Outcome Measurement in Speech-Language Pathology and Audiology

L'évaluation des résultats en orthophonie et en audiologie

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Abstract

To use the scarce resources allocated towards speech-language pathology and audiology services effectively, information about the benefits and costs associated with alternative clinical practices is needed. This paper examines the benefit side of the evaluation equation. The paper suggests that economics and ethics need not be in conflict once clinicians adopt a utilitarian approach to medical ethics. This approach to service provision places clinicians and health service researchers in the enviable position of developing both economically efficient and ethically appropriate health policies and services. A conceptual framework is presented for the evaluation of clinical practice. This framework overlays the processes of clinical practice within speech-language pathology and audiology with the World Health Organization's classification scheme of impairment, disability, and handicap. By synthesising the WHO classification scheme with various clinical practice processes, insights are gleaned into the potential for outcomes research within the general area of communication disorders.

Résumé

Pour utiliser efficacement les maigres ressources qui sont consacrées aux services d'orthophonie et d'audiologie, il faut obtenir des renseignements sur les avantages et les coûts associés aux pratiques cliniques de rechange. Le présent document porte sur les avantages de ces pratiques. Il suggère que les questions financières et déontologiques ne s'opposeront pas nécessairement une fois que les cliniciens auront envisagé la déontologie médicale selon une approche pragmatique. Cette approche à l'égard de la prestation des services place les cliniciens et les chercheurs des services de santé dans la situation enviable de pouvoir élaborer des politiques et fournir des services qui sont à la fois efficaces sur le plan financier et acceptables d'un point de vue déontologique. Un cadre conceptuel est présenté pour l'évaluation des pratiques cliniques. Ce cadre fait correspondre les procédés de ces pratiques dans le domaine de l'orthophonie et de l'audiologie avec la classification des notions de déficience, d'incapacité et de handicap de l'Organisation mondiale de la santé. En appliquant la classification de l'OMS à différents procédés des pratiques cliniques, il est possible de tirer des conclusions sur les possibilités que présente la recherche sur les résultats dans le domaine général des troubles de la communication.

Introduction

Health expenditures in Canada, just as in other Western countries, have outstripped the growth in the economy. In 1960, these expenditures represented 5.5 percent of Canada's Gross National Product (GNP). They currently represent over 9 percent of GNP. In 1960, health expenditures per capita were $120 (or $604 in real 1990 dollars). These per capita health expenditures have almost quadrupled in the last thirty years and are projected to be $2,321 in 1990.

Because health care in Canada is publicly funded, the dramatic increase in health expenditures has been a cause of significant concern for federal and provincial governments. Increases in the share of government monies allocated to health care have caused governments to postpone increases in other priority areas, such as education and economic development. Consequently, by limiting further increases in health expenditures, governments satisfy two political objectives: they appear fiscally responsible and, at the same time, they provide additional resources for other priority areas.

While limits on health expenditures may contain health care costs, these restrictions (such as those associated with transfers from the federal government to the provinces or from the provinces to hospitals and other providers) are not designed specifically to enhance the cost-effective provision of health care services.[1] These restrictions on transfer payments focus on only one side of the health care equation, namely the costs of such care. Little or no attention is currently devoted to the benefit side.

Students in first year economics are taught that the basic economic problem is one of choice because human wants are virtually unlimited, while the resources used to satisfy these wants are in finite supply. As a result, economics primarily is concerned with resource allocation questions. But, while it is commonly perceived that economists are primarily interested in the cost implications of alternative resource allocations, they are equally concerned with the benefits derived from such allocations.

To use the scarce resources allocated towards speech-language pathology and audiology services effectively, information about the benefits and costs associated with alternative clinical practices is needed. This paper examines the benefit side of the evaluation equation. Following a review of the current state of outcomes research within communication disorders, the health policy implications associated with this type of evaluation are considered.

Section 2 examines the relationship between economics and ethics. It is suggested that there need not be a conflict between the principles underlying these areas of study. Based on the recognition that it is potentially unethical not to evaluate the implications (both the benefits and the costs) of alternative clinical practices, Section 3 focuses on the benefits derived from such resource allocations. While therapeutic outcomes associated with clinical practice are believed to be the best indicators of the quality of client care, such indicators may have little relevance to real-life situations. Consequently, to evaluate the beneficial effects of clinical practice, Section 3 illustrates that information is required regarding both the therapeutic effects and the significance that clients attach to these effects. This perspective to the evaluation of clinical practice yields client-centred outcome measures. Section 4 suggests how outcome measures might be used to influence resource allocation decisions, thereby yielding a more efficient, and ethically appropriate, allocation of scarce societal resources. Section 5 provides a brief conclusion.

Economics, Ethics, and Resource Allocation

While various characteristics of the health services market distinguish it from other markets (Arrow, 1963; Pauly, 1978), the main distinction lies in the unequal distribution of information between providers and clients. (For instance, information concerning alternative assessment and therapy protocols, and the effectiveness of various treatments is unevenly distributed in this marketplace.) This asymmetry of information provides opportunities for information manipulation concerning the selection of alternative assessment and therapy protocols. Although incentives exist for providers to act opportunistically, McGuire (1986) and Mooney and McGuire (1988) argue that the dominant code of medical ethics acts as a countervailing force to limit opportunism, thereby resulting in an agency relationship between providers and clients. This agency relationship is primarily concerned with the provision of optimal health outcomes, for which providers are trained, rather than outcomes broadly defined.[2]

Cost containment policies pursued by various levels of government throughout Canada, which limit access to some publicly funded health care services, highlight a trade-off between economics and ethics. Conflict occurs because actions that are ethically correct (or right) from an agency perspective, in which providers act in the best health outcome interests of their clients, frequently are also costly for society to implement. Because society cannot undertake *all* activities that are in the best health care interests of *all* clients, it must decide which assessment and therapy protocols to finance and which clients should receive these protocols. Given the presence of a scarce pool of resources to fund health care services, rationing will always take place. However, the ethically appropriate manner in which rationing should occur has received little attention. This Section discusses the linkage between economics and ethics.

Reconciling Economics and Ethics

Economics and ethics are frequently perceived as opposing forces within health care. Economics symbolizes control over a broad array of health expenditures, while ethics functions as a means to justify actions that support the individual interests of clients. However, this apparent conflict is based on a relatively narrow view of ethics, in general, and of medical ethics, in particular (McGuire, 1986; Mooney & McGuire, 1988). By emphasizing an individualistic ethical code (wherein service provision is judged in terms of its direct impact on the client) rather than one based on a utilitarian approach (wherein the appropriateness of service provision is based on its consequences for society as a whole), a distinction is made between economics and ethics (McGuire, 1986). But shifting the ethical emphasis from the narrow interests of individuals to that of society as a whole, provides opportunities to develop sensible health care policies that are firmly grounded in both economics and ethics.

The distinction between the health care interests of clients and what is efficient for society is an important ingredient in the current concern over health care funding (Fuchs, 1984). From a provider's perspective these concerns, and current interest in economic evaluation, are seen as unwelcome intrusions of economics into the field of clinical practice (Jennett, 1984). These intrusions limit professional autonomy, reduce the provision and availability of health care services (or at least slow its rate of growth), and ultimately, may erode professional incomes.

While complaints over the loss of professional autonomy and concerns over the decline in health service accessibility may be valid, they represent only one side of the economic evaluation equation: the cost side. On the benefit side however, the resources released from more effectively utilizing existing health care services could be allocated towards health or non-health activities. If this reallocation results in benefits that exceed costs, economic efficiency is improved, and society as a whole is better off.[3] (Indeed, by more effectively using our existing resources, health outcomes (or benefits) may be enhanced without the need to raise health expenditures.) Consequently, the recent introduction of economic evaluation methodologies to the health field might best be indicative of a shift in ethical perspectives away from the individualistic ethic, presently dominant within many health professions, towards a utilitarian (or societal) approach to ethics.

The Social Cost of Medical Ethics

The dominant code of medical ethics is concerned with the role of providers to act in the best interests of their clients. From a provider's perspective, this situation is associated with the provision of services to the point at which a client's incremental benefit and cost of these services are equated. This point of optimal service provision, as perceived by the provider, is based on an individualistic code of medical ethics. Concerns over the best use of societal resources are absent in this code.

The cost of (or problem with) the dominant code of medical ethics, from an economic efficiency perspective, can be shown diagrammatically in Figure 1. A provider may act in the best interests of her client by providing S_i services, where the incremental (or marginal) benefit of these services (to the client) is equated with the client's incremental (or marginal) cost of the services (here, zero because these publicly funded services are "free" at the point of access). However, the resources embodied in these services might have been used more effectively either by being offered to some other client or through the provision of some other service. The *potential benefits to society* derived from the best of these foregone alternatives is defined as the "opportunity cost" associated with the provider's resource allocation decision. This opportunity cost is the cost to society associated with the provision of health care services, and is drawn for simplicity as the horizontal schedule in Figure 1. The efficient provision of services takes place at S_s. At this point, the incremental (or marginal) benefit of service provision is just equal to the marginal opportunity cost. By providing services that deviate from S_s, society's resources are not being employed effectively: that is, by reconfiguring service provision, it is possible (if compensation were actually paid) to make at least one person better off without making anyone else worse off. However, by altering the provision of services to attain S_s, a conflict between medical ethics and economic efficiency results because some clients may be adversely affected by this denial of care.

Movements from S_i to S_s are associated with the rationing of health care services. This restriction on access conflicts with both the individualistic code of medical ethics and each provider's incentive to act in his or her own self-interest, particularly when compensation is on a fee-for-service basis. This shift in service provision places providers in the unenviable position of refusing to care for some of their potential clients.

Economic Evaluation

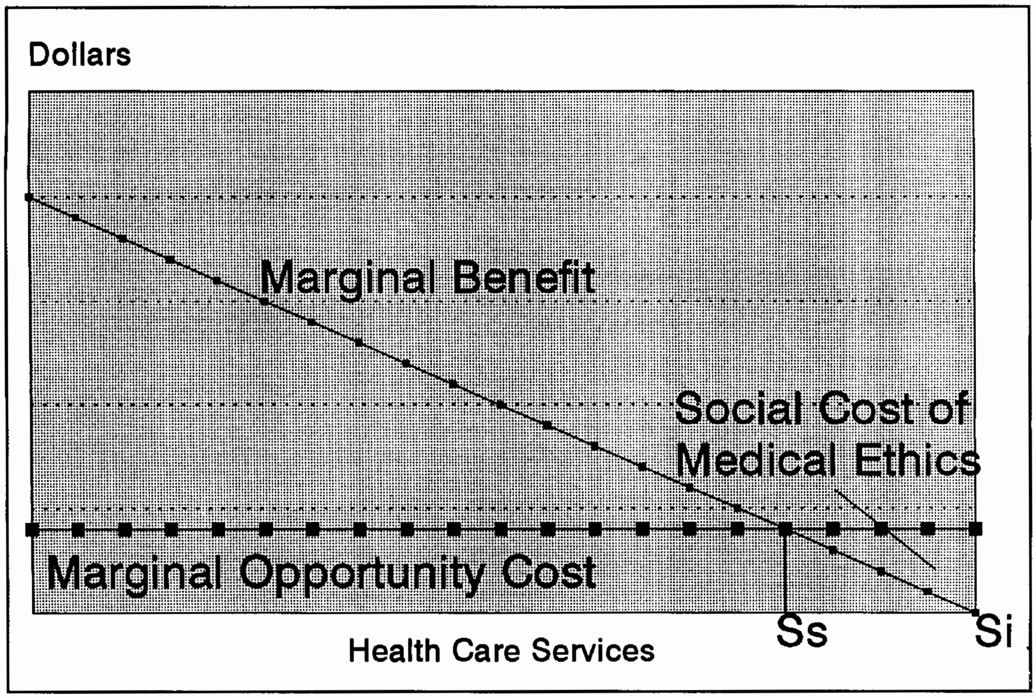
To achieve an efficient allocation of resources, information is needed concerning the costs and outcomes of clinical practices, as well as the value to be placed on these outcomes. These three aspects of an economic evaluation are plagued with difficulties. However, we should not be too discouraged because "the real choice we face in deciding how to allocate health care resources is between an explicit and systematic evaluation of alternative health care programs and an implicit, possibly ad hoc, and secretive evaluation of programs," Fuchs (1980, p. 937).

By systematically considering the costs as well as the benefits associated with clinical practice, economic evaluations force us to contemplate which practices promote economic efficiency, and thereby improve the long term well-being of society as a whole. Without a wider use of economic evaluation in clinical practice, inefficiencies will persist and the price of these inefficiencies will be paid in death, disability, and discomfort (Mooney, 1980). By shifting the ethical emphasis away from the individualistic ethic, dominant within many health professions, towards a utilitarian approach, we place ourselves in the enviable position of developing both economically efficient and ethically appropriate health policies.

Outcome Measurement

Within the context of speech-language pathology and audiology, economic evaluation is a method that seeks to identify, measure, value, and compare the costs and the consequences of alternative clinical practices, including assessment and rehabilitation protocols, so as to provide decision makers with information upon which to premise their actions (Drummond et al., 1987). While there are two sides to a full economic evaluation, this Section focuses attention on the benefit side of the cost-benefit equation.

Figure 1. Resource allocation in health care.



The Ultimate Indicator of the Quality of Care

Concern with the dramatic increase in health expenditures has resulted in efforts to develop a significant program of outcomes research, particularly in the United States (Relman, 1988; Epstein, 1990). While this research program examines the effectiveness of clinical practice, presumably, but not necessarily, from the client's perspective[4], it is only one of three approaches used to assess the quality of health care services, the others being structure and process (Donabedian, 1966; 1980; 1982).

Alternative approaches to the assessment of quality are important in emphasizing different aspects of clinical practice. The structure of care stresses the characteristics of providers and the institutions (or environments) in which care is delivered. These characteristics include provider expertise, as exhibited by professional qualifications and experience, staffing ratios, and the physical and organizational arrangements that complement the provision of care. These dimensions to the structure of care historically have been the focus of quality assurance (and accreditation) exercises.

As time has passed, quality assurance has evolved into quality improvement. Indeed, health managers have recently embraced the Continuous Quality Improvement (CQI) gospel. (The old testament is available from Juran (1964; 1988; 1989) and Deming (1986), while the new testament is espoused by Berwick (1989) and Berwick et al. (1990).) Sermons on CQI assert that the quality of care is best improved by enhancing the process (or the processes) by which care is delivered to clients. To this end, the disciples of CQI congregate in teams to brainstorm on methods to improve such processes. Efforts are then directed to document, evaluate, and improve what is done to clients.

While there are benefits associated with an examination of both the framework and the processes within which care is delivered to clients, greater opportunities to enhance the effectiveness of clinical practices occur through outcomes research. Simply put, the structure and the process of care are inputs to client well-being, they are not the ultimate outputs (or outcomes). In contrast, outcomes research concentrates on outputs. It provides a benchmark for the evaluation of clinical practices, and it offers opportunities to assess the impact of variations in structure and process on the outcomes of such care. Outcomes research is therefore the ultimate indicator ofboth the quality of client care and the benefits derived from such care (Cleary & McNeil, 1988).

Impairment, Disability, and Handicap

The following is a conceptual framework for the assessment of clinical practice in the areas of speech-language pathology and audiology. This framework integrates research on communication impairment, disability, and handicap with current research on the measurement of communication outcomes. By merging the results obtained from these two areas, insight is gleaned into the potential contribution of clinical practice to various outcomes. Furthermore, the integration of these research activities provides a methodological basis for various outcome measures, highlights the content domain addressed by each measure, and demonstrates the degree of congruence between these varied outcome measures.

This section begins with a review of the World Health Organization's classification scheme of impairment, disability, and handicap (WHO, 1980) and then overlays the process of clinical practice in audiology and speech-language pathology with the WHO classification scheme. It will be shown that the client assessment phase of the clinical practice process is primarily concerned with the identification of communication impairment. Any subsequent intervention is designed to enhance communication performance, which (in our language) is synonymous with reducing communication disability. Alleviating communication disability diminishes handicap, and thereby enhances (both directly and indirectly) the quality of life of clients and their family and friends. Consequently, the outcomes from the practice of audiology and speech-language pathology are multifaceted. These outcomes depend on whether one is investigating the contribution of clinical practice to the identification or to the alleviation of impairment, disability, or handicap. Furthermore, once the focus of outcomes research is defined, valid and reliable measurement instruments are needed to estimate precisely the contribution of such practices to the concept(s) under scrutiny.

A considerable number of research efforts, both in Canada and elsewhere, have suggested that distinctions can be made among *impairment, disability,* and *handicap* (WHO, 1980; Stephens & Hetu, 1991). WHO (1980) defines impairment as any loss or abnormality of function, including psychological, physiological, or anatomical structure. Here the focus is on defective communication function. In audiology, such defective function may be measured in a sound room through the use of pure tone audiometry or speech recognition tests. In the case of speech-language pathology, defective articulation may be measured in several ways to reflect defects in the form, content, and use of language and phonology (Olswang & Bain, 1991). For instance, clients who stutter may have their impairment assessed through interval-based or event-based measures (Ingham, 1984). Within communication disorders, impairment is defined narrowly to incorporate auditory or linguistic departures from a perceived norm. The consequences for the client and his/her family and friends have no bearing on the measurement of impairment.

Once the focus shifts to communication disability, the centre of attention becomes the actual communication consequences for clients associated with their communication impairment, that is, the communication problem. WHO (1980) defines disability as the inability to perform an activity in the range considered normal for a human being. In the case of audiology, "disability refers to the hearing difficulties experienced by [the client] in his/her real-life situation" (Stephens & Hetu, 1991, p.190). Clients with the same degree of hearing impairment, but with diverse real-life situations, may experience divergent hearing disabilities. Such disabilities may be measured through self-report questionnaires or through the acoustic simulation of these real-life situations. However, because these measures generally capture only a subset of all real-life situations confronted by a client, the assessments may yield a relatively poor estimate of disability (Cox & Alexander, 1991). In the case of speech-language pathology, communication disability exhibits itself through the difficulties experienced by clients in communicating with others. While impairment is a necessary condition for the experience of communication disability, these difficulties depend crucially on the client's communication environment and strategies. Furthermore, reported difficulties also depend on a host of personality traits (Gatehouse, 1990).

WHO (1980) defines handicap as the disadvantage resulting from impairment or disability that limits the fulfilment of a role that is considered normal for the client. In audiology, handicap "represents non-auditory problems that result from hearing impairment and disability" (Stephens & Hetu, 1991, p.191). For instance, such impairments or disabilities that manifest themselves in the inability to hear or understand speech may restrict social interactions and employment opportunities. These consequences of hearing impairment or disability are handicaps because they reflect limits on the fulfilment of a normal role for the client. Similarly, for those with language impairments or disabilities, specific types of employment opportunities and social interactions (particularly for children) are limited. These restrictions are handicaps caused by communication impairment or disability. The frequency and severity of these handicaps depends on the cultural experiences of the client. Specifically, the fulfilment of a role that is considered normal depends on an array of client characteristics, including age, gender, socio-economic group, cultural background, and family situation.

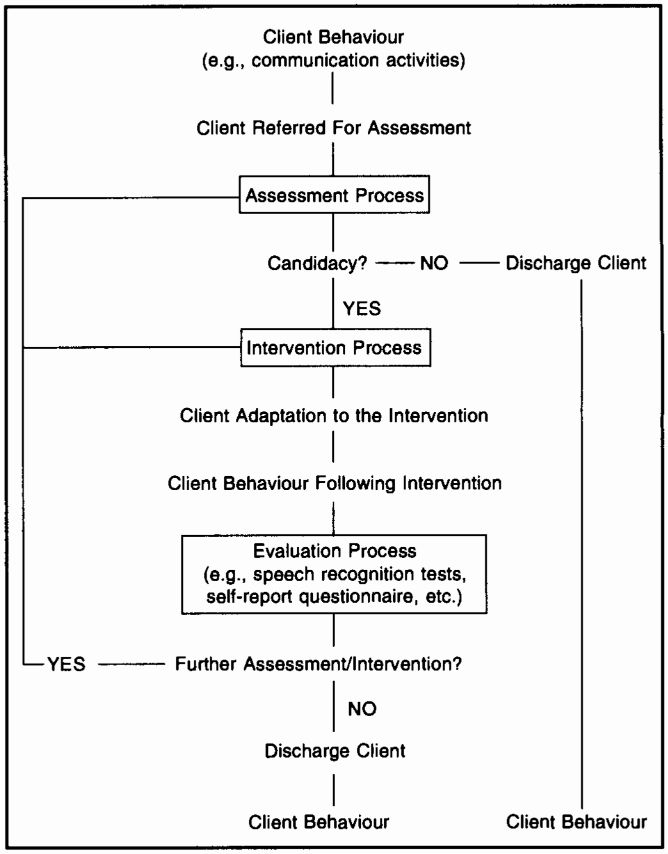
Handicap encompasses the direct and indirect impacts on the quality of life of clients with impairments or disabilities, as well as the associated impacts on their family and friends caused by restrictions on (or burdens of) normal communication activities, whether self- or externally-imposed. This definition of handicap provides a useful perspective for the evaluation of clinical practice. While the ultimate objective of all clients is to enhance the quality of their life, this definition of handicap recognizes that client impairment or disability often may adversely affect other individuals (Stephens & Hetu, 1991; Jones et al., 1987). For example, a spouse, a relative, or a friend may become frustrated with having to repeat words or sentences to those who suffer from a communication disorder, and furthermore, these same individuals may be adversely affected by listening to noisy radio or television programs. These secondary effects require consideration in an evaluation of the outcomes of clinical practice that focuses on handicap. Furthermore, because impairment or disability frequently increases the burden associated with communication activities, without necessarily altering the actual level of performance, it may be inappropriate to focus exclusively on communication performance in the development of outcome measures. Indeed, a more complete analysis of the contribution of clinical practice to client well-being may include measures of improved communication performance as well as measures of any reduction in the burden (or effort) associated with communication activities. When these two outcomes are combined we obtain the net benefit (benefits minus costs) from rehabilitation.

The WHO classification scheme of impairment, disability, and handicap provides a useful interpretative framework for outcomes research. Within this framework, the outcomes from clinical practice in communication disorders are distinct from those in other, more straightforward, areas of practice. (Lohr, 1988, provides a useful review of outcome measures.) Rather than examining thirty-day mortality rates, the occurrence of various surgical or medical complications, hospital readmissions, and the like, outcomes research in audiology and speech-language pathology is multifaceted. The target of communication outcomes research depends on whether one is investigating the contribution of clinical practice to the identification or alleviation of impairment, disability, or handicap. Each concept is concerned with the contribution of a different aspect of the clinical practice process, and each has its own measurement difficulties.

Processes of Clinical Practice in Communication Rehabilitation

Clinical practice in communication rehabilitation is composed of several distinct processes, but these may be collapsed into three time-dependent components. First, clients are assessed to determine the degree of defective communication function (impairment), to indicate their potential candidacy for intervention (the application of inclusion and exclusion criteria based on the expected benefits from therapy), and to prescribe an appropriate course of intervention, if intervention is deemed suitable: the assessment process. Second, intervention takes place to alleviate the adverse consequences of defective communication function or, in some situations, to restore effective function: the intervention process. Third, the success of intervention is evaluated to determine whether it achieved the intended effect and whether alternative interventions might result in further progress towards the attainment of various clinical objectives: the evaluation process. These three processes are portrayed in Figure 2.

Figure 2. Processes of clinical practice.



The process of clinical practice begins before the client is referred for a formal assessment. In the conduct of normal activities of living the client may be unable to perform normal communication activities. This assessment might be determined by the client, family and friends, co-workers, supervisors, or health professionals. Based on this assessment, the client may be referred for a formal assessment as depicted in Figure 2. At the formal assessment phase, each client is a "disability complex." The presence of the client for a formal assessment suggests that she/he is (or is perceived to be) unable to perform communication activities in the range considered normal for a human being, that is, the client has a communication disability.

At the assessment stage, while an enhancement in communication performance (the alleviation of communication disability) is often the client's single most important objective, there are other subsidiary objectives (Barcham & Stephens, 1980; Hagerman & Gabrielsson, 1984; Golabek et al., 1988). For instance, in audiology, clients frequently express the desire to have their hearing improved, but they are also interested in an assistive device that has aesthetic appeal, is comfortable, and so on. These client-based objectives do not always map directly onto clinical objectives. Consequently, in outcomes research it is always important to highlight whose perspective is taken in the analysis.

Clients are assessed to measure communication impairment, their potential candidacy for intervention, and (in the event of intervention) to customize their program of rehabilitation. If we were confident that the assessment measures we use are valid and reliable indicators of impairment, then these measures could be used for the determination of differential diagnoses (e.g., sensorineural versus conductive hearing loss). Furthermore, if these measures of impairment were closely related to communication disability, they may prove useful, in themselves, in the selection of clients for intervention and in the determination of a program of rehabilitation. However, we have concerns not only about the validity and reliability of current assessment measures in both audiology and speech-language pathology, but also about the application of such measures in the determination of client candidacy for intervention and the design of rehabilitation programs (Olswang & Bain, 1991; Ingham, 1990).

A Framework for Outcomes Research in Speech-Language Pathology and Audiology

The advantage of the description of clinical practice, as captured in Figure 2, lies in its congruence with the WHO classification scheme and its usefulness as an interpretive framework for outcomes research. If we were to overlay Figure 2 with the WHO concepts of impairment, disability, and handicap, then each concept would be closely associated with various processes of clinical practice in communication rehabilitation.

The assessment process is concerned with the identification of communication impairment. This process yields estimates of defective function through the application of various basic and advanced evaluation techniques. While the assessment process provides estimates of defective communication function, it only yields estimates because "true" (i.e., real-life) function is unobserved. For instance, in the case of clients who stutter, it is difficult both to identify the frequency of this problem (Ingham, 1984) and to obtain clinical agreement about its occurrence (Kully & Boberg, 1988). Furthermore, there is some evidence to suggest that the client is the only person who is capable of making valid and reliable measures of impairment (Adams & Runyan, 1981).

The estimates of true defective function obtained during the assessment process are estimates of a subset of potentially defective functions because no single test can address all possible imperfections in function. For example, speech recognition tests assess impairment in the discrimination of preselected speech materials, but these tests do not assess impairment in the discrimination of all types of speech messages and listening contexts. Furthermore, measures of each subset of potentially defective functions may differ in their validity, reliability, and accuracy because each estimate is subject to varying stochastic and systematic influences that are frequently difficult to control. Hence, measures of defective function obtained during the assessment process provide only an estimate (and possibly an inaccurate one at that) of true communication impairment.[5]

The intervention process is designed to alleviate the adverse consequences of defective communication function or, in some situations, to restore effective function. This objective is accomplished through the application of professional services and assistive devices, and through the development of communication skills and strategies by and for the client. Because disability is a complex function of impairment, communication strategies, and personality traits, it is self-evident that measures of disability and impairment are unlikely to be perfectly correlated (Duckworth, 1983; Berger & Hasberg, 1982; Haggard, Foster, & Iredale, 1981; Oja & Schow, 1984; Cox & Alexander, 1991). In itself, this observation suggests that if clinical practice aims to alleviate disability, then the assessment process is too narrowly focused if it only yields estimates of impairment. A more complete assessment that includes an estimate of disability also requires a review of each client's personality traits and communication strategies as well as an evaluation of the contribution of these variables to disability.

Measures of disability currently exist in the literature, especially within audiology. These measures are often based on self-report instruments, such as the Communication Profile for the Hearing Impaired (CPHI)[6] (Walden et al., 1984). (A useful review of the self-report literature in audiology is offered by Schow & Gatehouse, 1990.) The measures derived from such instruments are estimates of disability and therefore are subject to the same types of criticism as those applied to estimates of impairment derived from basic and advanced evaluation techniques. For instance, because disability is a multifaceted concept, the application of a self-report questionnaire, which addresses only one aspect of disability, is unlikely to serve as a general disability measure. Furthermore, in outcomes research the measures of disability utilized should satisfy basic psychometric properties and should perform well in terms of their validity and reliability. Because the CPHI satisfies these criteria[7], estimates of communication disability so derived have the potential to measure the contribution of clinical practice in audiology to the alleviation of disability.

Following rehabilitation, and after the evaluation of the contribution of clinical practice to the alleviation of disability, the client is discharged. But following discharge, clients may still face restrictions on normal communication activities that adversely affect the quality of their lives and the lives of their family and friends. For instance, a hearing aid might be prescribed and fitted for a client with hearing impairment, yet (while the device enhances communication performance particularly with respect to the discrimination of speech) the client may retreat from social activities if she/he feels stigmatized by wearing the device in public. Such adverse consequences of communication impairment or disability are handicaps that lower the quality of life for the client.

Clinicians have been entrusted to allocate scarce societal resources to address the concerns of those with communication impairment or disability. If these clients are interested primarily in the consequences of impairment or disability on the quality of their life, then appropriate indicators of success in the attainment of this goal are those that are relevant to the client's real-life experiences. Consequently, when measures of impairment or disability are of limited relevance to the overall functioning of clients, they cease to serve as meaningful client-based outcome measures. Such is the state of some practices within health care, in general, and in audiology and speech-language pathology, in particular. For instance, client performance on speech recognition tests may have little bearing on either disability or handicap, and therefore capture poorly (if at all) the contribution of rehabilitation to client well-being.

The contribution of clinical practice to client well-being depends on the enhancement to communication performance (a measure of the reduction in communication disability), the significance attached to such improvements, and the adverse consequences of communication rehabilitation (for example, the stigmatizing effect of an assistive device). While client well-being is dependent upon these variables, various other characteristics of the client and her/his communication environment influence well-being.

Client well-being may be measured through utility assessment[8] (see Froberg & Kane, 1989a, b, c, & d for a review of the literature). This measurement technique elicits client preferences for various outcomes. A rating is assigned to each potential outcome through the use of a structured interview. The resulting assessment provides an estimate of client well-being or utility. While utility might be viewed as a function of a single argument, such as communication performance, it is more reasonable to take a multi-variate (or multi-attribute) perspective. In this case, the client's assessment of a given communication outcome depends on each one of an array of different attributes of that single outcome. For instance, in audiology, clients assess the comfort of the assistive device, its appearance, the imperfections to sound quality, as well as the enhancement to communication performance under various circumstances. In this way, utility assessment assigns a rating to the outcomes of communication rehabilitation which is composed of several attributes.

Because utility assessment provides an estimate of client well-being, it, too, is subject to the same types of criticism as those applied to estimates of impairment and disability. For instance, because client well-being is a complex construct, it may be difficult to develop and apply a multi-attribute utility assessment tool that provides a complete picture of the various idiosyncrasies associated with communication outcomes. Furthermore, even if utility assessment provides a complete picture of each communication outcome, the technique must satisfy basic validity and reliability properties if it is to be usefully employed as an outcome measure.

Outcome Measures and Health Policy

Over one-third of all provincial government spending in Canada is allocated to health care services. Health expenditures, which represent the largest single funding envelope for provincial governments, have grown more rapidly than expenditures on other government programs. There is a commonly held opinion that there is only a weak relationship between health expenditures and health outcomes. Indeed, if some expenditures were to be redirected to activities that are more closely related to a broader view of health, which encompasses not only the absence of disease, but also a state of complete physical, mental, and social well-being, as outlined in the Constitution of the World Health Organization, then health outcomes may be enhanced without resulting in higher health expenditures. It is this broader view of health, in combination with the current recessionary environment, that has ushered in an era of fiscal restraint towards the health sector and an associated focus on treatment effectiveness (or outcomes research).

There is a growing perception that there are publicly funded clinical practices that are of limited clinical effectiveness or, if they are effective clinically, represent little improvement in client well-being. Furthermore, there is also a perception that there are other clinical practices, not well-endowed with public funds, that are effective clinically and result in significant improvements in client well-being. A concerted emphasis on a client-centred approach to outcomes research has the potential to inform decision makers about these outcome discrepancies, thereby providing opportunities to redirect scarce resources (Epstein, 1990).

However, outcomes research requires outcome measurement. Without such measures, the impact of clinical practices on clients cannot be evaluated, the determinants of client satisfaction cannot be ascertained, and the cost-effectiveness of alternative health care programs cannot be computed. While the development of outcome measures is a prerequisite for outcomes research, a successful program of outcomes research requires the availability (or the development) of accurate, valid, and reliable outcome measures. Once significant efforts have been devoted to these measurement issues, the potential for outcomes research to influence health policy is greatly enhanced.

Valid and reliable information obtained through outcomes research may be used to redirect scarce resources towards clients who benefit most from intervention, the discriminative (or the targeting) goal of outcomes research. Furthermore, because this research program provides an important input to the evaluation of clinical practices within Speech-Language Pathology and Audiology, it provides a mechanism to reconfigure these practices to ensure that the services received by clients are delivered in a cost-effective manner, the evaluative goal of outcomes research. When clinicians have been entrusted with scarce societal resources, it is incumbent on them (both financially and ethically) to be informed about the effectiveness of alternative intervention strategies.

As discussed above, there are various concepts that may be addressed through outcomes research. If the measurement problems affect each concept equally, then each fits into a three-layered hierarchy of outcomes. The most general outcomes are those associated with client well-being. These outcomes estimate the ultimate consequences of communication impairment or disability on the normal activities of clients. At an intermediate level is the concept of communication disability or communication performance, which addresses the impact of impairment on communication activities. This intermediate outcome depends on impairment, communication strategies, and various personality traits. While estimates of communication disability may be correlated with client well-being, these measures are unlikely to be the sole determinants of well-being. Furthermore, while estimates of communication impairment may be correlated with estimates of disability, this relationship is less than perfect because other factors modify the degree of disability.

Conclusion

While some progress has been made towards outcome measurement in audiology and speech-language pathology, in general, and client-centred measures, in particular, room exists for further work. In this respect, speech-language pathology and audiology are no different than other areas of clinical practice. Outcomes research has the potential to improve the utilization of scarce societal resources by altering resource allocations and funding mechanisms for health services. Because conclusions drawn from such research have the potential to impact significantly the provision of an array of health care services, outcomes research is sometimes viewed as a threat to professional autonomy. Given this perception, it is incumbent upon both outcome researchers and clinicians to join forces to evaluate clinical practices so that the conclusions so derived reflect informed judgements. In this way, there is the potential to safeguard professional autonomy and effect significant beneficial change in patterns of practice.

A conceptual framework has been presented for the evaluation of clinical practice in speech-language pathology and audiology. The framework overlays the processes of clinical practice with the WHO's classification scheme of impairment, disability, and handicap. This integration provides potential for various types of outcomes research within the general area of communication disorders. Within this framework, the contribution of clinical practice to be measured, how such practices might best be measured, and which aspects of the clinical practice processes are to be studied, depends on which WHO concept is of primary concern to those conducting the outcomes research.

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Endnotes

[1] Health policy changes are cost-effective if health costs are reduced without decreasing health outcomes or if outcomes are enhanced without additional expenditures. If, however, health policies lower both costs and outcomes, then such change is efficient to implement if, and only if, society's willingness-to-pay for these incremental outcomes exceeds the associated costs.

[2] While providers may act as agents for their clients, this agency relationship is unlikely to be perfect. To attain optimal outcomes for clients, providers would need to know their clients' preferences and would have to act upon these preferences. It is hard to conceive a situation in which providers would be in such a position, even if we were to suspend belief regarding the incentives faced by providers' to act in their own self-interest.

[3] While a utilitarian approach to the allocation of resources generally ignores the associated distributional consequences, opportunities to compensate those who are adversely affected occurs when the total benefits of a given change exceed the total costs.

[4] While outcomes research measures the results of clinical practice, these evaluations might focus on those therapeutic outcomes that are of little value to the client. This occurs if the outcomes bear little relevance to real-life situations or if they are irrelevant to the client's lifestyle (Berger & Hasberg, 1982; Haggard et al., 1981; Oja & Schow, 1984). As such, there is merit in a distinction between outcomes research, in general, and a client-centred approach in which the client's preferences for various outcomes are elicited and in which the weight attached to each outcome is based on its significance to the well-being of the client.

[5] In speech-language pathology, Shriberg & Kwiatkowski (1980a, b, & c) discuss the reliability of treatment measures for clients with phonologic disorders.

[6] The CPHI is a self-report inventory for the hearing impaired. It provides a detailed picture of a client's communication problems as well as assessing various psychological aspects of hearing disorders which are important to the alleviation of disability.

[7] Demorest & Walden (1984) report results of an extensive analysis of the psychometric and statistical properties of the CPHI.

[8] Of course, utility assessment is one of many different techniques for the assessment of client well-being or quality of life (see Cleary et al. (1991) for a discussion of several alternative constructs). Elsewhere, Cleary & McNeil (1988) discuss the use of client satisfaction as an outcome measure. Mulrow et al. (1990) use two self-report instruments to measure quality of life for hearing impaired clients over 65 years.