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Perspective

Horticultural Therapy: An Effective Yet Underutilized Rehabilitation Therapy

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ABSTRACT

The purpose of this paper is to analyze utilization rates and barriers of horticultural therapy while highlighting several of its efficacious applications. Horticultural therapy provides therapeutic opportunities to patients of varying diagnoses such as dementia, schizophrenia, depression, and other mental illnesses, yet is seemingly underutilized. Using telephone surveys, we analyzed the utilization of horticultural therapy in large medical institutions of the Northeast Ohio region, the remainder of Ohio, and portions of Western Pennsylvania. Nineteen out of twenty-four responding relevant medical institutions do not offer horticultural based therapeutic programs. These same institutions proclaim they are unable to provide the therapy due to inadequate financial remuneration and resources, inclement weather, and unfamiliarity towards horticultural therapy. Continued and more aggressive advocacy is imperative to achieve proper resourcing and remuneration of horticultural therapy as an essential health benefit through the Affordable Care Act (ACA).

Keywords: Rehabilitation; Horticulture; Mental illness; Cardiopulmonary

INTRODUCTION

Horticultural therapy, as defined by the American Horticultural Therapy Association (AHTA) is "...a process of utilizing plants and horticultural activities to improve social, educational, psychological, and physical adjustments of persons thus improving their body, mind and spirit [1]." Usage of this category of healing dates back to 2000 BC Mesopotamians combining therapeutic acreage in agricultural fields. They employed plants and gardening activities to calm the senses by combining beauty, fragrance, and nature [2]. The Persians were noted to engage in similar therapy at approximately 500 BC. In more recent practices, Dr. Benjamin Rush, a signer of the Declaration of Independence, and considered to be the "father of psychiatry and psychiatric care", recognized the advantageous psychological effects of simple gardening. He advocated for gradual rehabilitative modality. Further exploration of horticultural therapy garnered interest in the 1940s when horticultural therapy was utilized for hospitalized war veterans in the United States, as illustrated by the American Horticultural Therapy Association [1]. Other undocumented practices surely hold place in the past as well. The foundation of horticultural therapy stems largely from Native American practice of farming, agriculture, and herbal medicine. The mainstay of treatment aims largely for neuropsychological gain, however, physical improvement regarding individual's coordination, core strength, endurance, and balance is plausible [3].

However, not all gardening is horticultural therapy. To be effective as a therapy, the gardening activities must be incorporated with a therapeutic plan. This plan is most effective when supervised with a horticultural therapist combined with active participation. This is similar to the advantage of having a physical therapist with therapeutic exercise.

As stated above, horticultural therapy in the proper setting may prove effective for those suffering from illness or injury, socioeconomic stressors, and psychological as well as developmental disorders. Therapeutic benefits have been identified in several neuropsychological disorders that include dementia, schizophrenia, and depression; but usage is not limited to purely neuropsychological disorders as cardiopulmonary rehabilitation benefits have also been established.

APPLICATIONS

Dementia

Horticultural therapy has been most applied in the setting of dementia patients. A literature review concerning horticultural

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therapy use in dementia care identified three main tenets of effective treatment: emotional health, self-identity, and engagement. Emotional health improvement correlated most commonly with anxiety and agitation, followed by depression reduction assessed through depression scores, personal interviewing, and behavioral observation. Outdoor horticultural activities were observed to have positive effects on self-identity with promotion of independence and completing tasks for self-purpose. The social aspect of this form of therapy increases social interaction and communication [4]. Aside from physical components, these forms of interactions may appeal to older populations as there is a large neurosensory component, or rather a technique of reminiscing of the past and fruitful activities [5]. Other reviews demonstrate efficacy in improving mental health and/or behavioral decline in elderly Alzheimer's dementia patients as a non-pharmacological treatment [6,7]. Horticultural therapy in conjunction with art therapy in dementia patients also presents a therapeutic mechanism, where therapy in the form of art coupled with natural environmental sensations may increase creativity and provide an incentive for individuals to go outdoors [8]. Both are natural remedies that contain therapeutic components which may facilitate their association. Art therapy by itself has exhibited positive results, yet is also seemingly underutilized [9].

Neuropsychological improvement in this setting is most directly linked to increased conversational engagement and increased activities outside the individual's confined indoor space.

Schizophrenia

Evaluation of horticultural therapy, in conjunction with standard care versus standard care alone, was compared in schizophrenia patients in a randomized control trial. Depression Anxiety Stress Scale scores were lessened in the horticultural group compared to control [10]. Another randomized control trial with similar methodology demonstrated improved scoring in clinical psychological assessments and improvement of psychopathological symptoms [11].

Overall, a clinical recommendation cannot be definitively established in this setting as limited studies have been conducted and literature is sparse. However, additional research may help establish this additive therapeutic practice for patients afflicted by schizophrenia.

Depression and anxiety

Clinical depression in adults provided with horticultural therapy for a 12 week duration compared to control treatment resulted in a significant reduction from pretest to posttest valuation of Beck Depression Inventory scoring as well as an increase in Attentional Function Index scoring. Improvements in scoring were directly correlated to involvement of horticultural activities [12]. A three month follow up analysis also produced significant and sustaining results. As noted previously, horticultural therapy has a role in reducing anxiety in dementia patients, as well as elderly patients without dementia, and possibly for middle aged patients with clinical anxiety [4,13,14]. In the hospice setting, a horticultural therapy program comprised of indoor and outdoor activities showed decreased levels of pain, anxiety, depression, and serum cortisol in the experimental group when compared to control group receiving normal treatment regimens [15]. Overall, there exists a useful role for horticultural therapy as adjuvant therapy for clinical depression and hospice patients.

Developmental delay

Horticultural therapy has also been studied as therapeutic for developmentally delayed patients. In a medium secure unit, individuals with a personality disorder and developmental delay reported improvement in stress levels and improved life-satisfaction secondary to their horticultural engagement after 12 weeks [16]. Additional investigations display equally promising results. In a similar study with duration of 12 weeks, participants attested to the horticultural program as "an escape" and reported an overall improvement in wellbeing [17]. Mechanistic proposition is due to environmental interaction, engagement in the design process of the therapeutic garden, and intrinsic motivation with unique tasks. This improvement is also seen in similar patient groups using other lesser known, but effective, rehabilitative therapies such as hippo therapy [18].

Cardiopulmonary

Most research pertaining to horticultural therapy resides in neuropsychological fields, but applications for cardiopulmonary benefits have also been proposed. In a cardiopulmonary inpatient unit, willing subjects participated in a horticultural therapy program while the remaining patients served as the control group receiving standard patient education classes. Primary outcomes were measured applying the Profile of Mood States, total mood disturbance score, and patient heart rate. Significant reductions in heart rate and total mood disturbance scores were noted in the experimental group whereas the control group yielded no significant results [19]. While current literature may point towards improvement for patients with cardiopulmonary disturbances, additional research is needed to further solidify the positive outcomes of horticultural therapy in this patient population.

Many rehabilitative therapies have seen usage rates increase substantially since implementation of the ACA, most likely due in part to the fact that the ACA requires both Medicaid and state-based insurance plans to cover behavioral health services by classifying them as "essential health benefits" [20]. Significant clinical improvement for recovering patients has been established as a result of this increased utilization of therapy programs. A prime example of this fact is the direct increase in addiction treatment resources, such as medication, cognitive behavioral therapy, and other alternative therapies, that was seen in nearly all fifty states after the implementation of the ACA [21]. Stroke incidence and mortality have also declined in the past 10 years, partially due to the improved access of rehabilitative services provided by speech pathologists, physical therapists, and other forms of therapy [22]. Expansions in therapy programs have made it not only possible for the further development of existing traditional programs, but also the emergence of alternative therapies as a means of treatment. The ACA has allowed for the advancement of art therapy programs, which have been shown to fetch positive outcomes in patient

populations similar to those who have been shown to benefit the most from horticultural therapy [23,24]. While improvement of patient outcomes is a clear benefit stemming from horticultural therapy, large medical institutions would also be set to benefit from its implementation. Horticultural therapy programs have been shown to possibly save on costs when compared to traditional therapy programs and can be seen as a relatively inexpensive form of patient care [25].

STUDY INTERESTS AND METHODOLOGY

The primary motivation of this study was to explore the usage of a promising form of therapy that is seemingly underutilized by most medical institutions. Further, interest behind completing this investigation was to examine the use of current rehabilitative services and search for possible advancements of therapy regimens to promote the best outcomes for mental health patients.

In our original research, we look into usage rates amongst large medical institutions in northeast Ohio and nearby surrounding geographical areas. Data collection was personally conducted through telephone interviews with members of the institution's administration; thirty-one institutions in total were contacted. First, interviewees were asked if their institution currently endorses any sort of horticultural therapy program. Institutions were asked about the logistics of their program if they were currently utilizing one. Absence of programs prompted secondary questioning regarding barriers to obtaining a program. Respondents were enabled to provide multiple answers. Next, respondents were asked about their interest in horticultural therapy if given ample resourcing and financial reimbursement. In order to quantify and understand collection data, graphical analysis was employed.

RESULTS

Following completion of data collection, responses were categorized appropriately. After questioning regarding the utilization of a current horticultural therapy program, five respondents answered yes, nineteen respondents answered no, and seven institutions did not respond (Figure 1).

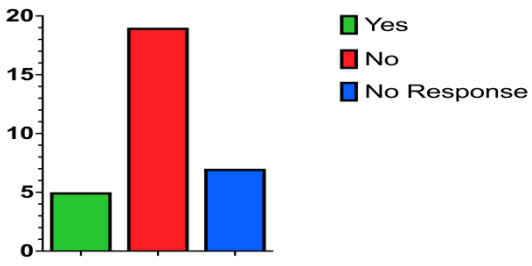

Figure 1: Response rate of surveyed major health institutions regarding utilization of a horticultural therapy program.

When institutions were asked to specify the barriers to horticultural therapy usage, seven respondents stated inclement weather, fourteen stated lack of resources, and six stated unfamiliarity with the practice of horticultural therapy (Figure 2).

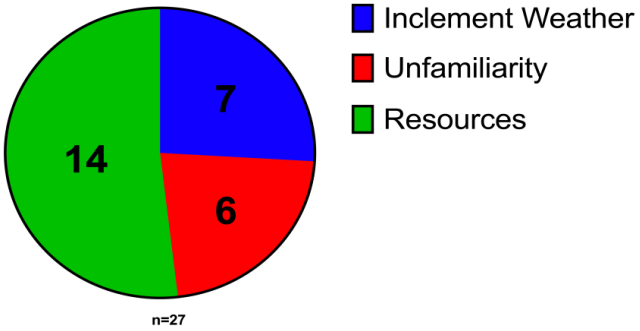

Figure 2: Barriers to implementation of a horticultural therapy program amongst institutions without an established horticultural therapy program.

Regarding the response labeled as "lack of resources", tabulation included three interrelated rationales consisting of inadequate space, cost of establishment, and lack of expertise guidance. Data pertaining to institution interest, if they were supplied with appropriate resources was excluded due to insufficient respondent data.

DISCUSSION

Horticultural therapy is shown to be an effective therapy and treatment for certain subpopulations based on literature review. Evidence shows encouraging results have been amassed in a variety of different settings with significant clinical improvement being achieved. Despite the objective improvement in patient outcomes, our research suggests many institutions have yet to employ horticultural therapy in their own practices. Numerically, the majority of responding medical institutions surveyed do not offer horticultural based therapeutic programs. Lack of adequate resources was most often cited, with specifics of these responses being inadequate space, cost of establishment, and lack of expert guidance as their reasoning behind not offering this rehabilitative and habilitative service. We propose that inclement weather, although its own segmented barrier, in many ways fits under the categorical grouping of resource limitation. Indoor facilities, if properly awarded, would effectively eliminate this inconvenience. Unfamiliarity issues may in part be due to inadequate offering of horticultural therapy program assistance. As this is a lesser known therapy, unfamiliarity may originate from the educational levels as well. In regard to institutional interest, there was difficulty with proper assessment for several reasons. Limitation in sample size and the notion that some respondents were unfamiliar with horticultural therapy altogether provided barriers to interest level stratification.

The ACA under 42 U.S.C. §§ 18001 SEC. 1302 (b) (1) (G) states essential health benefits include rehabilitative and habilitative services. Horticultural therapy fits under this classification, but has not been properly remunerated to providers as of yet. Our research attests to this as lack of resources, weather barriers, and unfamiliarity were most

associated with program absence. Other therapies, such as art therapy are also still rarely utilized under this section of the ACA despite their proven benefit to patients and institutions.

CONCLUSION

While the ACA has shown beneficial advances in other rehabilitative fields, its influence has not yet reached horticultural therapy. Given this, the next natural step in expansion of treatment for various mental health conditions is increasing the employment of horticultural therapy. Continual advocacy is necessary in order to provide institutional access to this promising rehabilitative and habilitative service. Further research is needed to better understand the barriers associated with low utilization rates, implementation, and other impacting factors across a larger geographical area.

CONFLICTS OF INTEREST

The authors have no potential conflicts of interest to disclose.

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