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A geographical workforce analysis of hand therapy services in relation to US population characteristics

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ABSTRACT

Introduction: A paucity of work force planning literature exists for hand therapy services.
Purpose: This descriptive study aimed to map the geographical distribution of US Certified Hand Therapists (CHT) and describe characteristics of US populations living in respective CHT workplace areas.
Methods: A de-identified Zip Code list of all active CHTs through April 2016 from the Hand Therapy Certification Commission, included 5572 CHTs with US Census Zip Code Tabulation Areas (ZCTA). The CHT ZCTAs were matched with population parameters "rurality", "poverty" and "race and ethnicity" from the 2010 US Census and 2014 American Community Survey.
Results: The 5,572 CHTs practice areas mostly overlapped with high density US population areas, covering just 9% of the total number of 33,120 US ZCTAs. The population in CHT ZCTAs was (1) urban in nature, (2) with lower poverty rates than ZCTAs without CHTs, and (3) mostly reflecting US race and ethnicity population distribution, despite a slightly higher percent of whites and Asians. Only 3.7% of CHTs worked in large concentrations, 11 to 26 CHTs per ZCTA near or in urban centers. Most CHTs, 67%, worked in one to three CHTs per ZCTA concentrations, contributing to a larger geographic spread of CHT locations than expected.
Discussion and Conclusion: This study provides a foundational snap shot of the distribution, the potential availability, of the 2016 CHT workforce in the context of US population characteristics. It may serve as baseline for supply and demand studies and interventions to increase CHT presence to optimally meet population needs.

Introduction

A dearth of information presently exists in the work force planning literature pertaining to hand therapy services. It is therefore unclear how accessible hand therapy services are to the population of the United States. Health care access is a multidimensional concept that addresses whether services are available for those who need them.[1-3] Inequities in medical access to needed services continue to be reported in the literature, and demographic factors such as race/ethnicity, age, poverty level, and extent of residential rurality/urbanization have been associated with disparities in health care access.[4-6] Promoting equity in access to comprehensive, quality health care services, including hand therapy services, to those who need them, continues to be a major goal defined under the United States Healthy People 2020 initiative.[4]

Dimensions of access to health care

Analyzing accessibility of health care services is a complex process because of the multifactorial and multidimensional nature of the concept of access. Various frameworks have been developed to analyze barriers to accessing health care. A recent framework developed by Levesque, Harris, and Russell[3] delineates work force supply and patient demand aspects and describes 5 dimensions of access to health care. The 5 dimensions include availability, approachability, acceptability, accommodation, affordability, and appropriateness of health care services.

Analyzing health services access requires understanding of the characteristics of the health care system (supply aspects of access) and the individuals, households, communities, and populations

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(demand aspects of access) who need the health services.[2,4,7] Characteristics of the health care system (supply) include analysis of the health care providers, organizations, services delivered, and processes of service delivery. The supply and demand aspects of access are analyzed within the context of relevant health policies and other possible influencing factors. Inherent in the definition of supply is not only the presence of practitioners but also availability of services to be supplied. Analysis of supply seeks to understand whether the services exist and if they exist in sufficient capacity to deliver the services needed (density, concentration, or distribution of the services) and that they can be reached in a timely manner.[2,3,8] Finally, availability of health care services influences service utilization and an individual's perception of their health care experience.[9] The current level of hand therapist availability in the United States has not been investigated limiting the conduct of studies aimed at optimizing hand therapy service delivery. This paucity in literature limits exploring demand trends and estimation of population changes and limits the opportunity to study outcomes of educational and recruitment efforts to enhance the equity of access to the profession.

Workforce development planning

The problem of health care workforce/resource planning has been described "as assessing the right number of people with the right skills in the right place at the right time, to provide the right services to the right people."[8] As a specialization, the number of available Certified Hand Therapists (CHT) is a limited human resource; therefore, an understanding of the distribution of CHT services is critical to facilitate optimal distribution of this expertise in serving populations in need. Health care workforce/resource planning commonly starts with a snapshot describing the available health care workforce (supply) and matching the supply with the demand for the services offered by that workforce.[8] Various research methodologies are used to determine health care workforce supply and demand. These methodologies include the "stock-and-flow" methodology that examines increase/decrease of currently available human resources in light of contextual factors such as retirement, death, migration, and trends in training of those entering the workforce.[8-11] This type of research encompasses the multidisciplinary field of health services research, a field concerned with examining accessibility of health care services and the effectiveness and efficiency of health service delivery,[11,12] as well as acceptability and utilization by the population for which the care is intended.[3]

Workforce planning studies for occupational therapy and physical therapy

Limited health services research is available for the field of hand therapy or hand surgery. In contrast, workforce projection studies are available for the hand therapists' parent organizations, physical therapy (PT) and occupational therapy (OT).[13-16] Such projections studies are valuable in providing data on the potential pool of therapists from which hand therapists are drawn. Current OT and PT work force projections show similarities but also differences in long-term projections that may impact the availability of a PT and OT therapist pool in the long run.

According to the American Occupational Therapy Association (AOTA), there were approximately 137,000 active OT practitioners (approximately 102,500 OTs and 34,500 OT assistants) in 2010.[15] The American Physical Therapy Association (APTA) reports that there were 204,000 physical therapists licensed in the United States in 2016.[17] Based on US population projections obtained from the US Census Bureau, Zimbelman et al[16] projected higher demand than supply for PTs in all 50 continental US states through the year 2030. Landry et al[13] also analyzed PT workforce trends in the United States, using a supply and demand model of gains/losses in the workforce and population demands based on the US Census projections. They reported a mixed forecast of nationwide 2020 PT workforce estimates, ranging from a shortage of 40,934 full-time equivalents assuming an estimated 3.5% attrition rate and 2012 supply data, to a surplus of 1530 PTs in 2020 based on a 1.5% attrition rate and 2013 supply data. For OTs, results similar to the findings by Zimmerman et al[16] were reported: a projection of increased demand over supply through 2030.[15]

The National Center for Health Workforce Analysis, part of the US Health Resources and Services Administration,[18] includes supply modeling incorporating labor market characteristics such as attrition and the addition of newly trained persons into the occupation. For demand modeling, population demographics, health care use patterns (including the influence of applicable health policies such as the Affordable Care Act of 2010), and demand for health care services (translated into requirements such as full-time equivalents) are included. The National Center for Health Workforce Analysis supports growth estimates for both the PT and OT professions, highlighting a demand that is estimated to exceed the supply.[18] The analysis reported that the supply of the 2012 work force of 86,300 OTs and 191,600 PTs is estimated to grow by 46% for OTs and 33% for PTs between 2012 and 2025. The demand for OTs is projected to grow by 20% and demand for PTs is projected to grow by 23%. The report concludes that long-term projected growth in supply exceeds the projected growth in demand for services for both OTs and PTs. Therefore, it suggests that the United States should have a more than sufficient supply of OTs and PTs to meet the projected growth in demand for services by 2025. These trends reported by PT and OT organizations, and government sources, show a mixed picture of surplus and shortages in the therapist pools from which the hand therapy profession draws for certification. Based on the various projections, a sufficient supply of OT and PT pool of practitioners is present for the near future, but the long term demand for OTs and PTs is also not so high that it would diminish the incentives for specialization.

Hand therapy as a specialty: Needing its own workforce analysis

Currently, CHT practitioner workforce projections are not visible within the projections for the OT and PT parent organizations in national government work force estimations. PTs and OTs from the US and abroad who specialize in hand therapy may obtain certification as hand therapists through the credentialing process of the Hand Therapy Certification Commission (HTCC).[19] To be certified as a hand therapist requires 3 years of practice as a general practitioner, 4000 hours of practice in hand and upper limb rehabilitation, evidence of HTCC accepted continuing education in hand and upper limb rehabilitation, and passing of a standardized examination coordinated by the HTCC.[19] Only a small proportion, approximately 2% of eligible OTs and PTs out of a combined PT/OT workforce exceeding 300,000,[15,16] selects the path of focused learning and examination to become CHTs. It is not known if OT and PT workforce projections are valid for this small specialized workforce of CHTs. Therefore, a full "stock-and-flow" analysis is needed for hand therapy in addition to the ones available for PT and OT to ensure that the supply of CHT practitioners meets the demands for hand therapy services in a changing society.

Projections for demand for hand therapy services

Projections for the CHT workforce may vary from the OT and PT workforce projections. Increased demand for PTs and OTs has been