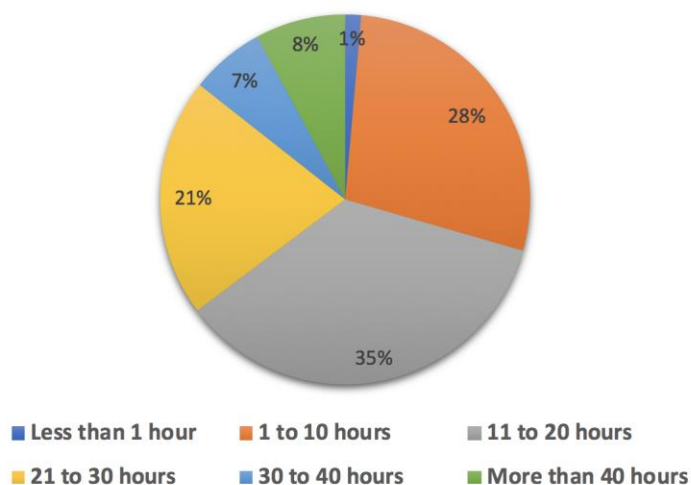
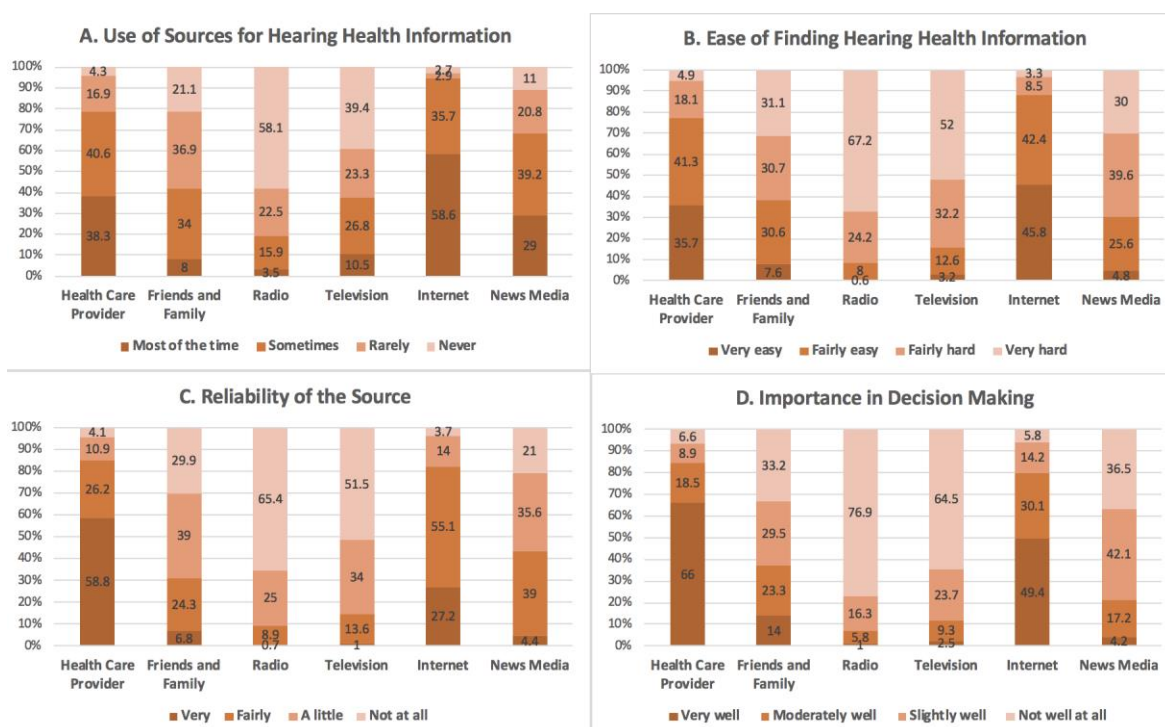


Figure 3

Sources of Hearing Health Information

Participants were asked to indicate the frequency with which they used six different sources (both non-media and media) of information to gather hearing health information. They were then asked how easily the information was obtained, how reliable it was, and whether the information was used during decision making. Results indicated that the Internet and health care providers were the most frequently used sources, followed by the news media (see Figure 4a). The Internet and health care providers were also rated as the easiest sources of hearing health information with nearly 90% respondents rating the Internet and 80% rating health care providers as ‘very easy’ or ‘fairly easy’ sources of Information (see Figure 4b). However, when rating the reliability (see Figure 4c) and importance of the information obtained during decision making (see Figure 4d) health care providers were rated more favorably than the Internet. Although the news media was used as a source of information by nearly one third of respondents, the reliability and importance of the information obtained was rated less favorably. Television and radio sources

245 were used less frequently, rated more difficult to find information, and were viewed as less
 246 favorable for reliability and importance in decision making. Friends and family were used as a
 247 source of information by over 40% of respondents. Ease of access to information, reliability, and
 248 importance of decision making ratings were favourable by 35 to 40% of individuals about friends
 249 and family.
 250

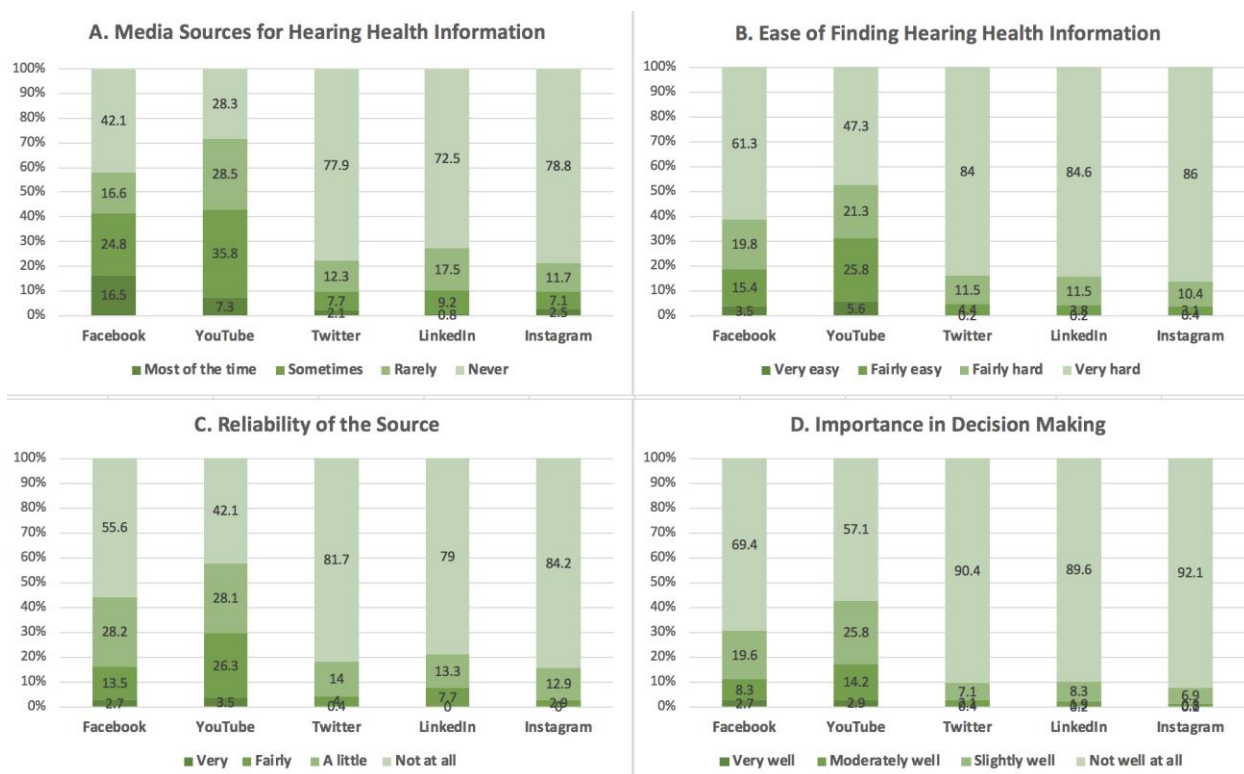


251
 252 **Figure 4**
 253

254 Social Media Use for Hearing Health Information

255 Participants were asked to indicate the frequency with which they used five different social
 256 media sources of information to gather health information. They were then asked how easily the
 257 information was obtained, how reliable it was and whether the information was used during
 258 decision making. Facebook and YouTube were the most frequently used social media platforms

259 with over 40% of the respondents using them ‘most of the time’ or ‘sometimes’, whereas the
 260 other three sources (i.e., Twitter, LinkedIn, Instagram) were used by less than 10% of
 261 respondents (see Figure 5a). Facebook and YouTube were rated as ‘very hard’ to find
 262 information on by nearly 61% and 47% of the respondents respectively (see Figure 5b).
 263 Facebook and YouTube were rated as ‘not at all’ reliable by nearly 55% and 42% of the
 264 respondents, respectively (see Figure 5c). In addition, Facebook and YouTube were rated as ‘not
 265 well at all’ in terms of importance in decision making by nearly 69% and 57% of the
 266 respondents, respectively (see Figure 5d). Twitter, LinkedIn and Instagram were rated as most
 267 difficult, less reliable and least important in decision making by most of the respondents.
 268



269
 270 **Figure 5**
 271

272 **Discussion**

273 The current study explored media and non-media usage by older adults with hearing loss.
274 Electronic media brings many advantages for people with hearing loss as they may provide a
275 means to facilitate communication remove auditory barriers (Barak & Sadosky, 2008). Use of
276 the Internet thus appeals to those with text-based communication preferences (Pilling & Barrett,
277 2008). The impact of obtaining information from electronic media in relation to direct sources of
278 information (i.e., health care profession, family, friends) should be considered by health care
279 professionals. The current study found that older adults with hearing loss do use various sources
280 of information including the Internet and social media. This is not surprising in light of that fact
281 that increasing numbers of people are using the Internet and social media to gather information
282 about health conditions. These results are in line with previous findings that 70% of hearing
283 impaired adults sampled reported using the Internet more than 10 hours a week (Henshaw et al.,
284 2012; Thorén et al., 2013). To date there have been conflicting finding regarding whether
285 demographics factors are related to the frequency of Internet usage.

286
287 The Internet was the most frequent initial source of hearing health care information used by 54%
288 of responders. Previous literature has also found the Internet to be the initial source of hearing
289 related information (Peddie & Kelly-Campbell, 2017). It was encouraging that health care
290 professionals still maintain a critical role in providing initial hearing health care information as
291 they were the second most frequent initial information source used by 34% of responders. The
292 initial source of information used was related to work status and level of education. The Internet
293 was also rated as the easiest source of finding information by 90% or respondents, followed by
294 80% rating health professionals as an easy information sourcewhen compared to other sources.

295 However, health care professionals were rated as the most reliable source of information by 59%
296 or responders, followed by the Internet (i.e., 27% of responders).

297
298 Perception of trust is an important element of hearing health care therapeutic relationship
299 (Preminger Oxenbøll, Barnett, Jensen, & Laplante-Lévesque, 2015). Hence, it is clear that while
300 older adults with hearing loss use the Internet, they view their hearing health care provider as the
301 more trusted source. Older adults may go to the Internet for information, but then they may
302 follow-up with their hearing health care provider to discuss the information they have gathered.
303 Consequently, hearing health care provider should be aware of what hearing health information
304 may be found on the Internet. This knowledge can help them prepare to engage in discussions
305 with their patients which can promote patient-centered care.

306
307 The use of social media to gather hearing health care information was lower when compared to
308 the use of the Internet and health professions. Facebook and YouTube were the most frequent
309 social media sources of information compared with other social media platforms such as Twitter,
310 LinkedIn, and Instagram. Social media sources received low ratings regarding the ease of
311 information gathering, reliability of information, and the importance of information in decision
312 making. The low trust placed on information obtained through social media can be seen in a
313 positive frame since social media seems to have high percentage of (mis)information (Deshpande
314 et al., 2018; Shin, Jian, Driscoll, & Bar, 2018). This highlights the need for professionals to add
315 reliable evidence-based information on social media sources and highlight (mis)information.
316 Patient's evaluation of online health information is a complex cost-benefit analysis process that
317 involves the use of a wide range of criteria and can be characterized as highly subjective and

318 contextualized (Sun, Zhang, Gwizdka, & Trace, 2019). Further work should be aimed at
319 examining how patients gather health information and how this influences decision-making.

320

321 **Study Implications**

322 The information from this study is helpful in highlighting which communication channels are
323 most likely to reach older adults with hearing loss. Stakeholders can develop reliable information
324 sources for the Internet, as this is a frequent resource for hearing impaired adults. There is a clear
325 need to improve the evidence-based and reliability of hearing health care information on the
326 Internet (Sbaffi & Rowley, 2017). Hearing health care professionals should review the quality
327 and relevance of health information in various electronic media and direct the patients to
328 appropriate sources. In particular, such an approach may be necessary when dealing with patients
329 who have low health literacy skills as they seem to have more difficulty evaluating online health
330 information (Diviani, van den Putte, Giani, & van Weert, 2015). Moreover, consumer health
331 literacy and information programs to empower patients and their family members to find quality
332 information online should be encouraged and developed (e.g., Armstrong-Heimsoth et al., 2017).
333 Given the high usage of Internet for hearing health information, developing Internet-based
334 rehabilitative strategies may be welcomed by patients (Beukes, Manchaiah, Baguley, Allen, &
335 Andersson, 2019).

336

337 **Future Directions**

338 The current study adds to the existing literature regarding health seeking information by
339 exploring perceptions of ease of gathering information, perceptions of reliability of information,
340 and the importance of sources of electronic information in decision making. The study sample

341 was somewhat biased as the respondents volunteered to participate in the survey by self-selecting
342 themselves which may have resulted in self-selection bias. Also, due to the nature of the survey
343 administration, the survey only included Internet users from one source. This resulted in the
344 sample consisting mostly of white males with a mean age of 67 years. Generalizations to other
345 population may thus be limited as there are significant cultural differences in information
346 processing preferences for online health information (Song et al., 2016). Future studies should
347 extend this study to a broader clinical population. Future studies can examine the relationship
348 between the information gathered by various sources and the resulting hearing health outcomes.
349 Such outcome may include hearing symptoms management, help-seeking, hearing rehabilitation
350 uptake, hearing rehabilitation use, and satisfaction from hearing rehabilitation.

351

352 **Conclusions**

353 The current study explored the media usage by older adults with hearing loss. Overall, the results
354 suggested that (a) older adults use various sources for seeking hearing health information, (b)
355 Internet and health professionals are more frequently used and the social media are less
356 frequently used sources, and (c) patients have higher trust on health professionals when
357 compared to other sources. Hearing health care professionals need to be aware of the quality of
358 information available in various electronic media and direct the patients to the most appropriate
359 sources. Moreover, enabling discussions about the information gathered in various electronic
360 sources with patients may promote the clinician-patient therapeutic relationship.

361

362 **References**

363 Antheunis, M.L., Tates, K., & Nieboer, T.E. (2013). Patients' and health professionals' use of
364 social media in health care: motives, barriers and expectations. *Patient Education and*
365 *Counseling*, 92(3), 426-431. <https://doi.org/10.1016/j.pec.2013.06.020>

366

367 Armstrong-Heimsoth, A., Johnson, M. L., McCulley, A., Basinger, M., Maki, K., & Davison, D.
368 (2017). Good googling: a consumer health literacy program empowering parents to find quality
369 health information online. *Journal of Consumer Health on the Internet*, 21(2), 111–
370 124. <https://doi.org/10.1080/15398285.2017.1308191>

371

372 Barak, A., & Sadovsky Y. (2008). Internet use and personal empowerment of hearing-impaired
373 adolescents. *Computers in Human Behaviour*, 24, 1802-1815.

374 <https://doi.org/10.1016/j.chb.2008.02.007>

375

376 Beukes, E.W., Manchaiah, V., Baguley, D.M., Allen, P.A., & Andersson, G.A. (2019). Internet-based
377 interventions for adults with hearing loss, vestibular disorders and tinnitus: a systematic review. *Trends*
378 *in Hearing*, 23, 1-22. <https://doi.org/10.1177/2331216519851749>

379

380 Broom, A. (2005). Virtually he@lthy: the impact of internet use on disease experience and the
381 doctor-patient relationship. *Qualitative Health Research*, 15(3), 325–45.

382 <https://doi.org/10.1177/1049732304272916>

383

384 Choudhury, M., Dinger, Z., & Fichera, E. (2017). The utilization of social media in the hearing
385 aid community. *American Journal of Audiology*, 26(1), 1–9. [https://doi.org/10.1044/2016_AJA-](https://doi.org/10.1044/2016_AJA-16-0044)
386 [16-0044](https://doi.org/10.1044/2016_AJA-16-0044)

387
388 Davison, A. (1984). Readability—Appraising text difficulty. In: R.C.Anderson, J. Osborn, & R.
389 J. Tierney (Eds.), *Learning to read in American school: Basal readers and content texts* (pp. 121–
390 139).

391
392 Deshpande, A. K., Deshpande, S. B., & O'Brien, C. (2018). A study of social media utilization
393 by individuals with tinnitus. *American Journal of Audiology*, 27(4), 559–569.
394 https://doi.org/10.1044/2018_AJA-18-0033

395
396 Diviani, N., van den Putte, B., Giani, S., & van Weert, J.C.M. (2015). Low health literacy and
397 evaluation of online health information: a systematic review of the literature. *Journal of Medical*
398 *Internet Research*, 17(5), e112. <https://doi.org/10.2196/jmir.4018>

399
400 Doak, C., Doak, L., & Root, J. (1996). *Teaching patients with low literacy skills (2nd ed.)*.
401 Philadelphia, PA: J.B. Lippincott.

402
403 Finn, P. (2019). The impact of social media on communication sciences and disorders: A need
404 for examination and research. *Perspectives of the ASHA Special Interest Groups*, 4(2), 224-227.
405 https://doi.org/10.1044/2019_PERS-ST-2019-0001

406

407 George, D.R., Rovniak, L.S., & Kraschnewski, J.L. (2013). Dangers and opportunities for social
408 media in medicine. *Clinical Obstetrics and Gynecology*, 56(3), 453–462.

409 <https://doi.org/10.1097/GRF.0b013e318297dc38>

410

411 Henshaw, H., Clark, D., Kang, S., & Ferguson, M (2012) Computer skill and Internet use in
412 adults aged 50–74 years: Influence of hearing difficulties. *Journal of Internet Medicine*

413 *Research*, 14(4), e113. <https://doi.org/10.2196/jmir.2036>

414

415 Hill, J.A., Agewall, S., Baranchuk, A., Booz, G.W., Borer, J.S., Camici, P.G., et al. (2019).

416 Medical Misinformation. Vet the Message! *Circulation*, 139, 571-572.

417 <https://doi.org/10.1161/CIRCULATIONAHA.118.039193>

418

419 Manchaiah, V., Ratinaud, P., & Andersson, G. (2018). Representation of tinnitus in the U.S.

420 newspaper media and Facebook pages: Cross-sectional analysis of secondary data. *Interactive*

421 *Journal of Medical Research*, 7(1), e9. <https://doi.org/10.2196/ijmr.9065>

422

423 Marton, C., & Wei Choo, C. (2012). A review of theoretical models of health information

424 seeking on the web. *Journal of Documentation*, 68(3), 330–52.

425 <https://doi.org/10.1108/00220411211225575>

426

427 Oh, H.J., & Lee, B. (2012). The effect of computer-mediated social support in online

428 communities on patient empowerment and doctor-patient communication. *Health*

429 *Communication*, 27(1), 30–41. <https://doi.org/10.1080/10410236.2011.567449>

430

431 Peddie, K.A., & Kelly-Campbell, R.J. (2017). How people with hearing impairment in New
432 Zealand use the Internet to obtain information about their hearing health. *Computer in Human*
433 *Behavior*, 73, 141–51. <https://doi.org/10.1016/j.chb.2017.03.037>

434

435 Pew Research Center (2019). Social media fact sheet. Retrived from:
436 <https://www.pewresearch.org/internet/fact-sheet/social-media/> (accessed on November 28,
437 2019).

438

439 Pilling, D., & Barrett, P. (2008). Text communication preferences of deaf people in the United
440 Kingdom. *Journal of Deaf Studies and Deaf Education*, 13(1), 92-103

441

442 Preminger, J.E., Oxenbøll, M., Barnett, M.B., Jensen, L.D., & Laplante-Lévesque, A. (2015).
443 Perceptions of adults with hearing impairment regarding the promotion of trust in hearing
444 healthcare service delivery. *International Journal of Audiology*, 54 (1) 20-28.

445 <https://doi.org/10.3109/14992027.2014.939776>

446

447 Sbaffi, L., & Rowley, J. (2017). Trust and credibility in web-based health information: a review
448 and agenda for future research. *Journal of Medical Internet Research*, 19(6), e218.

449 <https://doi.org/10.2196/jmir.7579>

450

451 Shin, J., Jian, L., Driscoll, K., & Bar, F. (2018). The diffusion of misinformation on social
452 media: Temporal pattern, message, and source. *Computer in Human Behavior*, 83, 278–87.

453 <https://doi.org/10.1016/j.chb.2018.02.008>

454

455 Smailhodzic, E., Hooijsma, W., Boonstra, A., & Langley, D.J. (2016). Social media use in
456 healthcare: a systematic review of effects on patients and on their relationship with healthcare
457 professionals. *BMC Health Service Research*, 16, 442. [https://doi.org/10.1186/s12913-016-1691-](https://doi.org/10.1186/s12913-016-1691-0)

458 [0](https://doi.org/10.1186/s12913-016-1691-0)

459

460 Song, H., Omori, K., Kim, J., Tenzek, K., Hawkins, J., Lin, W.Y., Kim, Y.C., & Jung, J.Y.
461 (2016). Trusting social media as a source of health information: Online surveys comparing the
462 United States, Korea, and Hong Kong. *Journal of Medical Internet Research*, 18(3), e25.

463 <https://doi.org/10.2196/jmir.4193>

464

465 Sun, Y., Zhang, Y., Gwizdka, J., & Trace, C. (2019). Consumer evaluation of the quality of
466 online health information: Systematic literature review of relevant criteria and indicators.

467 *Journal of Medical Internet Research*, 21(5), e12522. <https://doi.org/10.2196/12522>

468

469 Thorén, E.S., Oberg, M., Wänström, G., Andersson, G., & Lunner, T. (2013). Internet access and
470 use in adults with hearing loss. *Journal of Medical Internet Research*, 15(5), e91.

471 <https://doi.org/10.2196/jmir.2221>

472

473 Zhao, Y., & Zhang, J. (2017). Consumer health information seeking in social media: a literature
474 review. *Health Information and Libraries Journal*, 34(4), 268-283.

475 <https://doi.org/10.1111/hir.12192>

476

477 **Supplemental Materials**

478 We have included a copy of the Electronic Media Usage Survey in the supplementary materials.

479

480 **Figure Legends**

481 **Figure 1: Frequency of use of different electronic media sources**

482

483 **Figure 2: First response to health symptoms**

484

485 **Figure 3: Weekly Internet use**

486

487 **Figure 4: Sources of information used to gather hearing health information**

488

489 **Figure 5: Electronic media usage for hearing health information**