The Economic Dimension of Home-Based Supportive Interventions in Dementia

Tsakni Georgia (Corresponding author)
School of Health and Care Sciences, Department of Occupational Therapy, University of West Attica
ytsakni@uniwa.gr

Tsiakiri Anna
School of Medicine, Department of Medicine, Democritus University of Thrace
atsiakir@med.duth.gr

Katsouri Ioanna Giannoula
School of Health and Care Sciences, Department of Occupational Therapy, University of West Attica
ykatsouri@uniwa.gr

Bablekos Georgios
School of Health and Care Sciences, Department of Occupational Therapy, University of West Attica
gmpample@uniwa.gr

Vlotinou Pinelopi
School of Health and Care Sciences, Department of Occupational Therapy, University of West Attica
pvlotinou@uniwa.gr

Abstract

Dementia represents a major challenge for public health and care systems, with cases continually rising. The need for cost-effective home-based interventions to support individuals with dementia and their caregivers is urgent. Nevertheless, there is still little proof of these strategies' cost-effectiveness.

By systematically evaluating the cost-effectiveness of home help therapies for dementia, this study sought to inform future research and practice.
A comprehensive analysis of economic research was carried out, *including full and partial economic evaluations of interventions, with an analysis of cost-effectiveness and quality of life outcomes.* Fourteen of the 151 items that were found satisfied the requirements for inclusion. *Interventions involving occupational therapy, home-based exercise, and psychological support were found to be the most cost-effective. Most studies indicated increased costs, but also significant benefits in quality of life.*

This review highlights the need for further, more comprehensive research on the cost-effectiveness of interventions at different stages of dementia, particularly in the early and late stages. Despite the diversity in outcomes, these specific interventions demonstrate a favorable cost-effectiveness ratio and can guide the development of policies for dementia care at home.

Keywords: dementia, cost effectiveness, home support intervention, occupational therapy

JEL Classification Codes: Health Economics, General health economic evaluations

Introduction

Dementia is a disease characterized by the decline of mental functions, which burdens the person's functionality and daily skills, resulting in the gradual loss of autonomy and independence (Brunnström & Englund, 2009).
Today, dementia affects about 44 million individuals globally. The sustainability of healthcare systems is seriously threatened by this figure, which is predicted to triple by 2050(Guzzon, Rebba, Paccagnella, Rigon, & Boniolo, 2023).

According to Ferri, Prince & Brayne (2005), 24.3 million people were diagnosed with dementia worldwide in 2005 and this number is expected to rise to 81.1 million in 2040. It is impressive that Brookmeyer, Johnson & Ziegler-Graham (2007) predict that by 2050, there would be 106.8 million individuals with Alzheimer's disease alone, up from the current 26.6 million.

From the abovementioned, it can be understood that the presence of this disease dictates the need for efficient home interventions that support both people with dementia and their caregivers. There is no doubt that the science of occupational therapy is crucial for patients suffering from dementia. Care is defined as the provision of help without compensation to people who have either a physical or mental need for people in their family or non-family environment (Drentea, 2007).The notion that people have an innate right to preserve their mental and physical abilities at the highest degree of functioning, as well as a profound regard for life, are the foundations of caregiving. Promoting independence by preserving a person's most functional physical, mental, emotional, and spiritual state is the ultimate goal of caregiving (Bridges, 1995).

The role of caregivers is of crucial importance, as most of the time patients lose their autonomy, because of which the existence of a companion is deemed necessary both for the performance of daily life activities and for their safety. Usually, caregivers are people from the patient's immediate family or friends.
In a study by Sadik and Wilcock (2003), it was found that caregivers spend 60 to 100 hours per week caring for the terminally ill patient, while 60% of caregivers live with the patient at home.
Cost-minimization analysis, cost-effectiveness analysis, cost-utility analysis, and cost-benefit analysis are the four categories of economic evaluation (Drummond, Sculpher, Claxton, Stoddart, & Torrance, 2015a). The cost-effectiveness relationship in home interventions in dementia is a matter of major importance, as this disease, due to its variability and duration, can lead to costly choices that burden both the patient and his family environment.

Research has shown that supportive interventions at home in the different stages of dementia bring positive results both in terms of effectiveness and costs. In this context, supportive care interventions could be considered the safest and potentially the best option, in terms of cost savings (Guzzon, Rebba, Paccagnella, Rigon, & Boniolo, 2023).

Methods

Cost-minimization analysis, cost-effectiveness analysis, cost-utility analysis, and cost-benefit analysis are the four categories of economic evaluation. The terms used to identify articles were: 'cost-effectiveness of home-based dementia interventions', 'dementia interventions', 'the role of carers in dementia' and 'dementia and occupational therapy'. Studies involving full and partial economic evaluations of interventions, with analysis of cost-effectiveness and quality of life, were included. Of the 151 articles identified, 14 met the inclusion criteria. Interventions involving occupational therapy, home exercise and psychological support emerged as the most effective. Most studies showed increased costs, but also significant benefits in quality of life.
Cost-effectiveness analysis is a technique of comparing the net monetary cost of a therapeutic intervention with some unit of measurement of clinical outcome or effectiveness, such as mortality rates or life years (Ydvarhelyi, Colditz, Rai, & Epstein, 1992).

Cost-benefit analysis states that when a treatment intervention's social benefits outweigh its costs, it is worthwhile implementing. Benefits could include increased productivity at work, time savings for nursing and medical personnel, lower medical expenses, or even lower costs due to patient incapacity (Mitsouli, 2004). Furthermore, the advantages are typically categorized in the literature as productivity, health, and future cost savings (Getzen, 2004).

Results

Less than half of dementia patients in existing systems receive an official diagnosis or have contacted a specialist at any stage of their condition, which is a significant problem for service delivery (National Audit Office, 2007). After receiving a dementia diagnosis, the patient and their family caregivers can make plans for the future or utilize the available social, psychological, and pharmaceutical treatments (Banerjee & Wittenberg, 2009). Occupational therapy has a catalytic role in home interventions for individuals with dementia. In addition to helping people maintain their memory and increase their functionality and independence, occupational therapy interventions can help people deal with issues pertaining to Activities of Daily Life, such as eating, dressing and undressing, and maintaining personal hygiene.
In addition, occupational therapists, through home interventions, aim at the best possible spatial orientation of the home (signs in areas, food labels), but also at strengthening the patients' functionality and stimulating their psychological state. It is typical that home interventions for people suffering from dementia combat depression and mental disorders in general.

Research has shown that occupational therapy has an effective effect on skill training, combined with the use of assistive devices. There is also evidence that integrated occupational therapy has benefits for functional capacity, social participation and quality of life (Steultjens, Dekker, Bouter, Jellema, Bakker, & Van Den Ende, 2004). The usefulness of advising primary caregivers of dementia patients on their functional skills is not well supported by empirical data (Steultjens, Dekker, Bouter, Jellema, Bakker, & Van Den Ende, 2004).

Furthermore, there is strong evidence that occupational interventions can enhance outdoor mobility (Logan, Gladman, Avery, Walker, Dyas, & Groom, 2004), activities of daily living (ADL) (Walker, Leonardi-Bee, Bath,

Langhorne et al., 2004; Legg, Drummond, Leonardi-Bee, Gladman et al., 2007), and recreational activities (Parker, Gladman, Drummond, Dewey et al., 2001). According to Graff, Adang, Vernooij-Dassen, Dekker et al. (2008), these interventions can lower health care costs by improving older people's independence, which can result in lower informal care costs and postponed nursing home admissions. They can also significantly lower overall health care and social service costs, such as those associated with day care and home care.
The effectiveness of home treatments in dementia is not only related to the outcome, but also to cost-effectiveness.

The study by Clarkson, Davies, Jasper, Loynes & Challis (2017), which had 14 economic evaluations, is worth mentioning at this point. These were removed because six (6) of them evaluated the results of caretakers (Eaglestone, Gkaintatzi, Jlang, & Stoner, 2023). Clarkson Davies, Jasper, Loynes, & Challis (2017) reviewed Pitkäla, Poysti, Laakkonen, Tilvis et al.'s economic evaluation (2013). Education (dementia care), cognitive (activity sessions), extended (occupational treatment, dementia care management), and other (dementia specialist day care, home care) were the categories examined in the seven pertinent economic evaluations. Only occupational therapy demonstrated a positive cost-effective connection among the therapies (Eaglestone, Gkaintatzi, Jlang, Stoner et al., 2023).

Table 1: Economic impacts and the benefits observed from the interventions (Graff, Adang, Vernooij-Dassen, Dekker et al., 2008).

ECONOMIC IMPACTS	BENEFITS
Lower health care costs because there is independence in elderly people	Home care
Reduced expenses for unofficial care	Functional capacity
Nursing home admissions that are delayed	Social participation
Health care and social service costs are lower	Positive results in the psychology of patients (e.g. fight against loneliness and depression)
	Quality of life
	Improving Activities of Daily Living

Discussion

Health economics is a widespread discipline with a significant impact on the scientific community.
Health economics studies are defined as full economic evaluation studies, partial economic evaluation studies, and single effectiveness studies, which include more limited information on describing, measuring, or valuing resource use associated with interventions (Higgins and Green, 2011b). A full economic assessment involves comparative analysis of alternative courses of action in terms of both costs (resource use) and consequences (outcomes) (Drummond, Sculpher, Torrance, O'Brien, & Stoddart, 2005b). To investigate clinical outcome or efficacy, randomized controlled treatment is usually carried out in conjunction with comprehensive cost-effective research. In thorough economic assessment studies, all relevant alternative

courses of action (e.g., intervention X vs comparative condition Y) are described, measured, and estimated along with their resource inputs and outcomes (Higgins and Green, 2011b). Regarding comparisons between various approaches in terms of costs (resource consumption) and results, other formulae for evaluating health care resources are not entirely obvious (Higgins and Green, 2011b).

According to a study on occupational therapy's role in dementia in the elderly, occupational therapy can promote independence and functional ability while lowering health care expenses (Hirofumi, Kounosuke, Ohno, Kayoko, & Keita, 2016).
Occupational therapy is cost-effective, according to the majority of studies. Client-centered goal setting is a feature of occupational therapy interventions. Furthermore, the majority of therapists receive extensive training in the intervention regimen (Hirofumi, Kounosuke, Ohno, Kayoko, & Keita, 2016). During their preventive home visits, Van Haastregt, Diederiks, Van Rossum, De Witte & Crebolder (2000) discovered that adjusting interventions to participants' requirements could be a crucial component of their efficacy. These initiatives have the potential to lower medical expenses and encourage health self-care.

Because it can combine improvements in both quantity and quality of life into a single metric, the most popular methodological approach to evaluating the cost-effectiveness of home-based dementia interventions is to measure results in terms of quality-adjusted life-years (QALYs) gained by caregivers after the intervention (Torrance, 1997).
It is worth mentioning that the Alzheimer Society of Athens has significantly increased the actions of the "Care at Home for people with dementia" program, while from the beginning of the pandemic until July 2021, 32740 group and individual sessions for people were carried out as part of the program with dementia and their caregivers: memory strengthening exercises, physical exercise programs, art therapies, counseling and caregiver training sessions and 850 families throughout Attica were served at home (https://alzheimerathens.gr/frontida-sto-spiti/) .
Last but not least, good cooperation between the involved staff of the PHY and the agencies and structures (public and private) providing care to patients with dementia is deemed necessary, as well as a set of psycho-educational activities, family and individual counseling programs and financial support for these individuals (Tzanakaki, 2002).

Conclusions

Following the above, from the systematic review both in the Greek and international literature, it is worth pointing out that more economic data is needed, regarding the cost-effect relationship of specific care interventions for dementia, so that there are realistic and scientifically safe conclusions. Furthermore, it is worth mentioning that the state should strengthen home supportive interventions in dementia as much as possible, by institutionalizing more programs and hiring more professionals from an interdisciplinary team (psychologists, occupational therapists, physical therapists, nurses, and social workers).
Undoubtedly, the economic dimension of home supportive interventions in dementia is an extremely interesting topic. Home-based supportive interventions in dementia constitute a large part of the treatment of the disease, and cost-effectiveness is an important criterion for the adoption of this option.

Conflict of Interest and originality of work

The authors declare the current work is free from plagiarism and there is no conflict of interest to it.

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