Vision and hearing impairment and occupational therapy education: Needs and current practice

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Abstract

Introduction: It is unclear what sensory impairment screening content should be included in the core-educational process for occupational therapists. The purpose of this study was to identify what content is currently being taught with regard to screening for vision and hearing loss, and to gather recommendations from specialists in this field of practice in order to formulate recommendations to improve professional entry-level occupational therapy curriculum content.

Method: Using a mixed-methods design, the two-phase study investigated the perceptions of five curriculum chairs, as well as 10 occupational therapists specializing in sensory rehabilitation.

Results: Curriculum chairs reported minimal course content with regard to training in the sensory domain, a dearth that was corroborated by specialists working with individuals affected by sensory loss. While vision-related topics were well covered, hearing-related information was sparser, and dual sensory impairment was mostly absent.

Conclusion: Occupational therapists are well positioned to play an essential role with the population living with sensory loss. However, most clinicians are not adequately prepared to practice with this clientele, and most expertise is gained after graduation. There is a need for stakeholders to discuss the minimal acceptable curriculum content needed to ensure that graduates are prepared to work in this growing area

Keywords

Low vision, hearing loss, deafblindness

Introduction

Vision and hearing loss in older adults can create substantial challenges for daily functioning and quality of life (Heine and Browning, 2015). Many older adults (aged 65 years or over) have multiple chronic age-related health conditions, including vision and hearing loss (Brennan et al., 2009), that compromise functional independence and threaten an older person's wellbeing and quality of life (Turcotte and Schellenberg, 2006; Vogeli et al., 2007). In addition, impaired vision and hearing are important risk factors for balance problems, falls and injuries (Gerson et al., 1989), as well as cognitive decline (Lin et al., 2004). Members of this research team recently reported on the prevalence and client characteristics of persons with combined vision and hearing loss in the Montreal region (Wittich et al., 2012, 2014), who are one of the fastest growing client groups in sensory rehabilitation, specifically where older adults over the age of 85 are concerned. Given the severe consequences of hearing and vision loss on function and quality of life (see, for example, Dalton et al., 2003; Vu et al., 2005), occupational therapists are likely to encounter clients with vision and/or hearing loss throughout their careers and will play an important role in the screening and management of their sensory impairment. The current employment environments include several growing clientele groups that require specific attention in service delivery based on their visual and hearing capacities, including older adults, some with multiple chronic health conditions (Wittich et al., 2012), individuals with acquired brain injury (Lannoo et al., 2004) and persons requiring assistance with diabetes management (Cate et al., 1995). As sensory impairment is often a co-morbid condition in these clients and can dramatically interfere with rehabilitation

service delivery, it is of the utmost importance to detect such sensory losses in order to be able to properly compensate with the necessary adaptations and/or refer to other necessary services such as orientation and mobility training (Virgili and Rubin, 2010) or low vision rehabilitation services for sight enhancement (Markowitz, 2006).

Vision and hearing education in occupational therapy programs

According to the Statement on Occupational Therapy, issued by the World Federation of Occupational Therapists (WFOT), individuals practicing this profession are encouraged to ‘‘have a broad education in the medical, social behavioural, psychological, psychosocial and occupational sciences’’ (WFOT, 2010). With regard to sensory impairment, the WFOT has raised awareness about vision and hearing loss through their links with the World Health Organization. For example, in an effort to promote new assistive device solutions for sensory loss (WFOT, 2013b), the WFOT repeatedly publicized World Sight Day (WFOT, 2011), and has promoted a Sensory Integration Certification Program (WFOT, 2013a). There is an explicit assumption that graduates from WFOT-recognized occupational therapy programs will be generalist practitioners with the requisite knowledge and skills to provide evidence-based services to individuals in need of rehabilitation. Occupational therapists are called to embrace and apply the principles of evidence-based practice (EBP). This is particularly relevant for sensory rehabilitation, where there is mounting scientific evidence to be used to support clinicians’ decision-making (Binns et al., 2012; Gaffney et al., 2014).

Traditionally, occupational therapy programs have included limited content on vision and hearing loss (see, for example, American Occupational Therapy Association, 2011; Canadian Association of Occupational Therapists, 2012; College of Occupational Therapists, 2015), as curriculum content standards are broad with respect to evaluation and intervention on ‘‘sensory’’ and ‘‘sensory-perceptual’’ impairment content. This is despite the rising incidence of

these conditions in the aging population. Additionally, because vision and hearing rehabilitation services are considered specialty practice, occupational therapy programs allocate available resources to preparing students to address sensory loss from a generalist perspective. The growing incidence of sensory impairments and their documented impact on function has led to a renewed interest in identifying the extent to which low vision-related content is offered within occupational therapy training pro- grams across the globe, including the United States (US) (Deacy et al., 2012), Canada (Wittich et al., 2015) and the United Kingdom (UK) (Campion et al., 2010). The study made by Deacy et al. (2012) found that all but one of the 119 US occupational therapy and occupational therapy assistant programs provided content on low vision, but only 24 of those offered a mandatory course on the topic. In Canada, a recent survey of 102 generalist occupational therapists in the field of aging service delivery indicated that the majority of respondents were inadequately trained to respond to the needs of their clients with sensory deficits, even though 92% said that they served clients with a visual loss, 84% saw clients with a hearing impairment and more than half (53%) reported having clients with combined sensory impairments (Wittich et al., 2015). The UK study found that content on low vision was lacking and that most surveyed occupational therapists reported having low confidence in their ability to offer services to this client population (Campion et al., 2010). Recent research focusing on recommendations from occupational therapists specializing in the area of sensory rehabilitation found that, in addition to factors such as the availability of collaborations, consultations and referral options with eye-care professionals, clinicians' level of comfort with the provision of low vision rehabilitation services was associated with their perception of having received adequate training during their professional education (Winner et al., 2014).

This literature underscores the importance of adequate and targeted education on vision and hearing loss for optimizing occupational therapists' readiness and confidence in providing

evidence-based services in sensory impairment. It also highlights the need to provide occupational therapy programs with recommendations on the core con- tent that should be included in the entry-level curriculum. However, it is currently unclear what content on sensory impairment detection and screening (vision and/or hearing loss) should be included in the core-educational training, and what educational strategies are most likely to foster the required competencies in this area. The purpose of this study was to identify what content is currently being taught with regard to the screening and detection of vision and hearing loss across Quebec occupational therapy university programs (phase 1), and to gather suggestions and recommendations from specialists in this field of practice (phase 2) in order to formulate recommendations to improve professional entry-level occupational therapy curriculum content.

Method

Research design

This was a qualitative study using semi-structured inter- views (phase 1) and a focus group (phase 2). Both phases of this project received ethical approval from the review board of the *Centre de recherche interdisciplinaire en réadaptation de Montréal métropolitain*, and adhered to the tenets of the Declaration of Helsinki regarding ethical principles for medical research involving humans (Williams, 2008).

Phase 1 – current curriculum content

Participants. A faculty member responsible for curriculum content within each of the five occupational therapy programs in Quebec was purposefully recruited to participate in phase 1 of the study.

Procedure. The investigators developed semi-structured interview questions, focusing on the curriculum content within the respective programs with regard to (a) the amount of time allotted to the teaching of sensory impairment, (b) the sensory screening techniques and tools presented within the curriculum and (c) the possibilities for students to gain practical experience (for example, during research internship supervision) in screening for vision and hearing loss. The questions were piloted with the chair of the curriculum committee of one of the universities. All programs agreed to participate and received a mailed package, including an introduction letter that summarized the study context and purpose, the detailed questions, a consent form and a pre-stamped return envelope for the consent form. A research assistant contacted the individual within the program that was responsible for curriculum issues to schedule a phone interview. The curriculum committee member was instructed to consult syllabi and instructors relevant to the topic prior to the interview to be prepared to answer the interview questions. The interviews were conducted over the phone, were audio-recorded and were transcribed for analysis. Qualitative description (Sandelowski, 2000), summarizing the responses to questions about curriculum content, was used to analyze the data (see Table 1). Quantitative data from the interview, such as number of hours of sensory training and number of elective courses offered, were summarized using descriptive statistics.

Phase 2 – specialist recommendations

Participants. An invitation for participation in a focus group on sensory rehabilitation practices was sent by email to all occupational therapists employed at the MAB-Mackay Rehabilitation Centre, which serves clients of all ages with vision and hearing impairments.

Given the qualitative analysis component of this phase, it was decided to limit recruitment to this one site where all occupational therapists could participate in English.

Topic

Procedure. The focus group was facilitated by the principal investigator (certified low vision therapist and researcher) and the co-principal investigator (occupational therapist and researcher). The discussion questions focused on topics such as: ‘‘How did you come to work in sensory impairment?’’ ‘‘How do you currently screen for sensory loss in your clients?’’ ‘‘How should an occupational therapy program ideally prepare their students for sensory screening during their training?’’ The group discussion lasted 1 hour and was recorded, transcribed verbatim and analyzed using thematic analysis (Boyatzis, 1998). Coding was conducted face-to-face by the first and the last author and disagreements were resolved through discussion.

Results

Phase 1 – current curriculum content

Table 1 summarizes the findings from the curriculum chair interviews on the degree to which vision, hearing and dual sensory impairment (DSI) are taught in the occupational therapy programs of five Quebec universities. Qualitative answers were grouped into eight categories (see Table 1 Legend). For example, ‘‘Case study’’ and ‘‘Laboratory or invited speaker’’ categories were assigned when the topic is specifically covered in these contexts, whereas ‘‘topic is covered’’ means no information was available as to the nature of the coverage (for example, lecture, case study, laboratory). ‘‘Topic is not covered to the knowledge of the interviewee’’ indicates that the interviewee specifically mentioned that he or she did not think this topic was broached. ‘‘No information available’’ means the interviewee did not know, or the information did not come up in the context of the interview or during

examination of the course description on the institution's website. In the case of University B, for example, the graduate curriculum has very few mandatory courses and allows instead for a number of optional courses, which the interviewee mentioned might touch upon any of the listed topics. While the anatomy of the eye and ear and their associated morbidities are mentioned in almost every undergraduate occupational therapy program, there are many noticeable discrepancies in coverage among the five universities (Table 1). Coverage of dual sensory impairment is likewise not standardized across universities, with two undergraduate curricula not including the topic (Universities A and D).

Variation was also observed among the responses to questioning regarding the extent to which information is taught about each of the three sensory impairments. While all five vision-related topics (anatomy, morbidities, occupational impact, screening and rehabilitation) were generally well covered across all programs, teaching of hearing-related topics was sparser, while dual sensory impairment was almost entirely absent. Sensory impairment was generally taught at the undergraduate level, whereas this type of curriculum content information was mostly not available at the graduate level.

Phase 2 – specialist recommendations

Of the 10 occupational therapists that participated in the focus group, seven had an entry-level master's degree and three had a bachelor of science degree in occupational therapy. They were recruited because they were all employed with a specific mandate to provide services to individuals with sensory impairment, across all age groups. Their professional experience ranged from 0.5 to 22 years. The focus group data were grouped into three themes: (1) Effects of the lack of training on current practice; (2) Recommendations for training and continued education; (3) Detection versus treatment.

Effects of the lack of training on current practice. The participants described a large variety of professional path- ways that brought them to working with individuals with a sensory impairment, including exposure during fieldwork. Given the absence of any systematic training on sensory loss, they described situations where this lack of training became apparent during their work:

Recently, I thought it was interesting, when we just had a new client, it was the first time he was seen, and it's a new OT that just graduated that was doing the evaluation, and right away I was able to see ''Oh I have to go get my CVI [cortical visual impairment] stuff'' and I went and got it, and was able to see it better. But since we don't have much training in that originally as an OT, I never had any training at all in CVI, I would have never picked it up before.

A different participant reported:

We have a client who was seen for a very long time by [social worker] because they were saying he had so many [disturbing] behaviors, it's really not going well, he can't follow during therapy, he needs therapy readiness for a good 6 to 8 months, until another therapist who had worked in vision in the past was brought in and she said ''I think it's vision.'' And in the end the child is legally blind. But it took 6 to 8 months before, and we were changing the way we were working with him, and now he is in school. So I feel OTs don't know enough.

Of particular interest were several anecdotes where participants enforced the importance of training on sensory impairment in their clinical context:

If a child can't sit at a table and do a puzzle for more than 10 seconds, usually, I know my original thought process was to think they have, ''ok, there's something wrong with their attention'' or some sort of behavioral issue, that they are not able to sit down and focus on this. But if they can't see or if it takes this hyperopia in children, which is farsightedness, so if you need near glasses to see something up close, for children it presents like this, adults though get headaches because they force their eyes to be able to see, but children are smart and they just say ''why would I focus on that when I can be going and running around instead?'' So they don't force their eyes but then that means that they don't sit.

Specifically in the context of multiple impairments and autism, the phenotypic similarities between vision impairment and cognitive impairment were highlighted:

That's one of the major things I learned also when I was working in the vision program, there's a fine line, like autistic behaviors and visual impairment behaviors, present themselves as pretty much the same or similar. She's had children with autism that go on to have bilateral cataract [surgery], and then you get rid of that problem and all of a sudden the child is not acting autistic anymore.

Recommendations for training and continued education. Several participants reported a need for more sensory-specific con- tent within the entry-level curriculum. As one participant reported: ''Hearing is that what I don't know, I feel like I know nothing about, like starting all over again, so it's on my list of objectives to work on.'' Another participant stated that:

... we can't possibly learn everything in school. But I think it needs touching upon. I know at least in my program, I went to [name of university], we didn't do anything vision, I touched a bit on it in one of my [fieldwork] placements.

However, there was variability among the participants in terms of the level of exposure during their training:

Going back to my schooling, we learned about the most common visual impairments per se and the most user-friendly ways of screening for visual impairment, so those screening tools can be used in multiple settings. That's what I remember going back.

The importance of continuing education was acknowledged by several respondents, often in combination with a call for a better introduction to the topic of sensory loss at the academic training level: ''I think part of our role is knowing how to look it up. But having said that, there should still be a good foundation of normal development.''

In order to improve the training of occupational therapists as far as vision and hearing impairment were concerned, participants suggested a transversal approach of incorporating sensory loss across different courses throughout the curriculum: ''I think it can be spread with paediatric courses, adult courses, elderly courses through the lifespan, so then it just becomes automatic.'' In addition, participants suggested learning activities such as simulations aimed at sensitizing learners to clients' experience of vision and hearing loss:

I just wonder about a sensitization activity for students. Like we did at [university] that I remember, once we spent a day on a wheelchair, and the other one was the hearing voices workshop, I don't know if they still do that, but they really stuck out, I wonder about

experiencing sensorial loss would also help … I remember when we were in school, we went to [shopping mall] in wheelchairs, so maybe a part of this could also be in a wheelchair and the other one could be with blindfolds.

Finally, one participant made specific recommendations about the priorities for occupational therapy training and practice:

But really what's important for us I think is knowing the functional impact of that diagnosis, and maybe you can just in school, going through the main different areas in terms of complete vision loss, some vision loss in terms of acuity versus tunnel vision … and then breaking that down and knowing how it's going to impact the daily activities and what strategies you can use .. . to compensate for that loss, I think would be a good way to start the course.

Detection versus treatment. The final theme emerging from the focus group discussion dealt with the role of occupational therapy in the detection and treatment of sensory impairment. Participants agreed that the ability to screen for and detect sensory loss should be an integrated part of the occupational therapy curriculum, in order to provide graduates with an awareness of the general sensory capacities of their clients, as captured here by one participant:

… we do screening of vision and hearing loss, but I always felt that there was never time to really focus on helping to compensate for those deficits … don't ask everybody to do treatment, 'cause it's a specialty on its own in my opinion. If we have to know enough about vision, and I think in the program there should be the development from the children and after go to adulthood and things that happen when we get older, but to have a broad OT

and [know] the signs of what to check for.

Our participants also supported the idea of having more information available in order to be able to properly refer to more specialized services, or to know who to invite onto the multidisciplinary team.

… someone in a different program thinks there's possibly a problem in someone's vision, then they can refer them directly to the vision program to have a screening before having gone to the wait list … people start to realize ''Oh this isn't a motor problem, there's a vision problem, let's check … , and it's a nice way to save possible monthly or yearly wait at the hospital or some- thing like that.

Discussion

The purpose of the present study was to identify what content is currently being taught with regard to the screening and detection of vision and hearing loss across Quebec occupational therapy university programs (phase 1), and to gather suggestions and recommendations from specialists in this field of practice (phase 2) in order to provide recommendations for improving curriculum content. The phase 1 review of the current professional entry-level curriculum content reveals great variability in the nature, amount and timing of sensory-related content, whereby the focus is primarily on vision, followed by hearing, with little attention to dual sensory loss. This limited exposure seems unlikely to meet the current demands at the service-delivery level for this population (Wittich et al., 2015), and is in agreement with some of the concerns raised by specialists during phase 2. Especially given the demographic predictions for developed countries (Christensen et al.,

2009), this lack of training likely means that the occupational therapists are underprepared to identify the sensory rehabilitation needs of their older clients, to refer them appropriately and/or to intervene directly when necessary. This can potentially result in negative effects on the quality of life, independence, function and wellbeing of an aging population, specifically, since sensory loss has repeatedly been associated with negative psychosocial outcomes, such as depression (Boi et al., 2012), isolation (Savikko et al., 2005) and anxiety (Kempen et al., 2012).

Wittich et al.'s (2015) work highlighted that an overwhelming majority of occupational therapists serving older adults intervene with clients with a sensory loss; this finding was further corroborated by the experts inter- viewed in phase 2 of the current study. Indeed, our expert clinicians repeatedly reported the steep learning curve on sensory-related content during their initial months in the employment environment. They reported being initially ill- prepared to provide appropriate and targeted services for this population, and that their developing expertise was very much a function of the opportunistic nature of cases, the numerous experiences, as well as the opportunities to reflect upon and learn from these experiences and those of their peers through mentorship. The experts commented on the value of continuing professional development; however, without a base of knowledge in sensory loss obtained through entry-level education, this process was more challenging.

Traditionally, sensory rehabilitation has been client-cantered and interdisciplinary by its very nature, given the varied needs of clients and the diverse expertise necessary to address these needs (see, for example, Hinds et al., 2003). In recent decades, the construction of this professional network has changed, in part through the requirements of third-party payers, resulting in additional professions entering the system, including occupational therapists (Warren, 1995). This shift warrants a re-examination of the role occupational therapists play

in the identification, referral and treatment intervention of all individuals affected by sensory loss, including an evaluation of their minimum level of training. The findings from this research suggest that concerted efforts are needed to identify the minimum level of education needed to ensure that graduates are prepared to work with the rising number of clients living with vision and/ or hearing loss.

The occupational therapy profile of practice (WFOT, 2010) is not a prescriptive framework meant to guide curricular content for specific areas of practice or client populations (such as stroke, older adults, paediatrics). It is therefore the responsibility of each academic program across different countries to identify the nature and amount of content needed to ensure that graduates are competent in profile roles across health conditions and the lifespan. To promote the development of the ‘‘expert in enabling occupation’’ role for occupational therapists working with clients with sensory loss, we suggest that all stakeholders (university programs, professional associations, regulators, client groups and clinician representatives) with a vested interest in professional practice and competence be involved in delineating the minimum acceptable content in vision and hearing loss, discuss the impact on accreditation standards, and consider developing formal position statements on the role of occupational therapists in this area.

As the drive for evidence-based practice continues to grow, particularly for practice areas where there is mounting evidence for occupational therapists to draw from to make clinical decisions, an integrated knowledge translation (IKT) approach is a promising vehicle for promoting best practices (Bowen and Graham, 2013). This model advocates for collaborations among researchers, clinicians and educators that aim to increase research utilization and promote uptake of best practices. IKT allows teams to collaboratively identify research–practice gaps, and design and evaluate strategies that promote the use of best practices in the identification and rehabilitation of vision and hearing loss, as well as appropriate referral to specialists. As a

direct result of this project, one of the five programs involved in the study implemented changes to its professional master's curriculum, whereby content on sensory impairment is now included in a similar manner to considerations relevant to culture. This is achieved by ''threading'' vision and hearing loss into numerous already existing courses (such as Holistic approaches in Occupational Therapy [undergraduate], and Community- based Occupational Therapy [graduate level]). The next step is to systematically evaluate its impact on the professional integration of this knowledge and improvements in care provision.

Limitations

The present study has to be considered within its geo- graphical limitations, as only university programs and specialists in Quebec, Canada, were accessed as data sources. There are likely differences in curriculum content and professional requirements across different regions and countries that offer occupational therapy training and services. In addition, there is a lack of precision and detail in the phase 1 interview data, likely with some missing information, given that only curriculum chairs were consulted. Reviewing the complete curriculum documentation was pragmatically impossible; therefore, the results of phase 1 may not be entirely representative of the actual curriculum contents. Finally, the original study context intended to focus on sensory rehabilitation issues as they pertain to older adults; however, the majority of specialists that were able and available to join the phase-2 focus group worked predominantly with a paediatric population. Therefore, issues relevant to geriatric service delivery may be under- represented and will need to be studied further.

Conclusion

To our knowledge, this is the first study to explore the occupational therapy education and practice of vision and hearing loss from the perspectives of curriculum chairs and expert

occupational therapists in this practice area. Occupational therapists are well positioned to play an essential role with the population living with sensory loss, as has previously been pointed out by Campion and colleagues (Campion et al., 2010). However, many of the barriers highlighted by these authors, such as over-charged curricula, are still in existence. Our study findings revealed that most clinicians are not adequately prepared to practice with clients with vision and hearing loss, and that much of the learning and development of expertise occurs after graduation. This expertise seems to be a function of continuing education courses as well as repeated practice and exposure to clients with vision and hearing loss. There appears to be great variability in the nature and amount of content offered to students across the different university programs; most programs contain limited content in this area. The potential consequence of such variability and limited exposure is the heterogeneity of competencies of new graduates despite demographic trends (such as aging individuals living with hearing and vision loss) and a growing evidence base for screening of these deficits. There is a need for relevant stakeholders to discuss the minimum acceptable curriculum content needed to ensure that graduates are prepared and competent to work in this growing area. Conversations among stakeholders should take into account the current practice climate, the growing evidence base in hearing and vision loss and the emphasis on providing evidence-informed and client-centred services to clients living with the devastating consequences of such deficits.

Key findings

- Most occupational therapists are not adequately pre- pared to practice with clients with sensory impairments.
- There is great variability in the curriculum content on the senses offered across different

universities.

- There is a need for relevant stakeholders to discuss the minimum acceptable curriculum content needed to ensure that graduates are prepared and competent to work in this growing area.

What the study has added

This is the first study to explore occupational therapy education and practice of vision and hearing loss from the perspectives of curriculum chairs and expert practitioners in the field.

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Research ethics

Ethical approval was obtained from the *Centre de recherche interdisciplinaire en readaptation* (CRIR) for phase 1 (CRIR-853-0613), approved from 27 June 2013 until 27 June 2017, and phase 2 (CRIR-860-0713), approved from 26 September 2013 until 26 September 2017. Participants provided informed written consent.

Declaration of conflicting interest

The authors confirm that there is no conflict of interest.

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Table 1. Degrees to which vision, hearing, and dual sensory impairments (DSI) are taught in the occupational therapy programs of five Quebec universities.

	Topic	University A	University B	University C	University D	University E
Bachelor's of Occupational Therapy						
VISION	Anatomy					
	Morbidities					
	Occupational impact					
	Screening		NO	?		
	Rehabilitation					
HEARING	Anatomy					
	Morbidities		NO			?
	Occupational impact			?		?
	Screening	?	NO	?		
	Rehabilitation		NO	?	?	?
DSI	General	NO			NO	?
Master's of Occupational Therapy						
VISION	Anatomy	NO	1		?	?
	Morbidities	?	1		?	?
	Occupational impact	?	1		?	?
	Screening	?	1	?	?	?
	Rehabilitation	?	1		?	?
HEARING	Anatomy	NO	1		?	?
	Morbidities	?	1		?	?
	Occupational impact	?	1		?	?
	Screening	?	1	?	?	?
	Rehabilitation	?	1	?	?	?
DSI	General	NO	1		?	?

Legend:

	Topic is covered (> 10 minutes)
	Topic is covered to an unknown degree
	Topic is mentioned (≤ 10 minutes)
	Case study
	Laboratory or invited speaker on the topic
NO	Topic is not covered to the knowledge of the interviewee
?	No information available
1	Optional courses may cover these topics