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Accessible Medical Equipment for Patients with Disabilities in Primary Care Clinics: Why is it Lacking?

Abstract

Background: Previous research has identified inaccessible medical equipment as a barrier to health care services encountered by people with disabilities. However, no research has been conducted to understand why medical practices lack accessible equipment.

Objectives/Hypothesis: The purpose of this study was to examine practice administrators' knowledge of accessible medical equipment and cost of accessible medical equipment to understand why medical practices lack such equipment. Hypotheses were: 1) Practice administrators lacked knowledge about accessible medical equipment and 2) The cost of accessible medical equipment was too great compared to standard equipment for the clinic.

Methods: This study was a mixed methods survey of primary care practice administrators. The sixty-three participants were members of a medical management organization. Data were collected between December 20, 2011 and January 17, 2012. Proportions, Guttman scalogram, and Spearman's Rho correlation analyses were utilized.

Results: For this sample, less than half of the administrators knew *that* accessible equipment existed and a fourth knew *what* accessible equipment existed. There was a significant ($p < 0.01$), positive correlation between knowledge of accessible equipment and pieces of accessible equipment in the clinics. Because less than half of the administrators had ever considered purchasing accessible equipment, it was inconclusive if cost of accessible equipment was too great.

Conclusion: Practice administrators' lack of knowledge of accessible medical equipment emphasizes the need not only for more education about the availability of accessible equipment but also about the importance of accessible equipment for their patients with disabilities and for physicians who provide them care.

Introduction

Previous research has identified barriers in the built environment that impede access to health care for people with disabilities. This is a public health concern due to the growing number of people with disabilities in the United States. According to the US Census report for 2000, about 49.7 million Americans reported some form of disability with 21.2 million having a physical disability ¹. In 2005, the US Census Bureau estimated that 54.4 million people in the United States had some form of disability, an increase of 4.7 million in five years. Of the 54.4 million, 34.9 million had a severe disability, 3.3 million used a wheelchair and 10.2 million used a cane, crutches or walker ². Between 2009 and 2010, there was a 0.5% increase in the number of non-institutionalized adults in the US reporting a disability ³. It is estimated that the number of Americans reporting a disability will continue to increase due to the increasing age of the American population, the increasing number of people with diabetes in America and an increase in the number of military veterans with disabilities ⁴⁻⁸.

As the number of people with disabilities in the US increases, it is important to ensure that this population has adequate access to health care. However, qualitative studies of people with disabilities have identified inaccessible medical equipment as a major barrier to health care services ⁹⁻¹⁷. Inaccessible medical equipment includes: exam tables that do not lower to the height of a wheelchair, scales that cannot accommodate a wheelchair, stirrups and examining instruments not designed for women with lower extremity disabilities, mammography machines that are physically inaccessible and diagnostic equipment that cannot be accessed by patients with physical disabilities ⁹⁻¹⁵.

Inaccessible equipment compromises patient and health care worker safety as well as the quality of care that can be delivered ^{17,18}. Diagnoses of disease may be delayed and/or treatment

may be inadequate for patients with disabilities due to the inaccessibility diagnostic equipment. Patients have been injured by health care workers who were not trained in proper lifting techniques or from falling off examine tables that were too high¹⁸. Back injuries are common among health care workers and are caused mainly from transferring patients. A study by Hart found that thirty-eight percent of nurses and forty-two percent of radiology technicians had experienced an injury due to moving, lifting or repositioning a patient in a two year time period¹⁹. Lastly, women with disabilities are less likely to receive a breast exam, mammogram or Papanicolaou test compared to women without disabilities and people with disabilities are less likely to have their teeth cleaned in part due to the absence of accessible medical equipment²⁰⁻³².

To date, no study has been conducted to identify why equipment barriers exist. Becker et al. suggested that future research is needed to understand why medical practices do not use accessible equipment that is currently available¹². Are practice administrators unaware of accessible equipment or is it too costly compared to standard equipment?¹². Additionally, new objectives have been added to Healthy People 2020, one of which is to reduce the number of people with disabilities reporting delays in receiving preventive and primary care due to specific barriers^{33,34}. An understanding of why equipment barriers exist in medical facilities is fundamental to developing strategies to eliminate these barriers and improve access to health care for people with disabilities.

The purpose of this study was to examine primary care practice administrators' knowledge of accessible medical equipment availability and cost to understand why medical practices lack medical equipment accessible to people with disabilities. The research question for this study was: why do equipment barriers exist that limit access to health care for people with disabilities? Hypotheses were: 1) Practice administrators lacked knowledge about

accessible equipment and 2) The cost of accessible equipment was too great compared to standard equipment. Additionally, this study sought to determine if the federal tax credit available to purchase accessible medical equipment was sufficient to offset the cost of accessible equipment.

Methods

A convergent mixed methods research design was employed. This design allowed for qualitative and quantitative data to be collected simultaneously, analyzed separately and then merged for further analyses to produce a more complete understanding of the phenomenon³⁵. A convenience sample of primary care practice administrators was the sample selected for this study. Primary care practices were chosen for this study because health maintenance and preventative care traditionally have been within the scope of care among primary care physicians³⁶. General practice clinics, family practice clinics, internal medicine and obstetrics / gynecology clinics were considered as primary care for this study. Practice administrators / health care administrators were selected for this study because their position typically has oversight of the budget, equipment purchasing, facility operations and patient flow³⁷.

Instrument

The survey used for this study was developed using Americans with Disabilities Act (ADA) construction guidelines, the ADA's *Access to Medical Care for Individuals with Mobility Disabilities*, the Adaptive Environment Center's *Checklist for Existing Facilities*, and published literature^{36,38-43}. The survey included demographic questions and questions regarding 1) accessible equipment in each clinic, 2) the administrator's knowledge of accessible equipment and 3) questions about the cost of accessible equipment. Accessible equipment questions were based on recommended equipment in the ADA's *Access to Medical Care for Individuals with Mobility Disabilities*⁴³. Administrators were asked if the clinic had the following pieces of accessible equipment: a height adjustable exam table, a scale that could accommodate a wheelchair, a height adjustable mammography machine (if mammograms were performed in

their clinic) and padded leg supports for a gynecological exams (if gynecological exams were performed in their clinic).

Four questions were asked to ascertain the administrator's knowledge of accessible equipment. In addition, practice administrators were asked seven questions regarding the cost of accessible equipment. Survey questions are provided in Table 1 and include both close-ended and open-ended questions. The questions were designed to be hierarchical in nature and to be analyzed using a Guttman scalogram analysis. A Guttman scalogram analysis is a method used to organize responses by order of degree in which a single, hierarchical pattern is achieved⁴⁴. The Guttman scale is useful when the researcher has two questions regarding the pattern of responses: (1) if a participant (i.e. practice administrator) exhibits some trait, then does that participant have other specific traits as well? and (2) is there a particular *order* in which these traits accumulate?⁴⁵. A Guttman scale's hierarchical ranking is considered to be valid if the coefficient of reproducibility (CR) is equal to or greater than 0.90 and if the coefficient of scalability (CS) is equal to or greater than 0.60. This is important since a valid Guttman scale legitimizes the use of a summed score for further analyses⁴⁶.

Participants

Primary care practice administrators from a medical management organization were identified through the organization's website. Practice administrators who self-identified as primary care administrators were contacted through the website's e-group communication portal. The e-group communication portal allowed for a message to be sent to each administrator's communication page inviting him/her to participate in an on-line survey. To view the request, the administrator needed to login to the organization's website, go to their personal

communications portal and click on the message link. In total, 1,637 practice administrators were sent a message through the e-group communication system on three separate dates between December 20, 2011 and January 17, 2012. Eighty-six administrators initiated the survey through the survey link. Of those who initiated the survey, sixty-three completed the survey for a completion rate of 73.3%. The number of administrators who viewed the message and refused to participate or the number of administrators who did not view the message (non-contact) could not be determined because the system did not allow this to be tracked. Because of this, it was not possible to calculate an accurate contact, cooperation or response rate; however, it is acknowledged that the response rate was low.

Protection of Human Subjects

Non-compliance with ADA standards can result in law suits, fines or penalties⁴³. Because of this, IRB approval was obtained prior to data collection. To ensure confidentiality, signed informed consents were not collected as they would have been the only link between the practice administrator and his/her response. Practice administrators were asked to read the on-line consent form. They were told that agreeing to continue with the survey constituted consent to participate in the study. To ensure anonymity, no identifying information was collected (i.e. name, practice name or location). Results of the survey were not returned to the practice administrators due to the sensitive nature.

Data Collection

After agreeing to participate, practice administrators completed an on-line survey. Qualtrics was utilized to produce the survey. The survey was programmed with a skipping

pattern to ensure that administrators were not asked irrelevant questions. The data from the on-line survey automatically populated into the data base, which promoted scientific and technical rigor by eliminating a data entry step and minimizing data processing errors. Administrators were instructed to type their responses to open-ended questions in text boxes provided in the survey.

Data Analysis

Answers to qualitative questions were analyzed for major themes. Themes were grouped into categories. Categories and answers to close-ended questions were merged for further analyses.

Descriptive statistics were computed for the group. Proportions of accessible equipment were calculated. Proportions of affirmative answers to knowledge of accessible equipment questions and cost of accessible equipment questions were calculated. Knowledge of accessible equipment answers and costs answers were placed in a rank order (hierarchical scale) based on positive responses and entered into AnthroPac software. The AnthroPac software was used to produce a Guttman Scale, a coefficient of reproducibility (CR) and a coefficient of scalability (CS). A Spearman's Rho correlation of number of pieces of accessible equipment and knowledge of accessible equipment was calculated using SPSS 18.

Results

Qualitative Results

Administrators were asked four qualitative questions. Answers to these questions were analyzed for major themes and categorized. Table 2 provides each question along with major themes and sample responses.

Descriptive Statistics

Descriptive data for the practice administrators and practices are provided in Table 3. The mean age of the administrators surveyed was 49.6 and the average number of years as an administrator was 14.9 years. The majority of the administrators were female (69.8%). Most administrators had either a Bachelor's or a Master's degree (34.9% and 47.6%, respectively). Practices had been in operation an average of 27 years. A majority of the practices were OB/GYN (47.6%) focused.

Accessible Equipment

None of the practice administrators reported that mammograms were performed in their clinics so this item was not included in further analyses. Ninety-one percent of the administrators reported having a height adjustable exam table. In practices where gynecological exams were performed, 55.2% reported having padded leg supports for patients with low extremity disabilities. Only 9.5% of the administrators reported having a platform scale that could accommodate a wheelchair.

Knowledge of Accessible Equipment

Four questions were asked to evaluate the administrators' knowledge of accessible equipment that is available for medical practices (Table 4). Less than half (46%) of the administrators knew *that* accessible equipment existed and only 25.4% could describe *what* accessible equipment existed. Twenty-two percent of the administrators knew of the federal tax credit to offset the cost of accessible equipment. Forty-one percent of the administrators had considered purchasing accessible equipment.

A valid Guttman scale was constructed using all four accessible equipment knowledge variables (Table 5). Variables were entered into Anthropac in the same order as found in Table 2. Statistical results for the Guttman scales were: CR = 0.92, CS = 0.76. Spearman's Rho correlation was used to determine if the amount of accessible equipment was correlated with the knowledge of accessible equipment. Spearman's Rho was used because accessible equipment knowledge was not normally distributed. There was a significant positive correlation between the Guttman Score for knowledge of accessible equipment and the amount of accessible equipment in the practice ($R = 0.33, p < 0.01$). The hypothesis regarding a lack of knowledge of accessible equipment as a reason for a lack of equipment was supported by these findings.

Cost of Accessible Equipment

Practice administrators were asked seven questions to determine if the cost of accessible equipment was a barrier to purchasing accessible equipment (Table 6). Less than half (39.7%) of the administrators had ever considered purchasing accessible equipment while only 33% considered the number of patients with disabilities sufficient to justify the cost of accessible equipment. Thirty-one percent of the practices had purchased accessible equipment and 22.2% of the administrators knew about the federal tax credit to offset the cost of the equipment. Only

two administrators had inquired about the tax credit to offset the cost, and one practice was eligible for the tax credit; however, they did not purchase the equipment even with the tax credit because the cost was too great. Because less than half of the administrators had ever considered purchasing accessible equipment, the hypothesis that cost was a barrier to purchasing equipment was inconclusive. Additionally, because only two of the administrators had inquired about the federal tax credit, it is not possible to determine if the federal tax credit amount is sufficient to offset the cost of accessible equipment.

Sixty-seven percent of the administrators reported that the number of patients in their practices was not sufficient to justify purchasing accessible equipment. Administrators whose response was 'no' were asked to explain their response. The main themes which emerged from this question were that their practice had a very low number of patients with disabilities or that the cost was too great.

Discussion

The most important finding from this study was the practice administrators' lack of knowledge about accessible equipment. Less than half of the administrators in this study knew *that* accessible equipment existed for medical practices. One fourth of the administrators could describe *what* accessible equipment was available for their practice or knew there was a federal tax credit to offset the cost of accessible equipment. The correlation test showed that there was a significant, positive correlation between the administrators' knowledge of the accessible equipment and the number of pieces of accessible equipment in their practices.

In qualitative studies focused on people with disabilities, a consistent barrier to health care services identified by participants was inaccessible equipment^{9-12,15}. Not being able to transfer onto an exam table, to be weighed or have diagnostic testing are primary reasons why important parts of an examination are skipped or why patients with disabilities stop seeking preventative care¹⁵. Practice administrators' low level of awareness about accessible medical equipment emphasizes the need for not only more education about the availability of accessible equipment for medical practices but also the importance of accessible equipment for their patients with disabilities and for their physicians who provide care to those patients.

To increase awareness of accessible medical equipment and to help with the understanding of the importance of accessible equipment for patients and providers, The U.S Department of Justice released *Access to Medical Care for Individuals with Mobility Disabilities* in 2010. The document is available on the ADA website (www.ada.gov) and provides detailed information about accessible equipment that is available for medical practices as well as information about the tax credit to offset the cost of accessible equipment. . Additionally, this

document highlights some of the legal requirements for making medical practices accessible.

For example, purchasing an adjustable exam table or platform scales would be considered to be a 'reasonable modification' required under the ADA⁴³.

Findings from this study may also illustrate the complexity of the ADA. Title II and Title III require that patients with disabilities have full and equal access to health care facilities and services⁴³. The ADA's *Accessibility Guidelines for Buildings and Facilities*, provide clear-cut guidelines for building construction and renovation. For example, doors must be 32" or wider, halls must be 36" or wider, or the maximum slope of a ramp is 1":12"³⁸. Equal access to services might be a more difficult concept to understand. Health care administrators who have little or no disability knowledge may not be aware of how profoundly access barriers compromise the quality of care that is provided for people with disabilities in their practice^{17,47}. Title II and Title III of the ADA do not explicitly state that a medical practice must have an accessible exam table, scales or diagnostic equipment. However, when litigation has been brought against health care organizations because of a lack of accessible equipment, often the resulting settlements have required the organizations to purchase accessible equipment^{18,48-51}.

Practice administrators' lack of knowledge regarding accessible equipment is concerning but not surprising. Few educational programs exist that provide disability education for health care administrators or health professionals^{16,17,52-55}. This leaves practice administrators and other health professionals with limited knowledge about how to best accommodate their patients with disabilities^{47,56}. The void in disability education also results in a lack of awareness regarding the issues that patients with disabilities experience when they encounter inaccessible equipment. Without education to create awareness of the challenges faced by patients with disabilities and a determination to improve access, equipment barriers will continue to exist.

Fortunately, the Patient Protection and Affordable Care Act (PPACA) may help change the trajectory of current health professional's education. Title V, Section 5307, *Cultural Competency, Prevention, and Public Health and Individuals with Disabilities Training* includes grant funding for:

the development, evaluation and dissemination of research, demonstration projects, and model curricula for cultural competency, prevention, public health proficiency, reducing health disparities, and aptitude for working with individuals with disabilities, training for use in health professions schools and continuing education programs ⁵⁷.

Dissemination of disability curricula to schools that offer health care administration or other health professional degrees and continuing education programs for health care administrators may be key to reducing barriers to health care and eliminating health disparities among patients with disabilities.

This study also sought to determine if the federal tax credit was sufficient to offset the cost of modifying a practice to be ADA compliant. Practice administrators' lack of knowledge about the federal tax credit shows that information about the tax credit has been inadequately disseminated among this group. The federal tax credit exists to defray some of the cost of ADA compliance for small practices ⁴³. Medical practices with less than thirty full-time employees or less than one million dollars in gross receipts are eligible for a tax credit for half of expenditures over \$250.00 but not to exceed a maximum credit of \$5,000.00 (58). For example, if a practice made \$10,000.00 in modifications, it may be eligible for a tax credit of \$4,750.00. Eligible expenditures include barrier removal or purchase of accessible equipment ⁵⁸. Because only two

administrators had inquired about the federal tax credit, we could not determine if the tax credit was sufficient.

Administrators were asked if the number of patients with disabilities in their practices was sufficient to justify bringing their practice into compliance with the ADA if their practice was not already compliant. Administrators whose response was 'no' were asked to explain. The main themes which emerged from this question were that their practice had a very low number of patients with disabilities or that the cost was too great. Title II and Title III of the ADA require that public and private health care facilities offer full and equal access to their health care services and facilities⁴³. This law is not based on the number of patients with disabilities in a practice but is a requirement if the practice has any patient with a disability. Additionally, Section 504 of the Rehabilitation Act prohibits any organization that receives federal funding from denying services to people with disabilities⁴³. Any health care organization that has one or more patients with disabilities and receives funding from Medicare, Medicaid or other federal funding sources must provide full and equal access to their services⁴³. When the administrators stated that there were not enough patients with disabilities to justify bringing their practice into compliance, they illustrated their lack of knowledge regarding ADA legal requirements for compliance.

Based on the qualitative portion of this study, the second theme to emerge was cost. One administrator explained that it was "*More economical to lose the patient than spend the money*" (*Respondent 12*) to bring his/her office into compliance with the ADA. This response demonstrated the administrator's lack of awareness about his legal obligation to provide access to services required by the ADA as well as his attitude about patients with disabilities. When patients with disabilities encounter barriers to care, they experience feelings of anger, frustration,

fear, overwhelm and embarrassment¹⁵. They are also more likely to forgo necessary medical care when a barrier is encountered¹⁵. However, the feelings and experiences of patients with disabilities seem to be out of the consciousness of some practice administrators. This theme illustrates how decisions about accessible equipment are sometimes based on economics or business decisions rather than quality of patient care or legal obligation.

This study is not without limitations. Studies with low response rates are susceptible to self-selection bias⁵⁹. Previous studies concerning medical office accessibility have also encountered low response rates and the researchers have posited that administrators of practices not in compliance with the ADA refuse to participate due to concerns of repercussions for being non-compliant⁴⁰⁻⁴². Although the reason for refusal was not specifically tracked in this study, it is possible that administrators who knew that their practice was non-compliant self-selected out of participation. This could have biased the results by overestimating the pieces of equipment found in primary care clinics. Additionally, administrators might not have participated due to a lack of time or because they had not viewed the invitation to participate. There was also a possibility of bias resulting from self reported information. The participants may have under or over reported information if they perceived the response to be socially desirable⁶⁰.

Even though the sample size for mixed methods research tends to be lower than purely quantitative research, the sample size for this study was relatively low for the quantitative analysis portion of the study³⁵. Because a small number of administrators completed the survey, this study was not representative of practice administrators in general. However, this study does begin to provide some understanding about the relationship between practice administrators' knowledge of accessible equipment and the availability of accessible equipment in their practice.

Because there were limited qualitative responses, the qualitative answers are not transferable to practice administrators in general.

Additionally, the current study only focused on primary care. Thus, results cannot be generalized to specialty practices. The current study only included practice administrators. Clinical staff, such as nurses or physicians, may have had better insight into the accessibility of the clinic than the practice administrator as they have direct patient contact⁴².

Despite potential limitations, this study adds to our understanding of why medical practices lack accessible equipment that is available to them. A lack of awareness of accessible medical equipment appears to reduce the likelihood of having accessible equipment. However, it was not possible to determine if cost was a barrier in this study because few administrators had ever inquired about the cost of purchasing accessible equipment. More research is needed in this area. Additionally, few practice managers knew about the federal tax credit to offset the cost of accessible equipment. Because of this, it was inconclusive if the federal tax credit amount is sufficient to offset the cost. As a result, more research is needed in this area. Increasing practice administrators' knowledge of accessible medical equipment may be an important first step in removing this barrier to health care. Readily available accessible equipment will allow patients with disabilities to fully engage in all preventative services offered by their primary care physicians. This could lessen both the unmet health care needs experienced by patients with disabilities and the resulting health disparities among this group.

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