Allocating social services to the elderly: a review and decision making model

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Abstract. As a result of population ageing and a reduction in informal care, public institutions must assume a higher responsibility in caring for the elderly and providing services that respond to their needs. The aim of this study is, on the one hand, to investigate the profiles of elderly people using social services; and, on the other hand, to examine whether any classification systems and/or assessment tools are available to guide professionals in the assignment of services. A systematic literature review was carried out using PsycINFO, Web of Science, Dialnet, CSIC and Teseo, and a total of 44 studies were selected. The following variables were identified as predictors of service usage: functional dependency, cognitive impairment, lack or deficit of social support and bad housing conditions. No classification systems or assessment tools were found for facilitating the assignment of services according to profiles. A Decision-Making Model is proposed – based on the identified predictor variables - that aims to ensure an appropriate fit between the needs of the elderly and the social services provided.

Key words: Elderly; social services; Social Welfare; quality of life; decision-making.

Summary: Introduction. 1. Method. 2. Results. 2.1. Variables associated with the use of social services. 2.2. Models and systems for the allocation of the elderly to social services. 3. Discussion. 4. References.

Introduction

The combination of aging populations and changes in family structures has led to a reduction in the number of people who can provide informal support, entailing increased responsibility for public institutions attending to elderly people.

In Spain, in recent years there has been a significant increase in the number of places in social services (IMSERSO, 2017). Telecare is the service with the highest coverage ratio (8.89%), followed by Nursing Homes (4.4%), Home Care Services (3.77%) and Day Care Services (1.05%). Nevertheless, this growth in supply has been insufficient to cover growing demand and current needs remain unsatisfied. At the same time, the decentralization in the field of Welfare Assistance has led to considerable disparity across the regions in

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features, funding, eligibility criteria and coverage ratios.

At this juncture, various studies have demonstrated that the care given in certain services does not correspond, in all cases, to the user profile (Grando, *et al*., 2002). This means, on the one hand, that resources and services are being used inappropriately, and, on the other hand, that user necessities are not being properly fulfilled, generating dissatisfaction in both the user and the service workers.

Against this background, actions must be initiated that enable an appropriate answer to be given to each situation, attaining the greatest possible fit between the real necessities of each elderly care applicant and the corresponding services. Accordingly, adequate coordination between sanitary and social structures, and the optimization of available resources should be a priority.

The aim of this paper is twofold: to analyze the functional, cognitive and social profile of elderly users of social services; and to ascertain the existence of classifications, systems or any type of instrument that facilitate the allocation process.

1. Method

A literature review was carried out: in PsycINFO and Web of Science (WOS) databases from 2000 onwards, of all papers listed in Dialnet and in the *Consejo Superior de Investigaciones Científicas* (CSIC) from 1978, and in TESEO from 1994.

The search process for studies on elderly user profiles was carried out using the following keywords (either alone or in combination): *personas mayores*, elders, older people, old people, *residencias, centros de día, viviendas comunitarias, apartamentos tutelados, servicio de ayuda a domicilio*, nursing homes, day care centres, home help service and home care service. To identify research papers on resource allocation, the following combined terms were used: *mayores*, elders, olders, old people, aging, *asignación recursos*, *modelo, servicios sociales, ubicación*, resource allocation, allocation of resources, models, model, provision of services, resource use, placement of elders, balance of care, balance of resources and social services.

The papers which were included focused either on population samples of over 65s (exceptionally over 55s) or contained data broken down by age and which: 1) compiled profiles for social services usage, 2) identified risk factors for the use of social services, or 3) proposed models for allocating elderly people to social resources.

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│  WOS=832; TESEO= 71) (n=8.042)│  │                             │
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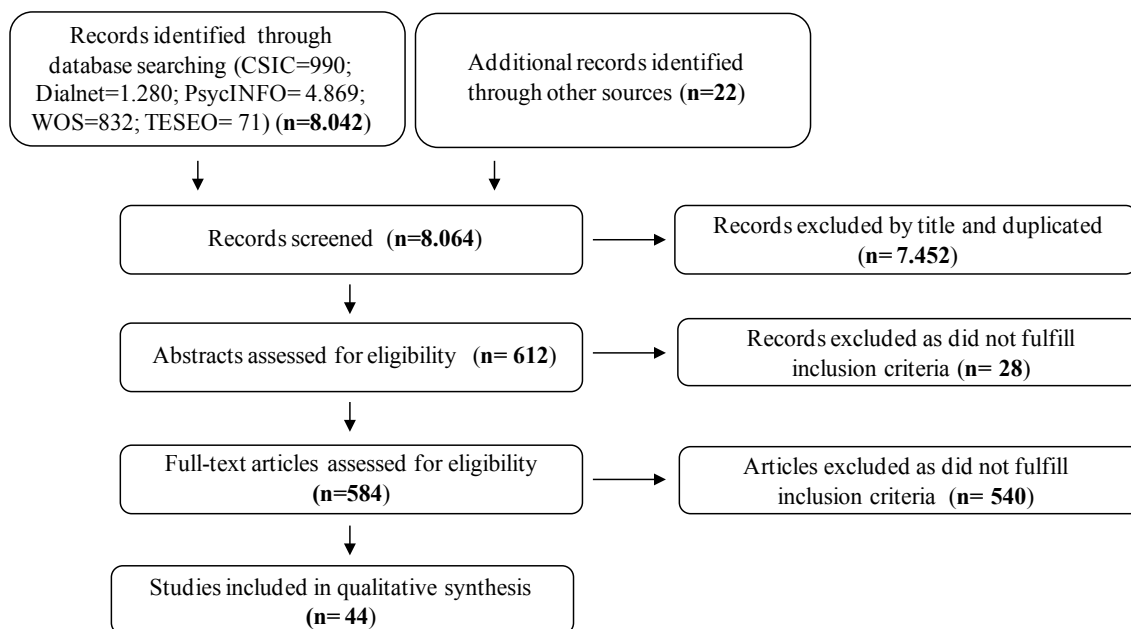
Figure 1. Flowchart describing the literature review process.

2. Results

In total, 44 studies (Table 1) were included, all of which focused on the user profile or factors which predict the use of different services for elderly people. No work was found on models for guiding professionals in the decision-making process of resource allocation. The flowchart in Figure 1 illustrates which studies were excluded from this review - by title, by not meeting the objectives of this research, because they were duplicated or, after reviewing the abstract and/or full article, because they did not fulfill the inclusion criteria. The initial search resulted in 8,042 publications; a following search in the references of the selected items led to the identification of a further 22 publications.

2.1 Variables associated with the use of social services

Home Care Service (HCS)

In Spain HCS is of a more social nature and less bound to formal healthcare than in programmes which are run in other countries under the term "home care". The prototype HCS user in Spain is female, with an average age of 80 (IMSERSO, 2015) and, generally, widowed or single, uneducated and living alone (Fernández del Valle & García, 1994; Martínez, Dávila & Vicente, 2003; Serrano & Tena-Dávila, 2004). They tend to be frail individuals, without cognitive impairment, who suffer geriatric problems which impact on their functional ability, with mild dependence for basic activities of daily living (ADLs) and mild to moderate dependence for instrumental activities (Prados, 2001; Serrano & de Tena-Dávila, 2004). Frailty is determined by multi-morbidity – highlighting coronary artery disease, hypertension, osteo-articular impairments and sensorial disabilities - pain, subjective memory complaints, sad mood, recent hospitalization and polypharmacy (Serrano & Tena-Dávila, 2004). This, together with the lack of social support (Fernández del Valle & García, 1994; Sabartés, Galí, González, Román & González, 2004; Serrano & Tena-Dávila, 2004) and poor housing (Sabartés, *et al.*, 2004), is one of the triggers for a HCS request.

This profile corresponds to that found, for example, in the USA, where home care services attend to people with less cognitive and functional deterioration than nursing homes (Lee, Kovner, Mezey & Ko, 2001) unlike in other countries where home care agencies provide for people with greater levels of inability (Kim, Chou & June 2006).

Day Care Centers (DCCs)

The available data indicate that, in the majority of the Autonomous Communities, between 60% and 79% of DCCs users are female and, generally, with an average age of 80 (IMSERSO, 2015). They often suffer from dementia and their care generates high stress levels, which causes low subjective well-being in caregivers, and is a risk factor for institutionalization (Gaugler, Kane, Kane & Newcomer, 2005). Although there are DCCs which specialize in care for people with dementia (García-Alberca, *et al.*, 2008), in Spain the majority of them care for people both with and without dementia, with moderate or severe dependence and adequate family support.

Studies on other aspects, such as functional ability, cognitive status and social support are rare in Spain and limited to concrete social health services in specific areas. Various studies have found a profile characterized by the presence of dementia (Laborda, Murguía, Rabanaque, Zeballos & Pascual, 2002), as well as by memory loss and disorientation, mood and demotivation problems, mobility impairments and health problems (especially breathing and cardiovascular problems, and sensory disabilities) which in some cases require special attention (oxygen, catheter, frequent cures etc.) and dependency for activities for daily living (Soldevila & March, 2002).

Nursing homes (NHs)

More studies have been carried out on NHs than on any other resource, considering their effects and the factors that determine their use. For the latter, predictors have been identified in a wide variety of groups of elderly people: those who live in the community (Buys, *et al.*, 2013; Sheppard, Sawyer, Christie, Allman & Brown, 2013); those who have been hospitalised in acute units (Mora, *et al.*, 2009) or in rehabilitation centers (Aditya, Sharma, Allen & Vassallo, 2003); people with dementia (Gaugler, *et al.*, 2000; Gaugler, Leach, Clay & Newcomer, 2004); elderly African Americans (Gaugler, *et al.,* 2004) etc.

These factors can be grouped into three categories (Lee, *et al.*, 2001): socio-demographic factors, those related to physical and cognitive status, and those linked to social support.

1. Socio-demographic factors: NH use is linked to being female, not having a spouse, not having children, being elderly (Luppa, *et al.*, 2010), being white (rather than being Hispanic or African American) and having a low socioeconomic status (Lee, *et al.*, 2001; IMSERSO, 2015; Lim, 2009; Noël-Miller, 2010; IMSERSO, 2015).

2. Factors related to health, and physical and cognitive status: the institutionalized elderly, or those at risk of being institutionalised, tend to be people with mobility difficulties (Aditya, *et a*l., 2003; Von Bonsdorff, Rantanen, Laukkanen, Suutama & Heikkinen, 2006; Sheppard *et al.,* 2013) and, in general, with poor health (Miller & Weissert, 2000; Tomiak, Berthelot, Guimond & Mustard, 2000; Aditya, *et al.*, 2003; Maxwell, *et al.*, 2013) characterized by: sensorial disabilities, musculoskeletal problems, strokes, confusion, Alzheimer's disease, incontinence, use of tranquilizers and recent hospitalizations). Thus, it has been observed that dependency for carrying out ADLs (Tomiak, *et al.,* 2000; Lee, *et al.,* 2001; Bharucha, Pandav, Shen, Dodge & Ganguli, 2004; Damián, Valderrama-Gama, Rodríguez-Artalejo & Martín-Moreno, 2004; Bernal & Barbero, 2006; Lim, 2009; Cohen-Mansfield & Wirtz, 2011; Almomani, McDowd, Bani-Issa & Almomani, 2014; Helvik, Skancke, Selbaek, & Engedal, 2014; IMSERSO, 2015) above all, in disadvantaged environments (Buys *et al.*, 2013), and the presence of cognitive deterioration and dementia (Tomiak, *et al.*, 2000; Gaugler, Kane, Kane, Clay & Newcomer, 2003; Bharucha, *et al.*, 2004; Damián, *et al.,* 2004; McCallum, Simons, Simons & Friedlander, 2005; Lim, 2009; Sabartés, *et al.*, 2009; Lekuona & Calvo, 2010; Cohen-Mansfield & Wirtz, 2011; Maxwell, *et al.*, 2013; Almomani, *et al.,* 2014; Helvik, *et al.*, 2014;) are variables which characterize the users of NHs or which significantly increase the risk of admission. One of the main collectives of NH users is people with dementia. To this effect, there are numerous studies on

the factors which predict institutionalization for this collective (Gaugler, *et al.,* 2000; Pot, Deeg & Knipscheer, 2001; Hebert, Dubois, Wolfson, Chambers & Cohen, 2001; Yaffe, *et al.,* 2002; Gaugler, *et al,* 2003; Chan, Kasper, Black & Rabins, 2003; Ander, Hyer & Slack, 2007). At the same time, the probability of being institutionalized is increased when behavioural problems are present (Gaugler, *et al.,* 2000).

3. Social support: this is considered a critical factor for NH use and it is widely known that NH residents have informal networks made up of few members, most of whom are relatives (Calvete, 1994). The spouse is the principal support provider, but children, other friends and relatives can also provide the support necessary to prevent institutionalization. Living alone (Aditya, *et al.,* 2003; Mora, *et al.,* 2009) or having little social support (Bharucha, *et al.,* 2004; Luppa, *et al.,* 2010) are key factors in admission, although the lack of an informal caregiver may not be decisive if a community care programme is available (Friedman, Steinwachs, Temkin-Greene & Mukamel, 2006). Another important aspect to consider regarding social support is appraisal of the quality of relationships with carers.

Supervised Apartments and Community Housing (SA/CH)

Studies in Spain on SA/CH are practically non-existent and, furthermore, these services do not correspond clearly to those in other countries.

2.2. Models and systems for the allocation of the elderly to social services

Despite increasing knowledge and clarification of the criteria to be met by the elderly in order to access social and social health services, deficiencies and existing problems with allocation have failed to be resolved. Work at international level has shown that elderly patients requiring a large amount of care were attended to in less complex centers and, at the same time, others who required less care were attended to in more sophisticated centers (Spector, Reschovsky & Cohen, 1996). Simi-

lar data has been found in Spain regarding the use of nursing homes for non-disabled and disabled people (Solano & López, 1998).

Work carried out by Fundación SAR (2007), is proof of an attempt to unify the type of care given in situations of dependency to elderly people with a similar profile. Their objectives include the definition of a normative base model and reference scenarios that would enable services to be assigned to user profiles according to their level of dependency. The result of this work led to the elaboration of reference scenarios which identified six user types, their personal environment and the services which they needed, although this model does not allow systematic decisions to be made for placement in different social services.

In the field of social health services, Balance of Care (BoC) can be highlighted as a strategy for planning assistance. It assumes that people can be attended to via various care options or by different resources, and aims to analyze the different possible contexts for planning social or geriatric services, whilst at the same time improving the balance between supply and needs of potential users.

In the field of gerontology, BoC usually refers to the prioritization of community-based care rather than residential (Hughes & Challis, 2004). It focuses on identifying those subjects who qualify to be admitted to a centre, but who could remain in the community if there were adequate social and health resources to meet their needs at a reasonable cost. The BoC estimates the proportion of people who could be reliably attended to in their homes, with good results, and defines the priorities for economic investment which could affect the combination of these two care systems.This would establish the correct combination of community services and specialized services for any given geographical area (Challis & Hughes, 2002; Hughes & Challis, 2004).

The *Planificación Optimización Dinámica Asistencial (PODA)* (Planning Optimization Dynamic Assistance) system, drawn up by "Antares Consulting" consultants, is an example of how the BoC model can be applied to the field of social and social health services for the elderly in Spain. PODA is a BoC principle-based support system for making decisions on planning services. It defines the care needs of a population, translates them into resource requirements and analyzes their cost and financing.

The BoC based systems allow strategies and funding policies to be defined, but do not provide a model that facilitates decision making when allocating services based on specific user profiles.

3. Discussion

Limitations in functional ability, at both basic and instrumental level, have been related to the use of community social services such as HCS (Prados, 2001; Serrano, *et al.,* 2004), or DCCs (Soldevila & March, 2002; Huges & Challis, 2004; García-Alberca, *et al.,* 2008), and with NH admission (Gaugler, *et al.*, 2000; Yaffe, *et al.*, 2002; Bharucha, *et al.,* 2004; Bernal & Barbero, 2006; Andel, *et al.,* 2007; Lim, 2009; Luppa, *et al.*, 2010; Helvik, *et al.,* 2014).

People with cognitive impairment and/ or dementia are habitual users of NHs, above all when they also have behavioural problems (Gaugler, *et al.*, 2000; Hebert, *et al.*, 2001; Pot, *et al.*, 2001; Yaffe, *et al.*, 2002; Chan, *et al.,* 2003; Gaugler, *et al.*, 2003; Andel, *et al.*, 2007; Luppa, *et al.*, 2010), and of DCCs due to the positive influence which these have on their behaviour (Zank & Schake, 2002).

The absence of an informal support network can be palliated through HCS. In fact, the average size of the social network of users of this service in Spain is smaller than that of the elderly population in general (Fernández del Valle & García, 1994) and a large number of users are in a situation of social risk (Serrano & Tena-Dávila, 2004). Social support is also a critical factor in NH use (Calvete, 1994; Friedman, *et al.*, 2006; Luppa, *et al.*, 2010; Nöel-Miller, 2010), with the quality of the relationship with carers being especially decisive in institutionalization.

Service usage is directly and indirectly related to housing. On the one hand, admission to services which include accommodation (such as NHs or SA/CHs) becomes necessary when housing conditions do not guarantee the elderly person's safety. But in addition, the physical environment is a critical factor for the maintenance of functional ability.

With that in mind, the variables we have discussed should serve to establish profiles which allow the features and benefits of services to be adjusted to the needs of the elderly. In this sense, the review carried out brings to light that functional ability, cognitive status, social support and housing conditions are the fundamental variables in developing a decision-making model for professionals.

Proposal of a Decision Making Model (DMM) for allocating social services to the elderly

The structure of the Model takes into account the foremost services for attending to the elderly in Spain (NHs, DCCs, SA/CHs and HCS), and the predictor variables of their use as identified by the revision process: two external variables (social support and housing) and three internal variables (functional ability for basic activities of daily living, functional ability for instrumental activities of daily living and cognitive condition).

Users of these services are characterized by the following profiles:

* NHs: people with severe dependency, lack of social support and housing problems.
* DCCs: people with moderate dependency who require personalized therapeutic or social attention, who have adequate accommodation and a network of social support which suffices to ensure their care outside the hours when they attend the centre.
* SA/CHs: people who are functionally independent or have mild dependency and who find residing in their habitual environment difficult due to housing deficiencies or co-existence problems with the core family.
* HCS: people with: 1) mild/moderate dependency, whose homes meet habitability conditions but who lack the necessary informal support, or 2) moderate/severe dependency, who receive adequate social support from informal caregivers who need respite from care tasks.

Levels are defined within each variable:

* Social support: 1) bad (a network size of zero, or with an instrumental support frequency of less than once a month), 2) insufficient (instrumental support frequency of once or twice a month), and 3) adequate (instrumental support frequency of weekly or higher). Díaz Veiga´s Scale of Social Resources in the Elderly (Díaz, 1985)

can be referred to in order to obtain this information.

- Housing conditions: evaluated as good or bad according to the scores obtained on an evaluation scale designed *ad hoc* for the creation of the Model, which would include living conditions, services and architectural barriers.
- Functional ability: capacity in both basic and instrumental activities is considered 'good' when, according to the scores of the Barthel Index (Mahoney & Barthel, 1965) and the Lawton and Brody Index (Lawton & Brody, 1969) respectively, the subject is independent or has mild dependence, and 'bad' when dependency is moderate, severe or complete.

- Cognitive status: this is categorized according to the scores obtained on the Short Portable Mental Status Questionnaire (SPMSQ) (Pfeiffer, 1975): 'good' when performance is normal or with mild impairment, and 'bad' when impairment is moderate or severe.

Taking into account the aforementioned variables and levels, a hierarchical classification with 16 conditions has been established (see Figure 2).
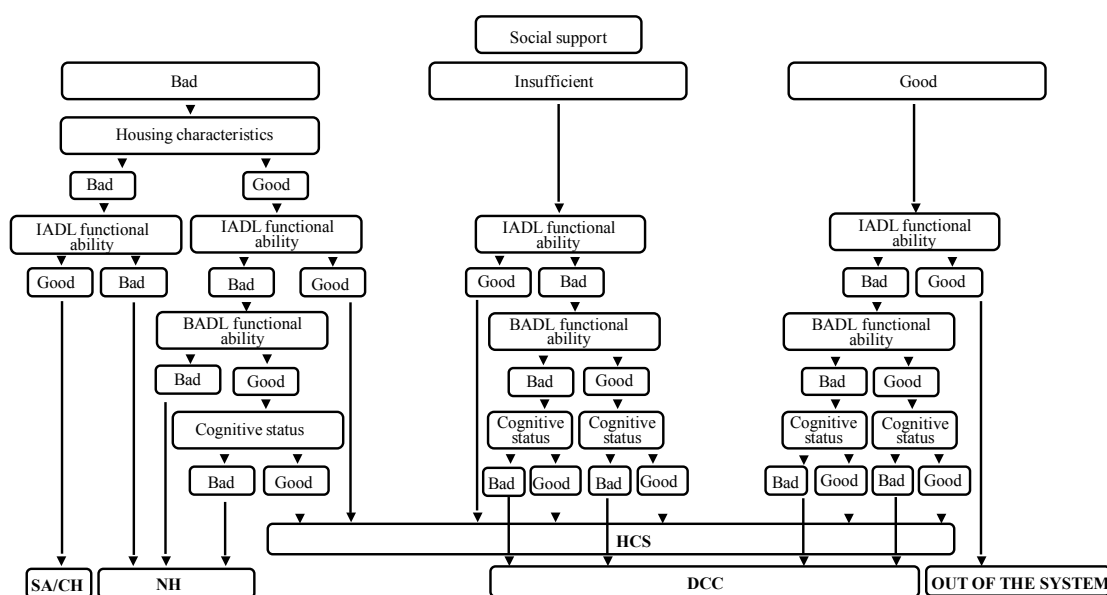

Figure 2. Decision Making Model for allocating social services to the elderly

Elderly people's quality of life depends on both their functional and cognitive status, but also on the capacity of their environment to support their needs. Hence, and with the main objective of favouring the elderly staying in their own home for as long as possible, the decision-making process begins with informal social support.

When precarious social support is combined with housing deficiencies, the person requires a residential service. If the person has adequate functional capacity at instrumental level, he/she would be candidate for admission to a SA/CH. Neither basic activities nor cognitive condition would need to be analyzed, as good instrumental capacity already implies

appropriate performance in these two areas, in fact, a high positive correlation has been found between the Lawton Index and the Barhtel Index, whilst both scales correlate negatively with Pfeiffer´s SPMSQ (Serrano & Tena-Dávila, 2004). On the other hand, if functional autonomy is limited at instrumental level, the person would be derived to a NH, as would those who, in spite of having good quality housing, are functionally and cognitively dependent.

People with good functional capacity and good housing can have their needs met through HCS, as can those who, despite needing help on an instrumental level, retain their cognitive status and ability for carrying out ADLs.

Insufficient social support leads to an analysis of instrumental ability. In this case, an evaluation of the housing situation is not necessary as, even though social support may not reach the minimum requirements, it may still be sufficient to offset the limitations resulting from inappropriate housing. When a person is capable of instrumental activities, he/she is derived to HCS. If he/she not only has difficulties in carrying out ADLs, but also has insufficient social support, his/her basic activities must be assessed. Cognitive performance is considered whether the person is independent in this area or not. Accordingly, those who suffer deterioration are assigned to DCCs whereas HCS is considered sufficient for those who retain cognitive capability.

As with the previous case, when social support is adequate, housing is not taken into consideration. If people with good functional instrumental capacity have sufficient social support, this is judged to be enough for them to remain at home, with an adequate quality of life, without having to resort to any of the services contemplated in the Model. If the person has instrumental difficulties, their functional ability is assessed at a basic level, and independently of this, if cognitive performance is adequate, HCS is considered sufficient in caring for them, while people with cognitive deterioration are derived to DCCs.

The Model we propose is presented as a contribution to the work of professionals in the social and gerontology field, and also to those responsible for social policies for the elderly. On the one hand, its implementation would not only ensure a better fit between user needs and service features, but would also facilitate the advice and guidance given to the users and their families, thereby resulting in an improvement in the quality of care received. On the other hand, it could be used to estimate the needs of future services by devising different possible situations in accordance with the care model that is to be developed. User opinion should be taken into account, however, when applying the model, to guarantee the principles of choice, autonomy and participation.

The main limitation of the study has been the difficulty in comparing the features and benefits of gerontology services in different countries and, related to this, the bias derived from a predominance of literature about NHs. Regarding the Model, although it does include the most widely used services by people in situations of dependency or at risk of suffering them, future research should explore the possibility of extending the Model by incorporating other services like Telecare, not included here because it poses less difficulty for allocation and has a higher rate of coverage and consensus in access criteria. Likewise, the Model could contemplate combining various services, as it currently only assigns the service which is considered as ideal and therefore, the first choice. Finally, work must be continued on the analysis of the Model, both in its statistical goodness of fit and in its validation for a future implementation.

4. References

Aditya, B.S.; Sharma, J. C. ; Allen, S. C., & Vasallo, M. (2003). Predictors of a nursing home placement from a non-acute geriatric hospital. *Clinical Rehabilitation, 17*, 108-113. doi: 10.1191/0269215503cr567oa

Almomani, F.M.; McDowd, J.M.; Bani-Issa, W., & Almomani, M. (2014). Health-related quality of life and physical, mental and cognitive disabilities among nursing home residents in Jordan. *Quality of life research: An International Journal of Quality of Life Aspects of Treatment, Care and Rehabilitation, 23*, 155-165. doi: 10.1177/0891988709335799

Andel, R.; Hyer, K., & Slack, A. (2007). Risk factors for nursing home placement in older adults with and without dementia. *Journal of Aging and Health, 19*, 213-228. doi: 10.1177/0898264307299359

Bernal, M.E., & Barbero, M.I. (2006). Evaluación del nivel de autonomía funcional y del deterioro cognitivo en personas mayores en residencia. *Acción Psicológica, 4*(1), 15-23. Retrieved from: www.redalyc.org/articulo.oa?id=344030757002

Bharucha, A.J.; Pandav, R.; Shen, C., Dodge; H.H., & Ganguli, M. (2004). Predictors of nursing facility admission: A 12-year epidemiological study in the United States. *Journal of the American Geriatric Society, 52*, 434-439. doi: 10.1111/j.1532-5415.2004.52118.x

Buys, D. R.; Borch, C.; Drentea, P.; LaGory, M.E.; Sawyer, P.; Almman, R.M., …, Locher, J.L. (2013). Physical impairment is associated with nursing home admission for older adults in disadvantaged but not other neighborhoods: Results from the UAB Study of Aging. *The Gerontologist, 53*, 641-653. doi: 10.1093/geront/gns118

Calvete, E. (1994). Apoyo social y ancianos en residencias. *Zerbitzuan. Revista de Servicios Sociales, 25*, 71-76. doi: 10.5569/1134-7147

Challis, D. & Hughes, J. (2002). Frail old people at the margins of care: Some recent research findings. *British Journal of Psychiatry, 180*, 126-130. doi: 10.1192/bjp.180.2.126

Chan, D.C.; Kasper, J.D.; Black, B.S., & Rabins, P.V. (2003). Presence of behavioral and psychological symptoms predicts nursing home placement in community-dwelling elders with cognitive impairment in univariate but not multivariate analysis. *The Journals of Gerontology. Series A, Biological Sciences and Medical Sciences, 58,* 548-554. doi: 10.1093/gerona/58.6.M548

Cohen-Mansfield, J. & Wirtz, P. W. (2011). Predictors of entry to the nursing home: Does length of follow-up matter? *Archives of Gerontology and Geriatrics, 53*, 309-315. doi: 10.1016/j.archger.2010.12.009

Damián, J.; Valderrama-Gama, E.; Rodríguez-Artalejo, F., & Martín-Moreno, J.M. (2004). Estado de salud y capacidad funcional de la población que vive en residencias de mayores de Madrid. *Gaceta Sanitaria, 18*, 268-274. doi: 10.1016/S0213-9111(04)72013-0

Díaz, P. (1985). *Redes sociales y comportamiento afectivo en ancianos*. Memoria de licenciatura inédita. Universidad Autónoma de Madrid, Madrid, Spain.

Fernández del Valle, J. y García, A. (1994). Redes de apoyo social en usuarios del servicio de ayuda a domicilio de la tercera edad. *Psicothema, 6*, 39-47.

Friedman, S.M.; Steinwachs, D.M.; Temkin-Greener, H., & Mukamel, D.B. (2006). Informal caregivers and the risk of nursing home admission among individuals enrolled in the program of all-inclusive care for the elderly. *The Gerontologist, 46*, 456-463. doi: 10.1093/geront/46.4.456

Fundación SAR. (2007). *Calidad y dependencia. Grados de dependencia y necesidad de servicios*. Madrid, Spain: IMSERSO.

García-Alberca, J.M.; Lara, I,S.; González, D.; Porta, M.A.; Barranco, M., & Berthier, M. (2008). Perfil clínico de pacientes con enfermedad de Alzheimer atendidos en centros de día psicogeriátricos. *Anales de Psiquiatría, 24*, 145-152.

Gaugler, J.E.; Edwards, A.B.; Femia, E.E.; Zarit, S.H.; Stephens, M.A.P.; Townsend, A., & Greene, R. (2000). Predictors of institutionalization of cognitively impaired older adults: Family help and the timing of placement. The *Journals of Gerontology. Series B, Psychological Sciences and Social Sciences, 55*, 247-256. doi: 10.1093/geronb/55.4.P247

Gaugler, J.E.; Kane, R.L.; Kane, R.A., & Newcomer, R. (2005). Early community-based service utilization and its effects on institutionalization in dementia caregiving. *The Gerontologist, 45*, 177-185. doi: 10.1093/geront/45.2.177

Gaugler, J.E.; Kane, R.L.; Kane, R.A.; Clay, T., & Newcomer, R. (2003). Caregiving and institutionalization of cognitively impaired older people: Utilizing dynamic predictors of change. *The Gerontologist, 43*, 219-229. *Geriatric Society,* 52(3), 445-452. doi: 10.1111/j.1532-5415.2004.52120.x

Gaugler, J.E.; Leach, C.R.; Clay, T., & Newcomer, R.C. (2004). Predictors of nursing home placement in african Americans with dementia. *Journal of the American Society, 52*, 445-452. doi: 10.1111/j.1532-5415.2004.52120.x

Grando, V.T.; Mehr, D.; Popejoy, L.; Maas, M.; Rantz, M.; Wipke-Tevis, D., & Westhoff, R. (2002). Why older adults with light care needs enter and remain in nursing homes. *Journal of Gerontological Nursing, 28*(7), 47-53. doi: 10.3928/0098-9134-20020701-09

Hebert, R.; Dubois, M.F.; Wolfson, C.; Chambers, L., & Cohen, C. (2001). Factors associated with long-term institutionalization of older people with dementia: Data from the Canadian Study of Health and Aging. *The Journals of Gerontology. Series A, Biological Sciences and Medical Sciences, 56*, 693-699. doi: https://doi.org/10.1093/gerona/56.11.M693

Helvik, A.S.; Skancke, R.H.; Selbaek, G., & Engedal, K. (2014). Nursing home admission during the first year after hospitalization—The contribution of cognitive impairment. *PLos ONE, 9*(1). doi: 10.1371/journal.pone.0086116

Hughes, J. & Challis, D. (2004). Frail older people- margins of care. *Reviews in Clinical Gerontology, 14*, 155-164. doi: https://doi.org/10.1017/S0959259804001364

IMSERSO. (2015). *Informe 2014. Las personas mayores en España*. Ministerio de Sanidad, Servicios Sociales e Igualdad. Madrid: Ministerio de Sanidad, Servicios Sociales e Igualdad. Retrieved from: http://www.imserso.es/imserso_01/documentacion/publicaciones/colecciones/informacion_publicacion/index.htm?id=2492

IMSERSO. (2017). *Recursos sociales dirigidos a personas mayores en España*. Retrieved from: http://www.espaciomayores.es/InterPresent2/groups/imserso/documents/binario/informerecursos_sociales_2015.pdf

Kim, E.; Cho, E., & June, K. J. (2006). Factors influencing use of home care and nursing homes. *Journal of advanced nursing, 54*, 511-517. doi: 10.1111/j.1365-2648.2006.03839.x

Laborda, A.A.; Murguía, I.; Rabanaque, S.; Zeballos, P., & Pascual, G. (2002). Estudio Zaradia: La atención al paciente con demencia en los centros de día de Zaragoza. *Informaciones psiquiátricas, 170*, 435-449.

Lawton, M.P. & Brody, E.M. (1969). Assessment of older people self-mantainign and instrumental activities of daily living. *The Gerontologist, 9*, 179-186. doi: https://doi.org/10.1093/geront/9.3_Part_1.179

Lee, T.; Kovner, C.T.; Mezey, M.D., & Ko, I. S. (2001). Factors influencing long-term home care utilization by the older population: implications for targeting. *Public Health Nursing, 18,* 443-449. doi: 10.1046/j.1525-1446.2001.00443.x

Lekuona, P. & Calvo, J.J. (2010). Atención sanitaria y de enfermería en las residencias de mayores de Guipúzcoa. *Zerbitzuan. Revista de servicios Sociales, 47*, 37-47. doi: 10.5569/1134-7147

Lim, E.S. (2009). Predictors of nursing home admission: A social work perspective. *Australian Social Work, 62*, 90-98. doi: 10.1080/03124070802626901

Luppa, M.; Luck, T.; Weyerer, S.; König, H.; Brähler, E., & Riedel-Heller, S. (2010). Prediction of institutionalization in the elderly. A systematic review. *Age and Aging, 39*, 31-38. doi: 10.1093/ageing/afp202

Mahoney, F.I. & Barthel, D.W. (1965). Functional evaluation: The Barthel Index. *Maryland State Medical Journal, 14*, 61-65.

Martínez, S.; Dávila, M., & Vicente, M.R. (2003). Una aproximación a la evaluación económica de las políticas sociales. El caso del Servicio de Ayuda a Domicilio. *Revista del Ministerio de Trabajo y Asuntos Sociales, 41*, 89-103.

Maxwell, C.J.; Soo, A.; Hogan, D.B.; Wodchis, W.P.; Gilbart, E.; Amuah, J., …, Strain, L.A. (2013). Predictors of Nursing Home Placement from Assisted Living Settings in Canada. *Canadian Journal on Aging, 32*, 333-348. doi: http://dx.doi.org/10.1017/S0714980813000469

McCallum, J.; Simons, L.A.; Simons, J., & Friedlander, Y. (2005). Patterns and predictors of nursing home placement over 14 years: Dubbo study of elderly Australians. *Australasian Journal on Ageing, 24*, 169-173. doi: 10.1111/j.1741-6612.2005.00116.x

Miller, E.A. & Weisser, W.G. (2000). Predicting Elderly People's Risk for Nursing Home Placement, Hospitalization, Functional Impairment, and Mortality: A Synthesis. *Medical Care Research and Review, 57*, 259-297. doi: 10.1177/107755870005700301

Mora, J.;Silveira, L.J.; Calcerrada, N.; Maganto, M.A.; Merino, C., & Ribera, J.M. (2009). Análisis del índice de consecución de residencia pública asistida tras ingreso hospitalario en ancianos frágiles. *Revista Española de Geriatría y Gerontología, 44,* 186-193. doi: 10.1016/j.regg.2009.03.008

Noël-Miller, C. (2010). Spousal loss, children, and the risk of nursing home admission. *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences, 65B*, 370-380. doi: 10.1093/geronb/gbq020

Pfeiffer, E. (1975). A short portable mental status questionnaire for the assesment of organic brain deficit in elderly patients. *Journal of the American Geriatric Society, 23*, 433-411. doi: 10.1111/j.1532-5415.1975.tb00927.x

Pot, A.M.; Deeg, D.J., & Knipscheer, C.P. (2001). Institutionalization of demented elderly: The role of caregiver characteristics. *International Journal of Geriatric Psychiatry, 16*, 273-280. doi: 10.1002/gps.331

Prados, C. (2001). Prevención y mantenimiento de la autonomía de los mayores. La ayuda a domicilio. *Cuadernos de Trabajo Social, 14*, 291-300.

Sabartés, O.; Galí, N.; González, P.; Román, A., & González, V. (2004). Análisis descriptivo de la implantación de un servicio de ayuda a domicilio en el momento del alta de una unidad de media estancia. *Revista Multidisciplinar de Gerontología, 14*, 9-15.

Serrano, P. & Tena-Dávila, M.C.de (2004). Criterios de fragilidad en los usuarios del servicio de ayuda social a domicilio. *Revista Española de Geriatría y Gerontología, 39*, 9-18. doi: 10.1016/S0211-139X(04)74925-2

Sheppard, K.D.; Sawyer, P.R.; Christine, S.; Allman, R.M., & Brown, C. J. (2013). Life-space mobility predicts nursing home admission over 6 years. *Journal of Aging and Health*, *25*, 907-920. doi: 10.1186/1756-0500-7-323

Solano, J.J. & López, E. (1998). Envejecimiento y sistemas de clasificación de pacientes (I). *Revista Española de Geriatría y Gerontología, 33*, 292-300.

Soldevila, A., & March, J. (2002). Nivel de salud y autonomía en los Centros de Día de mayores. *Revista Multidisciplinar de Gerontología, 12*, 5-12.

Spector, W.D.; Reschovsky, J.D., & Cohen, J.W. (1996). Appropiate placement of nursing home residents in lower levels of care. *Milbank Quarterly, 74*, 139-160. doi: 10.2307/3350436

Tomiak, M.; Berthelot, J.M.; Guimond, E., & Mustard, C.A. (2000). Factors Associated With Nursing-Home Entry for Elders in Manitoba, Canada. *The Journals of Gerontology. Series A, Biological Sciences and Medical Sciences, 55*, 279-287. doi: 10.1093/gerona/55.5.M279

Von Bonsdorff, M.; Rantanen, T.; Laukkanen, P.; Suutama, T., & Heikkinen, E. (2006). Mobility limitations and cognitive deficits as predictors of institutionalization among community-dwelling older people. *Gerontology, 52*, 359-365. doi:10.1159/000094985

Yaffe, K.; Fox, P.; Newcomer, R.; Sands, L.; Lindquist, K.; Dane, K., & Covinsky, K.E. (2002). Patient and caregiver characteristics and nursing home placement in patients with dementia. *The Journal of the American Medical Association, 287*, 2090-2097. doi:10.1001/jama.287.16.2090

Zank, S.H. & Schacke, C. (2002). Evaluation of geriatric day care units: Effects on patients and caregivers. *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences, 57B*, 348-357. doi: 10.1093/geronb/57.4.P348

Table 1. Characteristics of the studies on predictors of services use and users profile.

First author and year	Service	Participants	Main variables included in the study	Aim[a]	Country
Aditya (2003)	NH	Elderly patients in rehabilitation after acute illness	Visual impairment, confusion, length of stay, wandering behaviour, incontinence risk of falls, living alone	1	UK
Almomani (2014)	NH	Nursing home residents	Demographic variables, general health status, health-related quality of life, cognitive status, mood, gait and balance	2	Jordan
Andel (2007)	NH	Older adults Medicare/Medicaid beneficiaries in Florida, with and without dementia	Age, marital status, race, health status, functional ability, cognitive status	1	USA
Bernal (2006)	NH	Nursing home residents	Functional ability, cognitive status.	2	Spain
Bharucha (2004)	NH	Community-dwelling elders in Pennsylvania	Demographic characteristics, living arrangements, functional ability, depressive symptoms, number of prescription medications, self-reported social support, hospitalization during the preceding year, cognitive functioning	1	USA
Buys (2013)	NH	Community-dwelling elders in Alabama	Physical impairment, neighbourhood environment	1	USA
Calvete (1994)	NH	Nursing home residents	Social support	2	Spain
Chan (2003)	NH	Community-dwelling elders with cognitive impairment enrolled in the observational longitudinal Memory and Medical Care Study (MMCS) (Johns Hopkins Medical Institutions)	Demographic characteristics, behavioural and psychological symptoms, health-related characteristics, health service use characteristics	1	USA
Cohen-Mansfield (2011)	NH	Elders attending day-care centres in Maryland	Demographic characteristics, functional status, cognitive functioning, delusions and hallucinations, depressed affect, agitation, pain, social network, medical information, caregiver burden	1	USA
Damián (2004)	NH	Nursing home residents	Cognitive status, self-perceived health, depression, pain, functional ability, chronic illness, pressure ulcers, incontinence, medication use, hospitalization	2	Spain
Fernández del Valle (1994)	HCS	Home care service users	Social support	2	Spain
Friedman (2006)	NH	Participants in the program of all-inclusive care for the elderly (PACE)	Functional ability, health, cognitive status, behaviour problems, social support (primary caregiver)	1	USA
Fundación Sar (2007)	NH	Nursing home residents from different autonomous regions	Functional ability, cognitive status, care needs	2	Spain

Study	Type	Population	Variables	N	Country
García-Alberca (2008)	DCC	Day care centre users	Demographic characteristics, cognitive status, functional ability, behavioural and psychological symptoms	2	Spain
Gaugler (2000)	NH	Day care centre users	Demographic characteristics, caregiver stress, caregiver well-being	1	USA
Gaugler (2003)	NH	Community-dwelling elders with dementia and their caregivers	Elders: demographic characteristics, functional ability, use of another formal services. Caregivers: demographic characteristics, time of care, burden, self-perceived health	1	USA
Gaugler (2004)	NH	African American elders with dementia	Demographic characteristics, cognitive impairment, caregiver burden	1	USA
Gaugler (2005)	NH	Elders with dementia from community-based long-term-care services and their primary caregivers	Elders: Demographic characteristics, cohabitation, functional ability, cognitive status, behaviour problems. Caregivers: demographic characteristics, burden, global well-being	1	USA
Grando (2002)	NH	Nursing home residents	Care level (estimated using the Minimum Data Set (MDS) and Resource Utilization Groups, Version III (RUG-III)	2	USA
Hebert (2001)	NH	Elders with dementia and their caregivers	From elders: Demographic characteristics, functional ability, behaviour problems. From caregivers: depression, health problems, burden, caregiver's desire to institutionalize	1	Canada
Helvik (2014)	NH	Elders from internal medical wards in a rural area	Cognitive status, functional ability, comorbidity	1	Norway
IMSERSO (2015)	HCS, DCC and NH	Home Care Service users, Day Care Centres users and Nursing Home residents	Demographic characteristics	2	Spain
Kim (2006)	HCS and NH	Home Care Service users and Nursing home residents	Demographic characteristics, functional ability, cognitive impairment, comorbidity, medical complications, number of catheters	1	South Korea
Laborda (2002)	DCC	Day care centres users with dementia	Demographic characteristics, primary caregiver, type of dementia, severity of dementia, functional ability	2	Spain
Lee (2001)	HCS and NH	Home Care Service users and Nursing Home residents	Demographic characteristics, functional ability, cognitive status	1	USA
Lekuona (2010)	NH	Nursing home residents	Health characteristics	2	Spain
Lim (2009)	NH	Patients from a general rehabilitation ward in a community hospital	Demographic characteristics, length of hospital stay, cognitive status, functional ability	1	Singapore
Luppa (2010)	NH	Literature review		1	Germany

Martínez (2003)	HCS	Home Care Service users	Demographic characteristics	2	Spain
Maxwell (2013)	NH	Assisted living residents	Social relationships, activities, cognitive status, functional ability, health, falls, hospitalization	1	Canada
McCallum (2005)	NH	Community-dwelling elders in New South Wales	Demographic characteristics, principal diagnose, functional ability, depression	1	Australia
Miller (2000)	NH	Literature review		1	USA
Mora (2009)	NH	Acute unit patients	Demographic and socioeconomic characteristics, clinical situation, functional ability	1	Spain
Nöel-Miller (2010)	NH	Community-dwelling elders from the Health and Retirement Study	Social support	1	USA
Pot (2001)	NH	Caregivers of elders with dementia	Commitment to the caregiving relationship, psychological distress, and personality traits	1	Holland
Prados (2001)	HCS	Home Care Service users	Functional ability, socio-familiar situation	2	Spain
Sabartés (2004)	HCS	Elders at discharge of a medium stay unit	Demographic characteristics, functional ability	1	Spain
Serrano (2004)	HCS	Home Care Service users	Social risk, functional ability, cognitive status, nutritional status	2	Spain
Sheppard (2013)	NH	Community-dwelling elderly Medicare beneficiaries	Life-space mobility	1	USA
Soldevila (2002)	DCC	Day care centres users	Functional ability, cognitive status, perceived health, diseases	2	Spain
Tomiak (2000)	NH	Community-dwelling elders in Manitoba	Demographic characteristics, health, functional ability	1	Canada
Von Bonsdorff (2006)	NH	Community-dwelling elders in Jyväskylä	Cognitive status, mobility	1	Finland
Yaffe (2002)	NH	Community-dwelling elders with severe dementia and their caregivers	From elders: Demographic characteristics, cohabitation, functional ability, cognitive status, behaviour problems. From caregivers: age, burden	1	USA
Zank (2002)	DCC	Patients and non-patients (control group) of Day Care Centres	Well-being, dementia symptoms, health , functional ability	2	Germany

Notes: NH= Nursing home, HCS= Home Care Service, DCC= Day-care Centre. [a]1= To study risk factors for usage of services; 2= To describe users profiles and/or to analyze user characteristics or the service in general.