Fitting Audiology Within the Population Health Perspective

Elizabeth Fitzpatrick, MSc¹

J. Cyne Topshee Johnston, MSc¹

Doug Angus, MA¹

Andrée Durieux-Smith, PhD²

ABSTRACT

The population health perspective has become increasingly apparent in the medical, public health, and policy literature. This article emphasizes the value of applying the population health perspective and associated frameworks to the rehabilitative sciences and particularly to the field of audiology. Key components of the population health perspective – including the determinants of health, the importance of evidence-based practice, and the value of transdisciplinarity – are used to illustrate the relevance of population health to the field of audiology. Using these key concepts from a population health framework and examples from audiology, the adoption of a population health perspective is proposed.

MeSH terms: Audiology; public health; evidence-based medicine; interdisciplinary communication

RÉSUMÉ

La perspective de santé des populations est devenue de plus en plus évidente dans la littérature médicale, en santé publique et en politiques de la santé. Cet article souligne l'importance d'utiliser la perspective de santé des populations et des cadres qui y sont associés, dans le domaine des sciences de la réadaptation et plus particulièrement en audiologie. Les éléments clés de la perspective santé des populations, tels les déterminants de la santé, l'importance de la pratique basée sur les preuves scientifiques et la valeur de la transdisciplinarité sont utilisés pour illustrer la pertinence de la santé des populations au domaine de l'audiologie. Les concepts clés émanant du cadre de la santé des populations sont utilisés et des exemples du domaine de l'audiologie, et l'adoption de cette perspective sont proposés.

In Canada, the government has adopted population health as a key concept and approach for health policy and program development. However, this model has received little attention in clinical rehabilitative sciences such as audiology and has had little or no impact on conceptualizing and delivering intervention services. In this commentary, we provide a brief overview of the field of audiology and explain the relevance of population health to this field.

Audiology is a clinical rehabilitative science that seeks to identify, diagnose, and provide rehabilitative services to individuals with hearing loss. Clinical audiologists work in hospitals, school boards, industrial, and private practice settings. The Canadian Association of Speech Language Pathologists and Audiologists¹ states that audiologists,

“... assess the extent of hearing loss, balance and related disorders and recommend appropriate treatment. Services are provided to people who are deaf or hard of hearing and persons at risk of hearing loss due to noise exposure, genetic causes, and exposure to certain drugs, or middle ear infections. Audiologists also work with adults and children who need aural rehabilitation, such as auditory training and speech reading, and educate consumers and professionals on the prevention of hearing loss.”

While this definition highlights the clinical role of audiologists, there is a strong need to move beyond a clinical model of health. A change is needed to: 1) integrate broad knowledge about factors that affect patient care and outcomes into clinical care models; 2) develop evidence-based practices; and 3) collaborate with other health professions. The contextual issues that may play a significant role in the development of hearing loss and may subsequently affect treatment outcomes are frequently overlooked and are omitted from this clinical definition. The population health approach provides a strong framework within which to achieve these goals and to grow as a profession.

Population health has been defined in a variety of ways since the inception of the term in the early 1990s. Health Canada broadly defines population health as “an approach to health that aims to improve the health of the entire population and to reduce health inequities among population

1. Institute of Population Health, University of Ottawa, Ottawa, ON

2. Faculty of Health Sciences, University of Ottawa

Correspondence and reprint requests: Elizabeth Fitzpatrick, Children's Hospital of Eastern Ontario Research Institute, 401 Smyth Road, Ottawa, ON K1H 8L1, Fax: 613-738-4869, E-mail: efitzpatrick@cheo.on.ca

groups.”² Other definitions have placed considerable focus on the social determinants of health and measurement of health outcomes, and have highlighted the need for transdisciplinary research to develop health policies linking the two.^{3,4}

Three key elements of a population health perspective that are particularly relevant for audiologists are the influence of the social determinants of health, the importance of evidence-based practice, and the transdisciplinary nature of the field.

Determinants of health related to audiology

As a clinical professional field, diagnostic audiology draws heavily from the biomedical model of health care, a model which places the emphasis on treating rather than preventing and which focusses on the immediate clinical problem. Historically, audiology clinics have been established in hospital settings frequently under the umbrella of otolaryngology departments. Audiologists have considered many of the characteristics of the *individual* with hearing loss in order to treat the hearing problem and to explain the health outcomes observed. Proximal factors such as the extent of a person's hearing loss and specific aspects of hearing technology and rehabilitation strategies have long been perceived as key to effective outcomes in both adult and pediatric populations.

The population health model is an overarching framework that encompasses the entire range of individual and collective factors and the interrelationships that affect outcomes. The term “determinants of health” is often used to refer to a range of social, economic, and physical environmental factors that occur at multiple levels and that affect health and health intervention outcomes. Like other health issues, hearing loss is sensitive to many of the determinants of health that occur at the family, community, policy and individual levels. Income and social status have emerged in the health literature as the most important determinant of health.³ Family income and education can either contribute to hearing loss or can be affected by the hearing disability.

Mohr et al.⁵ have estimated that there are more than 600,000 people in the US with severe to profound hearing impair-

ment and that, on average, they are poorer than other Americans. Fifty-three percent (53%) have a family income of less than \$25,000 compared to 35% of the general US population. Other staggering statistics for education and employment reveal that 44% of this population did not graduate from high school compared to 19% of the general population and 42% of the 18-44 year old hearing-impaired population was not employed compared to 18% in the general population. Other results indicate that family income level is a significant factor in predicting language outcomes for children with hearing loss. British studies show that the percentage of low-income deaf children achieving normal school outcomes is significantly lower than high-income deaf children.⁶

The impact of socio-economic status has been inadequately explored in studies of intervention methods for children with significant hearing loss. For example, while studies investigating the outcome of children in auditory-verbal therapy (an intervention method which stresses the development of oral communication) report encouraging results, they lack an examination of the distal determinants of health. Goldberg and Flexer reported on the status of 114 graduates from auditory-verbal programs in the United States and Canada.⁷ All had graduated or were graduating from high school, unlike the previously reported 44% rate of high school completion for the severely to profoundly hearing-impaired in the United States. Employment income was also significantly higher than in the general deaf population. No information was reported on family characteristics except that there was strong participation in the child's development. Other studies have also demonstrated that while children who participate in auditory-verbal therapy programs tend to perform higher than their peers in other rehabilitative programs, the children enrolled may not be representative of those with hearing loss nor of the general population.^{7,8}

Socio-economic status seems to be an important determinant of hearing health but there has been inadequate examination of this factor relative to audiology outcomes. Additional determinants that may play an important role in the health of this population include the service delivery

model of the rehabilitation programs, the funding structure of services in the province, and family characteristics. A framework such as that provided in population health is required to better account for the variability in individual audiology outcomes.

Evidence-based practice

The recent implementation of population-based infant hearing screening programs has helped thrust childhood hearing loss into a population health context. However, this further highlights the lack of an evidence-based approach to audiology interventions.⁹ Hearing screening programs identify hearing loss in infancy so that appropriate interventions can be implemented to improve longer-term communication and academic outcomes. A review of newborn hearing screening programs concluded that while strong evidence exists for the effectiveness of screening programs in improving the age of diagnosis, there is limited evidence for the effectiveness of early intervention on language development. Furthermore, despite various types of communication development programs (e.g., sign language, oral communication), the evidence with regard to their effectiveness is inconclusive.¹⁰

Attempts to study the effectiveness of interventions have been focussed almost entirely on proximal determinants such as the degree of hearing loss as well as the technical parameters of hearing technology. A population health perspective contends that complex interactions between these factors and social and economic issues determine health outcomes. The context or circumstances in which people live can have a significant impact on access to services and ability to follow through with intervention programs.¹¹ However, clinical practice guidelines have largely ignored socio-economic evidence.¹² Changes in perspective can affect our definitions of outcome and how research is conducted. For example, qualitative research paradigms can complement quantitative methods and help in identifying strategies to address the different responses of families to intervention. A population health framework considers evidence both in relation to the effectiveness of interventions and to policy development and decision-making.

Transdisciplinarity

A transdisciplinary perspective is essential in addressing the challenge of developing evidence-based practice in audiology. Working in interdisciplinary research groups may allow for greater exploration of hearing loss, the proximal and distal determinants associated with it, as well as for a richer understanding of outcomes. Many of the distal determinants of health can only be explored by incorporating other disciplines, and the broader understanding brought forth by multiple perspectives would improve clinical audiology practice.

Other clinical fields have developed evidence-based practices and incorporated a population health perspective.^{13,14} It is important to look to these other professions to see how they have achieved this change in perspective. Expanding these collaborations to better understand how a transition in perspective has been undertaken in these other fields may benefit audiology.

SUMMARY

Population health provides an overarching framework for exploring and potentially

improving the health of the population. While more frequently applied in community health contexts, we have suggested how population health can be applied to a clinical rehabilitative field. The social determinants of health, evidence-based practice, and transdisciplinarity are examples of the contributions that population health can make to the field of audiology.

REFERENCES

1. CASLPA. 2002. Available online at: <http://www.caslpa.ca/english/profession/audiology.asp> (Accessed November 12, 2002).
2. Health Canada. Population Health Approach, 2003. Available online at: <http://www.hc-sc.gc.ca/hppb/phdd/approach/index.html> (Accessed December 18, 2003).
3. Frank JW. Why "population health"? *Can J Public Health* 1995;86:162-64.
4. Kindig D, Stoddart G. What is population health? *Am J Public Health* 2003;93:380-83.
5. Mohr E, Feldman J, Dunbar JL, McConkey-Robbins A, Niparko JK, Rittenhouse RK, Skinner MW. The societal costs of severe to profound hearing loss in the United States. *Int J Technol Assess Health Care* 2000;16:1120-35.
6. Powers S. The educational attainments of deaf students in mainstream programs in England: Examination results and influencing factors. *Am Ann Deaf* 1999;144:261-69.
7. Durieux-Smith A, Olds J, Fitzpatrick E, Eriks-Brophy A, Cappelli M, Duquette C, Whittingham J. Factors facilitating the integration of hearing-impaired adolescents: Implications for policy and practice. *Proceedings of Research to Action: Working Together for the Integration of Canadians with Disabilities*. Halifax, NS: Dalhousie University, 1999;124-29.
8. Rhoades E, Chisolm TH. Global language progress with an auditory-verbal approach for children who are deaf or hard of hearing. *Volta Rev* 2000;102(1):5-25.
9. Thompson DC, McPhillips H, Davis RL, Lieu TA, Homer CJ, Helfand M. Universal newborn hearing screening: Summary of evidence. *JAMA* 2001;286:2000-10.
10. Schachter HM, Clifford TJ, Fitzpatrick E, Eatmon S, MacKay M, Showler A, et al. Systematic review of interventions for hearing loss in children. Review was commissioned by the Health Canada Working Group on Childhood Hearing Loss, 2002.
11. Wilkinson R, Marmot M (Eds.). *Social Determinants of Health. The Solid Facts*. Copenhagen: WHO, 1998.
12. Aldrich R, Kemp L, Williams JS, Harris E, Simpson S, Wilson A, et al. Using socioeconomic evidence in clinical practice guidelines. *Br Med J* 2003;327:1283-85.
13. Rafuse J. Population-health concept challenges dominance of clinical medicine. *CMAJ* 1995;152:242-45.
14. Robinson K. Evidence-based medicine and its implications for audiological science. *Br J Audiol* 1999;33:9-16.

Received: January 13, 2005

Accepted: June 21, 2005