Investigating gender–specific determinants of help–seeking behaviours in older adults with hearing loss who participated in a community group auditory rehabilitation and exercise program

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Abstract

Objective: Hearing loss (HL), which affects 78% of Canadians aged 60–79, can negatively impact socialization, health, and cognition. Many people take years to seek help, and most go undiagnosed or untreated. Walk, Talk 'n' Listen (WTL) was a community based group auditory rehabilitation program for older adults with HL assessing the benefit of adding group exercise and health education to group auditory rehabilitation. Unlike in most group exercise programs, the majority of participants were men. This prompted our exploration of the motivators and barriers to help—seeking in older adults with HL in both men and women.

Methods: Semi-structured guided interviews were conducted with 14 participants of WTL. Qualitative content analysis identified key themes within each cluster of ideas discussed.

Results: Participants discovered their HL through difficulties functioning or by external advisement (via family members or hearing tests) and were motivated to seek help for the same reasons. Men were specifically motivated by their partners. Denial was the main reason for delay, followed by pride/stigma. Participants joined the WTL to be proactive in their health, for physical activity, because they felt it was relevant for them, and, for men, because of support from others. Barriers were either physical (geography and disabilities) or social (denial, resistance to change, or misconceptions about WTL). Conclusion: Older adults are delayed in recognizing and understanding the extent of their HL, and thus delayed in seeking help. This could be mitigated by improved screening of HL in older adults or by targeting family members to promote help seeking, especially men's communication partners.

Introduction

Hearing loss (HL) is common in older adults, with up to 78% of Canadians aged 60–79 affected. The negative impacts of HL include declines in health, physical activity, and social involvement, as well as depression, anxiety, and loneliness, all of which are already a challenge for older adult populations. Unfortunately, few of those with HL ever seek help for their hearing. For those who do, it can take ten years to recognize one's HL and another ten or more years before finally seeking help.⁴

Auditory rehabilitation includes using hearing aids (HAs), coping mechanisms for specific environments, cognitive training to increase comprehension, and information and instruction on available technology as a means to mitigate the limitations imposed by HL and improve overall function. HAs are the main form of rehabilitation and can reduce mortality in older adults with HL. However, only approximately one in three of those who could benefit from a HA actually use one. Use Further, those who do obtain a HA often discontinue use after acquisition. This could be due to stigma surrounding HA use, Use in the HE was not severe enough to warrant a HA. In older adults who began using HAs, additional auditory rehabilitation has been shown to improve hearing abilities over time. In

Walk, Talk 'n' Listen (WTL) was a community group auditory rehabilitation (GAR) program for older adults with HL in the form of a randomized control trial (RCT) comparing the health benefits of adding group exercise and health education/socialization to bi-weekly GAR classes that included education about hearing, hearing technologies, enhancing communication skills, and psychosocial support. In most community based physical activity programs, the majority of participants are women; usually two thirds or more of participants are women. However, 58% of WTL participants were men. Although HL is more prevalent in men than women, this alone might not explain the demographic composition of WTL. This prompted our research question: what motivates older adults to seek help for HL, and does this differ between genders?

There is minimal literature on the gender differences in motivators to help-seeking for HL, specifically in the context of auditory rehabilitation. The majority of published research includes only the acquisition of HAs as a measure of help-seeking behaviour and does not examine other methods of auditory rehabilitation.

In this study, we examined the motivators and barriers that older adults face when seeking help for HL by interviewing participants of a community GAR and

Correspondence to Vanessa R. Montagliani (vanessa.montagliani@outlook.com) exercise program to understand their perceptions of HL and help—seeking, and to note any difference in responses between genders. By understanding what influences older adults to seek help for HL, we can better tailor similar programs to increase participation and improve hearing and other health—related outcomes, and therefore reduce morbidity and mortality in older adults with HL.

Methods

Recruitment

We employed a homogenous sampling technique of previous WTL participants. Ambulatory adults aged 65+ with self-declared HL were recruited to participate in the WTL through advertisements in audiologists' and otolaryngologists' offices, seniors' venues, the YMCA, local newspapers and newsletters, or by recommendation of their audiologist. After completing the program, 39 participants were emailed inviting them to discuss the WTL and their HL. Interviews were scheduled for those who wished to participate. Ethical approval was granted by the University of British Columbia Behavioral Ethics Board (H15-02319).

Data Collection and Analysis

One–on–one interviews were conducted following a script of guided questions and targeted probes related to HL, help–seeking behaviours, and experiences with the WTL. see Appendix 1 The interviews were audio–recorded and transcribed verbatim. Qualitative content theme analysis was performed using the Miles and Huberman method. 18 Transcripts were reviewed independently by three researchers to identify clusters relating to the interview questions and key themes in each cluster. Final clusters and themes were decided by consensus among the three researchers. Results were compared between men and women to determine trends among genders. Results pertaining to help–seeking behaviours and participation in a community GAR/exercise program are presented here.

Results

Fourteen participants were available to meet for an interview: eight men and six women. All were in the intervention group, except two women and one man from the control group. Demographic information can be found in Appendix 2. The clusters identified were: 1) hearing loss; 2) help—seeking; and 3) the WTL program.

Hearing Loss

Participants first recognized their HL due to its functional impact or by external advisement. HL began to impact their ability to function in work (n=2) or social settings (n=6). They were unable to hear what others were saying or missing things in conversation. Some noted frequently requesting that people repeat themselves, especially in crowds or public places. Others began to recognize their HL when

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family and friends informed them that they were missing things (n=7). The participants' relations expressed complaints about not being heard, having to repeat themselves, or that the TV was too loud. For the women, these complaints were from family and friends, while three of four men mentioned their partner specifically. Another common theme that emerged was discovering their HL after failing a hearing test (n=5). Some participants did not notice their HL or see it as a problem, so the discovery was a surprise.

"That's when I said oh do I have a HL? 'Cause you know lots of times you don't even think you really [do], at the beginning stages you're not really aware of it." (3m)

Help-Seeking

Interviewees spoke about their decision to seek help for their HL, including what motivated and delayed them. They also discussed different strategies they had attempted to mitigate the impact of HL.

Help-Seeking Motivators

Participants reported a variety of factors that prompted seeking help for their HL (Figure 1), falling into the same categories as HL recognition: functional difficulty and external encouragement.

Functional Difficulty

Eight people said the main motivator to seek help was difficulty in situational functioning, with equal representation between genders. Some participants were having trouble at work, in meetings, or in lectures.

"So I thought if I'm going to be able to keep my job I better do something about it." (6w)

Others were most motivated to seek help by their inability to hear conversations, impacting their ability to socialize.

"I wanted to hear what people were talking about more than anything else." (8m)

"Well just because I had a hard time if I was in with... a group." (12m)

External Encouragement

For some participants, the discovery of one's HL by failing a hearing test was reason enough to seek help. For others, however, a big source of motivation was family members (two women) or a partner (three men); their frustrations due to HL were causing stress in their relationships.

"The constant aggravation of my wife getting after me about not being able to hear things and doing something about it." (5m)

Help-Seeking Delays

Participants reported various reasons for why they or others might be delayed from seeking help, which included denial, pride, or technical concerns (Figure 2).

Denial

Denial was the most prominent theme (n=8). Many respondents were unwilling to admit the extent of their HL or downplayed its impact. Some men described how their HL was not bad enough to warrant seeking help (n=6). They felt they were still coping and did not yet need any assistance, so they had not yet obtained HAs.

'I won't say denial would be the word, but ya know I'm still coping with my hearing the way it is right now. I do see that uh I'm missing stuff, uh my wife is mentioning that uh the TV is too loud, especially at times, and things like that and then you also miss out on little things,

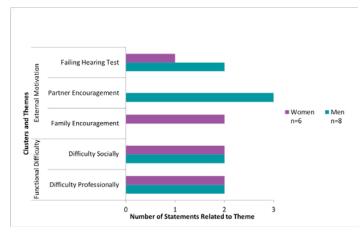


Figure 1 | Motivation to seek help for hearing loss

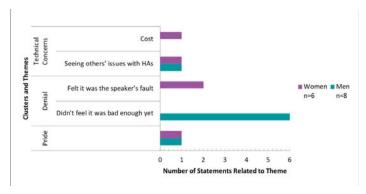


Figure 2 | Delays in the decision to seek help for hearing loss

like hearing the rain in the gutters and the birds in the, outside ya know the house and things like that, but so I haven't quite gotten the point where I'm going to get a hearing aid but I think about it pretty quick." (3m)

"I didn't feel, as far as the hearing concerns, well I'll miss some things, but it's not that important anyways." (8m)

"There was probably some procrastination in those days because I didn't think it was all that bad." (10m)

Two women denied their HL was to blame because they felt the speaker was not speaking up properly.

"I don't think I ever noticed, it was always somebody else's problem, they weren't speaking up or they were mumbling or, I just never put it together that it would be me." (9w)

"I thought probably it takes two to, uhm that the speaker is in fault, he should make himself understood and properly talking." (2w)

Some participants denied that their HL required intervention because they doubted it would benefit them.

"I always had to question, ya know "Do I really need hearing aids? Would hearing aids helb?" (12m)

Resistance to change was mentioned as a factor that played into denial. One man's description of why he thought some people never seek help for their hearing is as follows:

"I think people, depending on their personality, um have a tendency to resign themselves to the fact that they can't hear, and nothing is going to change the fact...so they don't recognize that ... there are things that you can do that may assist you to better hear at the level that you're hearing ... people depending on their age, they're not into changing things." (4m)

However, none of the participants reported resistance to change as a delay for themselves, rather as a reason that others might not seek help.

Pride

Other participants noted pride as preventing them from seeking help; they felt that HAs were for old people and that they were not ready to accept that in themselves (n=2). They also mentioned the stigma of wearing HAs as a deterrent.

Pride, not wanting to have something sticking in my ear. Not, ya know, thinking that HL is related to old age and not admitting the fact that I was getting older." (5m)

Technical Concerns

Lastly, respondents noted technical concerns that delayed them from seeking help. Some participants were deterred by preconceptions about HAs from seeing others having difficulty or hearing that they were ineffective or unhelpful. For one, cost was a barrier.

Most participants described delays related to acquisition of HAs and had not tried anything else for HL (n=11). Lack of awareness appeared as a barrier to accessing other forms of auditory rehabilitation, as many participants were unaware of other help available and had never heard of auditory rehabilitation.

"What else do you do? Besides a hearing aid?" (13w)

"Actually I never realized that there would be groups with HL because I've had it for so long, uhm, it just was part of me, like I didn't consider it a disability of any kind, it was just me and my family. All of my brothers have hearing aids. And it was just us so I didn't realize it was a disability." (11w).

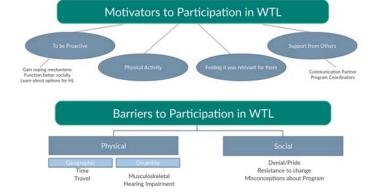


Figure 3 | Motivators and barriers to participation in the WTL program

The Walk, Talk 'n' Listen Program

Motivators to Participate

There were four main themes motivating participants to join WTL: to be proactive, for physical activity, feeling it was relevant for them, and through support from others (Figure 3). The first three themes had equal gender representation; however, support from others as an influence to participate was mentioned only by the men interviewed.

The majority of participants were motivated to attend as a way to be proactive about their HL and were willing to try anything that might benefit their situation (n=10). in lectures.

"In terms of my health... ya know I don't like to sit back, I like to be my own advocate" (4m)

Specifically, some were hoping to gain advice for coping in group situations (n=3), while others wanted to know if there were alternative options they were not aware of (n=5).

"Well again, I thought that maybe I might learn something, uhm when the audiologist I had...had never ever given me any kind of advice except what kind of hearing aids to buy, so I thought Hm, I might learn something." (9w)

"It's been now what about, yeah almost ten years now that I look back on having the dysfunctional hearing so I was hoping you know that things had progressed and I would learn something new about it" (11w)

"What was of interest was the fact that there were strategies that might help you to better engage, uh in terms of uhm human dynamics" (4m)

Another motivator to join was the opportunity for physical activity. The program offered regular exercise that would increase their physical activity and improve their fitness, and this was perceived as a strong benefit to the program (n=5). However, for three of the five reporting this, exercise was a secondary factor in the decision to participate.

"I was also really interested in the exercise program. I was looking forward to something more challenging." (11w)

"It will also maybe uh encourage me to be a bit more active, uh physically—wise, which doesn't hurt." (3m)

One theme that emerged was unique to men: they mentioned that their participation was motivated by support from family members or partners, or as an opportunity to support their partners (n=3). Whether they joined WTL because of support from their partner who suggested it, or for something that they could do together to support each other, it was clear that supporting loved ones was a positive motivator to join. Participants also mentioned that speaking with the program coordinators, who were very positive and supportive, gave further motivation to participate.

Another reason participants joined WTL was that they felt the program was applicable to them (n=3). After reading the advertisement, they felt that they fit the target group for which the program was designed.

"Well because I am a senior, I am experiencing HL, and that was what it was all about basically, so I thought well let's give it a shot and see if it has something that I can benefit from." (5m)

"The part of the ad that talked about withdrawing from conversations, I recognized that, and that worried me." (13w)

Barriers to Participation

Upon exploration of barriers to participation in the WTL, concepts emerged in themes of either physical or social barriers. Genders were equally represented in each theme.

Physical barriers

Physical barriers included geographic factors such as time and travel. Although one participant suggested that time would not be much of an issue for seniors, seven participants thought that both the length of the program and the time to travel to and from the program was difficult to manage. One participant initially thought time would not be an issue but felt the toll part way through. Location was also mentioned as a possible barrier to participation (n=9). Some older adults no longer drive, while others might not feel comfortable travelling through heavy traffic or on highways out of town

Difficulties regarding physical participation in the program were mentioned. For example, HL itself was suggested as a barrier (n=2 women); those with more severe HL might not be able to hear well enough to get anything from the program, especially in the setting of group discussions or fitness classes with loud background noise

"I drove one lady home once, and she really couldn't hear a lot that was going on so she quit." (9w)

With verbal prompting, nine participants agreed that physical activity might be an issue for some. They felt that if the physical activity was too advanced for an individual's ability, then they might be deterred from participating. Another noted that one has to value physical activity as a worthwhile use of their time in order for them to participate.

Social Factors

Social factors were frequently suggested as barriers for others to participate in the WTL (n=12). Participants mentioned that denial or pride might deter someone from participating (n=7). They suggested that some might believe HL is for "old people" and would not feel comfortable identifying themselves as part of that group. Some might not be ready to accept that their HL is at the point where they could benefit from seeking help.

"I would guess, it falls back on pride. And because you think you can still hear things, and it's as long as can be, you know, you think that. And you say to yourself 'Ah I don't need to go there, for any kind of help" (8m)

"I think everybody uhm deals with HL differently, and some people are embarrassed by it. I think that would be a big thing, is to step forward and sort of identify yourself with a bunch of people. One thing I did find is I found most of the people there were much older than me and I think if I had known that in advance that might have slowed me down on signing up, I might have, sort of had this pride thing Well I don't need to hang around with a bunch of old people". (10m)

Some of those interviewed felt that older adults would not participate in the program because they are either resistant to change or do not think it would help much (n=4). Participants suggested that some people might have given up and are unwilling to try anything new. Although the two sentiments—resistance to change and thinking it will not help much—seem to be separate ideas, the interviewees described them together, as if they were part of the same concept.

"Just because they're kind of, they might be resigned... they might feel, this is just how it is, and I can't see how anything is going to help me, because as you get older you tend to do that kind of thing a bit more, ya know you're not looking for something new or ya know, you get used to it." (6w)

Another suggestion was that, if people did not understand what the program was about, they might be deterred from participating (n=3). For example, they might not see the value in it or not think they were eligible and not sign up.

Participants were asked if they thought the group component of the WTL program might deter participation. Three people said this could be possible if someone prefers socializing one—on—one over a group environment; however, none noted this for themselves or suggested it as a barrier for others (other than hearing difficulties associated with group settings).

Discussion

Older adults primarily discovered their HL through functional difficulty and external advisement. The motivators to seek help fell into similar categories: improving functional ability and through external encouragement. This suggests that HL becomes apparent only once it limits one's interactions with others, and recognizing these functional deficits motivates help—seeking. This mirrors Southall's findings, which described the decision to seek help depending on the balance of negative factors, such as ability limitation, and positive factors, such as encouragement from family.⁶

Each gender had similar representation in the categories of improving social

and professional ability; however, when being encouraged to seek help by loved ones, men were specifically encouraged by their communication partner (i.e., their wife). Similarly, research examining strategies for dealing with social isolation found that women felt responsible to make arrangements for their husbands to be more socially active.¹⁹ This implies that focusing efforts on promoting rehabilitation to women might be more effective at increasing overall participation. Further work is needed to examine this finding.

In agreement with the literature, the most common barrier to help-seeking for HL was denial. A new finding was that men and women differed in how they described denial. Men did not believe their HL was bad enough to warrant HAs, while women felt their difficulty hearing was due to traits of the speaker. One populationbased study from Japan found that men had a tendency to underestimate their HL more than women,²⁰ similar to the men's reports here. However, this is the first time any gender differences in denial of HL have been reported. Further research into this phenomenon is warranted to investigate if this applies to different populations and, if so, how each gender's experience of denial could affect their help-seeking behaviors.

Of note, some results suggest that denial might be more complex and could be more closely related to not realizing the extent of one's HL. Specifically, since many participants were either surprised to have failed a hearing test or knew they were missing things only when others told them, a lack of insight could be another delay. HL is gradual, and the effects may be subtle at first, so without external advisement via hearing tests or communication partners, some could take much longer to recognize their HL and thus longer before seeking help. Recent qualitative research found that, because participants could mitigate some of their symptoms or mistakenly attribute them to external factors, they did not recognize their own HL.21 Laplante-Levesque et al. reported similar descriptions of how one perceives their HL as were found here, including thinking it was not yet bad enough, noticing in certain situations only, or being notified of their HL by family.2 This could explain why 77% of Canadian adults with HL go undiagnosed. Our findings, in conjunction with the literature, give compelling evidence to indicate that denial and the inability to perceive one's hearing deficits could be a common theme in many populations, and therefore future work is needed to determine the complex relationship between denial and insight into one's HL, as well as how to manage this as a key barrier to seeking help.

To address these delays in help-seeking, one endeavour worth exploring is the promotion of hearing tests in primary care. These screens could be as simple as an annual Hearing Handicap Inventory for the Elderly: ten-item screening questionnaire (HHIE-S)22 or a single question such as "Do you feel you have hearing loss?"23 Currently, HealthLink BC recommends discussing with your family doctor if you have any concerns regarding HL, thus putting the onus on the individual.²⁴ Since many individuals do not notice it early on, their HL goes undiagnosed for far longer than it might if screened adequately. By implementing routine screening in the adult population, people could become aware of their HL before it negatively impacts their functioning or relationships, and this could also mitigate denial as a barrier to help-seeking. Further, routine hearing screening could help reduce stigma by making HL and its significant prevalence more recognized within the population. Previous research suggested that routine screening by GPs could help promote self-realization of HL and hearing rehabilitation and decrease stigma by increasing visibility.²¹

The biggest motivator to participate in WTL was to be proactive in one's health, with almost every person interviewed stating this as his or her main draw. This seems to be a new, distinct motivator; being proactive in one's health is not noted in the literature to be a major draw to HL help-seeking (as determined by HA acquisition).^{6,25} Participants in WTL spoke of wanting to take ownership of their health and hearing as a whole, which was described separately from the opportunity for physical activity alone. Most participants had not heard of auditory rehabilitation options beyond HAs, suggesting the need for further promotion of GAR to address lack of awareness as a barrier. It seems that combining auditory rehabilitation with physical activity, as was done in WTL,15 could further increase help-seeking for HL in older adults. Another draw to WTL was feeling that the program was tailored specifically for them. By understanding these motivators, we can better promote the WTL and similar programs as opportunities for older adults with HL to become engaged in health promoting opportunities geared to their specific physical and social needs. Since men are further motivated by support from others, advertisements could be directed to the partners and families of people with HL as well.

Addressing the physical barriers to participation could help make the WTL and similar programs more appealing to prospective participants. Since many participants acknowledged time and travel as a participation barrier, it may be helpful to consider these factors when choosing locations and schedules for the program, such as offering multiple locations, flexible schedules, or online options. It is also important to give consideration to those with severe HL or physical limitations, such as minimizing background noise or offering modified activities.

Mitigation of social barriers to participation in a community GAR and exercise program might be a more complex task. Again, we strongly endorse the promotion of routine screening for HL to reduce denial and stigma. As with HL help-seeking in general, we feel this alone could be the most effective method to improve awareness and help-seeking behaviours in this population, thus improving the overall health, happiness, and quality of life in older adults with HL.

Limitations

There are potential sources of bias in our sample population. Our population is limited to people who participated in WTL and are therefore already open to a community program and health improvement. Our results might not reflect the attitudes of those who would not choose to participate, so we could miss key information about barriers that others face. Further, given the retrospective nature of the study, it is possible that one's experience with WTL might alter their response. Lastly, participants identified as man or woman, and those with partners were in heterosexual relationships. There was no option for non-binary gender roles. This must be kept in mind when making generalizations about gender differences and the role of one's partner in the decision

Three of our 14 study participants were in the RCT control group, so they did not participate in the exercise portion of the program. However, since the decision to participate was made before randomization, this should not affect our examination of motivators and barriers to help-seeking.

Given the face-to-face interview style employed here, we might have encountered social desirability bias. When exploring possible participation barriers, interviewees might have been hesitant to disagree with the interviewer's suggestions, thus agreeing that the suggested barriers were possibilities. We attempted to minimize this bias by presenting the results stratified by suggestions offered on their own versus responses to probing questions. Regardless, all barriers mentioned are discussed as possibilities that can be further examined if necessary.

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References

- Statistics Canada. Health fact sheets: Hearing loss of Canadians, 2012 to 2015 [Internet]. Statistics Canada; 2016 October 13. Available from: http://www.statcan.gc.ca/pub/82-625-x/2016001/article/14658-enghtm#moreinfo.
- Laplante-Levesque A, Knudsen LV, Preminger JE, Jones L, Nielsen C, Oberg M, et al. Hearing help-seeking and rehabilitation: Perspectives of adults with hearing impairment. Int J Audiol. 2012 Feb;51(2):93-102.

 Saunders GH, Chisolm TH, Wallhagen MI. Older adults and hearing help-seeking behaviors. Am J Audiol.
- Davis A, Smith P, Ferguson M, Stephens D, Gianopoulos I. Acceptability, benefit and costs of early screening for hearing disability: A study of potential screening tests and models. Health Technol Assess. 2007 Oct;11(42):1-
- Prendergast SG, Kelley LA. Aural rehab services: Survey reports who offers which ones and how often, and by whom. Haar J. 2002;55(9):30-35.
- Southall K, Gagne JP, Jennings MB. Stigma: A negative and a positive influence on help-seeking for adults with acquired hearing loss. Int J. Audiol. 2010 Nov;49(11):804-14. Bainbridge KE, Ramachandran V. Hearing aid use among older U.S. adults; the national health and nutrition examination survey, 2005-2006 and 2009-2010. Ear Hear. 2014 May-Jun;35(3):289-94.
- Singh G, Launer S, Social context and hearing aid adoption. Trends Hear. 2016 Oct;20.

 Aazh H, Prasher D, Nanchahal K, Moore BC. Hearing-aid use and its determinants in the UK National Health
- Azari F, Flastier J, Nadraham S, Noble DF, Telanigsand use antits determinants into ON Nadroham Service: A cross-sectional study at the Royal Surrey County Hospital. Int J Audiol. 2015 Mar;54(3):152-61. Preminger JE, Laplante-Levesque A. Perceptions of age and brain in relation to hearing help-seeking and rehabilitation. Ear Hear. 2014 Jan-Feb;55(1):19-29.

 Meyer C, Hickson L. What factors influence help-seeking for hearing impairment and hearing aid adoption in older adults? Int J Audiol. 2012 Feb;51(2):66-74.
- Davis A, McMahon CM, Pichora-Fuller KM, Russ S, Lin F, Olusanya BO, et al. Aging and hearing health: The
- Davis A, McManto CM, Petchora-Teuler KM, Missa S, Jain 7, Ousaniya BO, et al. Aging and rearning readm. The life-course approach. Gerontologist. 2016 Apr;56 Suppl 2s:256-67.

 Gussekloo J, de Bont LE, von Faber M, Eekhof JA, de Laat JA, Hulshof JH, et al. Auditory rehabilitation of older people from the general population-the Leiden 85-pts study. Br J Gen Pract. 2003 Jul;53(492):536-40. Lessa AH, Hennig TR, Costa MJ, Rossi AG. Results of auditory rehabilitation in elderly users of hearing aids evaluated by a dichotic test. Codas. 2013;25(2):169-75.
- Lambert J, Ghadry-Tavi R, Knuff K, Jutras M, Siever J, Mick P, et al. Targeting functional fitness, hearing and health-related quality of life in older adults with hearing loss: Walk, Talk 'n' Listen, study protocol for a pilot randomized controlled trial. *Trials.* 2017 Jan 28;18(1):47.
- Waters LA, Galichet B, Owen N, Eakin E. Who participates in physical activity intervention trials? J Phys Act Health, 2011 Jan;8(1):85-103.
 Foster CE, Brennan G, Matthews A, McAdam C, Fitzsimons C, Mutrie N. Recruiting participants to walking
- Intervention Studies: A systematic review. Int J Behav Natar Phys. Act. 2011 Dec 15;8:137.

 Miles MB, Huberman AM. Qualitative data analysis: a sourcebook. Beverly Hills: Sage Publications; 1994.

 Pettigrew S, Donovan R, Boldy D, Newton R. Older people's perceived causes of and strategies for dealing with
- social isolation. *Aging Ment Health*. 2014 Oct;18(7):914-20.
 Uchida Y, Nakashima T, Ando F, Niino N, Shimokata H. Prevalence of self-perceived auditory problems
- and their relation to audiometric thresholds in a middle-aged to elderly population. Acta Otolaryngol. 2003 Jun;123(5):618-26.
- 22.
- Jun;123(5):618-26.

 Rolfe C, Gardner B. Experiences of hearing loss and views towards interventions to promote uptake of rehabilitation support among UK adults. Im J Audiol. 2016 Nov;55(11):666-73.

 Chang H, Ho C, Chou P. The factors associated with a self-perceived hearing handicap in elderly people with hearing impairment results from a community-based study. Eur Hear. 2009;30(5):576-83.

 Sindhusake D, Mitchell P, Smith W, Golding M, Newall P, Hartley D, et al. Validation of self-reported hearing loss. The Blue Mountains Hearing Study. Int J Epidemiol. 2001 Dec;30(6):1371-8.

 Healthlink BC. Screening for hearing programs [Internet]. Healthlink BC; 2017 Nov 30. Available from: https://www.healthlinkbc.ca/health-topics/te4064. 24.
- Ng JH, Loke AY. Determinants of hearing-aid adoption and use among the elderly: A systematic review. Int J ol. 2015 May;54(5):291-300.