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RESEARCH PAPER (ORIGINAL)

Medication adherence in elderly people integrated in the Long-Term Care domiciliary teams

Adesão do regime terapêutico medicamentoso dos idosos integrados nas equipas domiciliárias de Cuidados Continuados

Adhesión al régimen terapéutico de medicamentos de los ancianos integrados en los equipos de Atención Continuada domiciliaria

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Abstract

Theoretical framework: An increased number of diseases and comorbidities leads to polymedication, which may interfere with Medication Adherence (MA) among the elderly.
Objectives: To describe the socio-demographic and economic characteristics of the elderly supported by the Integrated Long-Term Care Teams; characterise the level of MA of the population under study; and identify the variables influencing non-adherence.
Methodology: A descriptive/exploratory correlational study, using a quantitative method, was conducted in a sample of 55 elderly people.
Results: Sample with 78±7.9 years old, mainly female (69.1%). Using the measurement scale of adherence to treatment, it was found that 72.7% of elderly people did not adhere to the medication treatment and that 83.6% take three or more medicines. Using the Katz index, it was found that 25.5% of seniors were highly dependent. Using the Mini-Mental State Examination, 47.3% patients revealed moderate dementia. Using the Geriatric Depression Scale, 45.5% revealed moderate depression. A statistically significant association was only found between MA and mental status. Individuals with moderate dementia had a lower level of adherence.
Conclusion: The low level of MA is influenced by cognitive factors that should be considered while planning interventions to promote the MA among the elderly.

Keywords: medication adherence; elderly.

Resumo

Enquadramento: O aumento das patologias e co-morbilidades implica a polimedicação, podendo interferir na Adesão ao Regime Terapêutico Medicamentoso (ARTM) dos idosos.
Objetivos: Descrever características sociodemográficas, económicas dos idosos apoiados pelas Equipas de Cuidados Continuados Integrados; caracterizar o nível de ARTM da população estudada; identificar variáveis que influenciam a não-adesão.
Metodologia: Estudo descritivo/exploratório e correlacional, método quantitativo, amostra: 55 idosos.
Resultados: Amostra com 78±7,9 anos, maioritariamente feminina (69,1%). Através da escala de medida de adesão ao tratamento verifica-se que 72,2% dos idosos não aderem à terapia medicamentosa e, 83,6% tomam três ou mais fármacos. No índice de Katz 25,5% dos idosos são muito dependentes; no Mini-exame do Estado Mental 47,3% têm alteração demencial moderada; na escala de depressão geriátrica 45,5% têm depressão moderada. O nível de ARTM apenas apresenta associação estatisticamente significativa com o estado mental, os indivíduos que apresentam alteração demencial têm pior nível de adesão.
Conclusão: O baixo nível de ARTM é influenciado por fatores cognitivos que devem ser considerados no planeamento de ações promotoras para aumentar a ARTM nos idosos.

Palavras-chave: adesão à medicação; idoso.

Resumen

Marco contextual: El aumento de las enfermedades y las comorbilidades implica la polimedicación, que puede interferir en la adhesión al ARTM (régimen terapéutico de medicamentos) de los ancianos.
Objetivos: Describir las características sociodemográficas y económicas de las personas mayores con el apoyo de los Equipos de Atención Continuada Integrada; caracterizar el nivel de ARTM de la población del estudio, e identificar las variables que influyen en la falta de adhesión.
Metodología: Estudio descriptivo/exploratorio y correlacional, método de estudio cuantitativo y muestra de 55 ancianos.
Resultados: Muestra con 78±7,9 años, mayoritariamente, mujeres (69,1%). A través de la escala de medición de adhesión al tratamiento, se encontró que el 72,7% de las personas mayores no se adhieren a ARTM y el 83,6% toma tres o más fármacos. En el índice de Katz, el 25,5% de los ancianos es muy dependiente; en el Mini Examen del Estado Mental, el 47,3% presenta trastorno demencial moderado, y, en la escala de depresión geriátrica, el 45,5% tiene una depresión moderada. El nivel del ARTM solo presenta una asociación estadísticamente significativa con el estado mental. Se puede decir que los individuos que tienen un trastorno demencial tienen un nivel de adhesión peor.
Conclusión: El bajo nivel de la ARTM se ve influenciado por factores cognitivos que deben tenerse en cuenta en la planificación de acciones que promuevan el aumento de el ARTM en los ancianos.

Palabras clave: adhesión a la medicación; anciano.

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Introduction

Population ageing is a global phenomenon, which affects Europe in particular. Although it is not considered a disease, advanced age contributes greatly to increased healthcare consumption and, consequently, to increased healthcare spending, according to data from the World Health Organisation (2003). The expenditure on medicines is a large share of spending on health. The elderly are polymedicated; they sometimes have more than one prescriber and receive no proper care. Therefore, the effectiveness of a given drug on the identified pathology cannot be assessed. The increase in the number of prescribed medications and an impaired physical and cognitive autonomy lead to an increase in non-adherence to treatment.

According to Borges (2009), medication is essential for the symptomatic management of the diseases which affect the elderly and to improve their quality of life. In recent years, several studies have discussed the issue of medication in the elderly, namely polymedication and medical adherence (MA) and non-adherence. According to Pereira and Santos (2011), non-MA leads to personal, economic, and social repercussions, and contributes to increased hospital admissions, decreased quality of life, and increased morbidity and mortality. In addition, it is one of the main factors of prognosis.

In a critical analysis of the Latin American studies conducted over the last decade, Reiners, Azevedo, Vieira, and Arruda (2007, p. 2305) suggest that it is important to invest in this topic, as "the major responsibility for the adherence / non-adherence to treatment is conferred upon the patient and that both the professionals and the healthcare services need to be co-responsible in that process".

Thus, in order to outline an intervention plan capable of improving the effectiveness and efficiency of the therapeutic regimen for the elderly, as well as their quality of life, and reducing morbidity, this study was conducted with the following objectives: (a) to describe the socio-demographic and economic characteristics of the elderly assisted by the Integrated Long-Term Care Teams (*Equipas de Cuidados Continuados Integrados* – ECCI) of the Community Care Unit-Infante (*Unidade de Cuidados na Comunidade-Infante*); (b) to characterise the level of MA of the population under study, and (c) to identify the variables influencing non-adherence.

Background

According to the World Health Organisation (2003), adherence to therapy is defined as the extent to which a person's behaviour in taking medication, following a diet, and/or executing lifestyle changes, corresponds with recommendations from a healthcare provider. It is therefore an essential factor for elderly people's well-being and a significant component of the provision of care to the elderly. Non-adherence occurs when the patient fails to follow the recommendations of the physician or other healthcare professional. This concept is not limited to the deviations in the implementation of the therapeutic regimen as it was prescribed; it also includes failure in following recommendations regarding the choice of healthy habits and lifestyles, as well as missing scheduled medical visits or complementary diagnostic exams (World Health Organization, 2003).

In this study, MA is defined as the adherence and compliance to the recommendations of the prescriber and other healthcare professionals regarding self-medication.

According to Bugalho and Carneiro (2004), non-adherence "interferes with the therapeutic efforts, reducing the clinical benefits of medication and promoting the use of unnecessary means of diagnosis and treatment.… Monitoring and increasing adherence to therapy are beneficial for the healthcare systems" (p. 14). Thus, interventions aimed at improving therapeutic adherence greatly contribute to improve the health and the quality of life of the elderly population, significantly reducing the number of visits and hospitalisations due to disease decompensation.

The studies carried out by Cintra, Guariento, and Miyasaki (2010), and Sousa, Landeiro, Pires, and Santos (2011) suggest that socio-demographic and socio-economic factors influence MA. The aging process, social isolation, the realisation of imminent death, physical limitations and memory loss contribute to a non-adherence to medical indications. This is also evident in patients with psychiatric disorders, namely depression (Jacobs, 2009; Pinho, 2008), as well as in patients with hypochondriasis. In other words,

the experience of the disease – common, acute or chronic – affects not only the adherence to therapy, but also the behaviours of physicians and caregivers and the relationships between those involved in the treatment process.

The increase in the number of diseases and comorbidities brings about an increase in the number of polymedicated elderly people, which is a key factor in MA (Machado, 2009; Rocha et al., 2008; Santos & Almeida, 2010).

More and more users feel the need to participate in their treatment and rehabilitation process, thus they seek healthcare professionals for ways to improve their adherence. The healthcare professionals should adopt a biopsychosocial approach in which the users are active partners in the therapeutic process, clarifying their doubts and demystifying their concerns and fears.

Research questions

To meet the study objectives, the following research questions were formulated:

What is the level of adherence to the therapeutic regimen among the elderly in the Long-Term Care Unit? To what extent do age and gender influence MA? What is the number of prescribed medications influencing MA? To what extent do mental status and depression affect MA? What socio-demographic and socio-economic factors are associated with MA?

Methodology

This research is a descriptive/exploratory and correlational study, using a quantitative approach. It was carried out at the Community Care Unit- Infante (UCC-I) which covers the municipalities of Lagos, Vila do Bispo and Aljezur. Four multidisciplinary Home-based Integrated Long-term Care Teams (ECCI) are one of the services provided by this Unit. These teams provide care to people with lack of autonomy, different levels of dependence, and requiring sequential health and social support interventions. These teams have an installed capacity of 170 users. Individuals who met the following inclusion criteria were included in the sampling process: elderly people (aged 65 years or more), self-managing their medication, having cognitive skills to answer, and accepting to participate in the study on a voluntary basis, after having received the informed consent.

Data were collected using a questionnaire divided into three parts: 1) socio-demographic characteristics (age, gender, marital status, cohabitation, and employment situation), socio-economic characteristics (income and social class – these variables were assessed using Amaro's Graffar Index [1990]; 2) and the Measure of Treatment Adherence (MAT) Scale developed by Delgado and Lima, 2001), and therapeutic characteristics (number of medications, ability to pay for the medications, social support to pay for the medications); 3) Katz Index (Duarte, Andrade, & Lebrão, 2007); Mini-Mental State Examination (Guerreiro et al., 1994); Geriatric Depression Scale (Almeida & Almeida, 1999).

After permission was granted from the ACES Algarve II – Barlavento and informed consent was obtained, the sample was selected and data were collected in March 2011 during home visits. To this end, a meeting was held with the three ECCI coordinators of Lagos, Vila do Bispo and Aljezur to jointly select the users who met the inclusion criteria.

The questionnaires were always self-administered, after the participants were explained the study objectives and purpose and their doubts were clarified.

Statistical data analysis was performed using the Statistical Package for Social Sciences (SPSS), version 20.0. Two age groups were considered for statistical analysis: elderly people aged between 65 and 79 years, and oldest-old people aged 80 years or more. The MA index was dichotomised at the median in both groups: *Non-adherence* (scores <5) and *Adherence* (scores $\geq=5$), according to the authors' indication. The scales were used as categorical variables, as suggested by the authors. The results were analysed using descriptive statistics, including relative and absolute frequencies. The chi-square test was applied to assess the association between adherence to the therapeutic regimen and the independent variables. The confidence level was set at 95%.

Results

The sample was composed of 55 participants, aged between 65 and 90 years, with a mean age of 78 ± 7.8 years; 52,7% ($n=29$) of participants belonged to the

group of elderly people and 47,3% (n=26) to the group of oldest-old people. As for gender, 69.1% of participants were female and 30.9% were male. With respect to marital status, 61.8% of users were married or cohabiting, while the remaining participants were single (5.5%), widowed (29.1%) or divorced/separated (3.6%). Regarding cohabitation, 14.5% of users lived alone, while the other participants lived with other people. As for the number of hours spent alone by older people, 72.7% spent 0 to 5 hours alone, 10.9% spent 6 to 10 hours alone, and 16.4% spent more than 11 hours alone.

In relation to social class, most participants belonged to middle-class (67.3%) and lower-middle class (23.6%). As for their monthly income, 20% of participants had less than 250 Euros, 60% received between 250 and 500 Euros, and 18.2% received between 500 and 1000 Euros. It should be underlined that only one participant reported a monthly income of more than 1000 Euros. As to their residence, 78.2% of participants lived in their own house, 9.1% lived in a rented house, and 10.9% lived in a borrowed house. In terms of MA, 72.7% of the elderly in the study sample did not adhere to the therapeutic regimen. No statistically significant association was found between the socio-demographic variables under analysis and MA (Table 1). However, the results indicate that, within this population, the elderly, women, widowed, those living alone, and those belonging to a higher social class had lower MA (Table 1).

Table 1

Association between socio-demographic variables and Adherence to Therapeutic Regimen (N= 55)

Socio-demographic variables	Adherence to Therapeutic Regimen		Total N (%)	$X^2(p)$
	Adherence N (%)	Non-Adherence N (%)		
Age group				
Elderly people (≥65 and <80)	7 (24.1)	22 (75.9)	29 (52.7)	0.304 (0.581)
Oldest-old (≥80)	8 (30.8)	18 (59.2)	26 (47.3)	
Gender				
Male	6 (35.3)	11 (64.7)	17 (30.9)	*(0.514)
Female	9 (23.7)	29 (76.3)	38 (69.1)	
Marital status				
Single	1 (33.3)	2 (66.7)	3 (5.5)	
Married/Cohabiting	10 (29.4)	24 (70.6)	34 (61.8)	Not valid
Divorced/Separated	1 (50.0)	1 (50.0)	2 (3.6)	
Widowed	3 (18.8)	13 (81.3)	16 (29.1)	
Cohabitation				
Alone	1 (12.5)	7 (87.5)	8 (14.5)	*(0.423)
Spouse/ Other relatives	14 (29.8)	33 (70.2)	47 (85.5)	
No. of hours spent alone				
0 to 5 hours	11 (27.5)	29 (72.5)	40 (72.7)	*(0.951)
More than 6 hours	4 (26.7)	11 (73.3)	15 (27.3)	
Graffar Index				
Class II	1 (50.0)	1 (50.0)	2 (3.6)	
Class III	5 (45.5)	6 (54.5)	11 (20.0)	Not valid
Class IV	8 (21.6)	29 (78.4)	37 (67.3)	
Class V	1 (20.0)	4 (80.0)	5 (9.1)	
Monthly income				
Less than 250 Euros	2 (18.2)	9 (81.8)	11 (20.0)	
250 to 500 Euros	9 (27.3)	24 (72.7)	33 (60.0)	Not valid
500 to 1000 Euros	4 (40.0)	6 (60.0)	10 (18.2)	
1000 to 2500 Euros	0 (0.0)	1 (100.0)	1 (1.8)	

*Fisher's Exact Test

With respect to therapy, most users take three to five (42.6%) or six or more different medications (42.6%); only 14.5% take one or two medications. As regards their ability to pay for the prescribed medications, 9.1% of users reported not being able to pay for their medications; 30.9% reported being

able to pay for them on their own; and 69.1% needed support from relatives, neighbours, friends or home care teams to pay for their medications. Although no statistically significant association was found between the number of medications and MA, the elderly who took more medicines had lower MA (73.9% of Non-adherence; Table 2). Additionally, the elderly people who reported being unable to pay for the prescribed medications showed lower MA (80.0% of Non-adherence). With regard to the ability to pay for the prescribed medications, we found that, when the elderly were not able to pay for their medication, their level of non-adherence was 80% (Table 2).

Table 2
Association between pharmacotherapeutic profile and Adherence to Therapeutic Regimen

Pharmacotherapeutic profile	Adherence to Therapeutic Regimen		Total N (%)	$X^2(p)$
	Adherence N (%)	Non-Adherence N (%)		
No. of prescribed medications				
Between 1 and 2	3 (33.3)	6 (66.7)	9 (16.4)	
Between 3 and 5	6 (26.1)	17 (73.9)	23 (41.8)	Not valid
More than 6	6 (26.1)	17 (73.9)	23 (41.8)	
Able to pay for the prescribed medications				
Yes				*(1.000)
No	14 (28.0)	36 (72.0)	50 (90.9)	
	1 (20.0)	4 (80.0)	5 (9.1)	
Person paying for the medications				
Patient	5 (29.4)	12 (70.6)	17 (30.9)	*(1.000)
Others	10 (26.3)	28 (73.7)	38 (69.1)	

*Fisher's Exact Test

The Katz Index showed that 60.0% of the elderly were totally independent in their activities of daily living, 14.5% of the elderly were moderately dependent, and 25.5% were very dependent (Table 3).
With respect to mental status, 61.8% of participants presented a cognitive impairment and only 10.9% of participants showed no depression (Table 3). In this sample, although the chi-square test (*p*) was not valid for the association between the Katz Index and MA, it was found that highly dependent elderly people are those with a higher level of non-adherence (85.7%). On the other hand, individuals with depression had lower MA (75.5%). However, a statistically significant association was only found between the state of dementia and MA (p=0.005; Table 3).

Table 3
Association between health assessment tools and Adherence to Therapeutic Regimen

Scales	Adherence to Therapeutic Regimen		Total N (%)	$X^2(p)$
	Adherence N (%)	Non-Adherence N (%)		
Katz Index				
Independent	9 (27.3)	24 (2.7)	33 (60.0)	Not valid
Moderately dependent	4 (50.0)	4 (50.0)	8 (14.5)	
Very dependent	2 (14.3)	12 (85.7)	14 (25.5)	
Mini-mental state examination				
Normal	10 (47.6)	11 (52.4)	21 (38.2)	8.045 (0.005)
Cognitive impairment	4 (12.5)	28 (87.5)	34 (61.8)	
GDS-15				
Normal	3 (50.0)	3 (50.0)	6 (10.9)	*(0.329)
Depression	12 (24.5)	37 (75.5)	49 (89.1)	

*Fisher's Exact Test

Discussion

In this study, the level of MA of the dependent elderly who receive home-based healthcare provided by the Integrated Long-term Care Teams (ECCI) of the Community Care Unit-Infante (UCC-I) was investigated. This research is the first study conducted with this type of population in Portugal, namely in the southern region, more specifically in the municipalities of Lagos, Vila do Bispo and Aljezur in Western Algarve. As regards MA among these users, it was found to be low (27.3%). Similar results were found in the study of Rocha et al. (2008) in a population with the same characteristics (elderly people from the municipality of Porto Alegre, capable of attending the interview on their own and managing their therapeutic regime) and which concluded that 37.1% of participants adhered to the therapeutic regimen. The same results were not seen in the study of Sousa et al. (2011) with elderly people attending a day-care centre in the municipality of Olhão. Sousa et al. concluded that the elderly fully adhered to the therapeutic regimen.

No association between MA, age and gender was found in this study, which is in line with similar results found in the studies of Cintra et al. (2010) and Rocha et al. (2008). Furthermore, Sousa et al. (2011) mention that personal, family and social variables may influence the representation of the illness and therefore the type of coping related to treatment adherence, as the same person may perceive the same disease differently throughout the life cycle.

No significant association was found between MA and the number of prescribed medications, as in Sousa et al. (2011). However, other studies suggest that the greater the number of prescribed medications, the lower the adherence to treatment (Rocha et al., 2008; Santos & Almeida, 2010). Moreover, mental status was also found to have a significant influence on MA. Jacobs (2009) reached the same conclusion in a study conducted with 56 non-controlled hypertensive adult patients undergoing pharmacological treatment. In a study with 74 patients with chronic kidney disease carried out in a haemodialysis centre in the city of Braga, Machado (2009) also concluded that intentional non-adherence may be due to unintentional forgetfulness, complex regimen, the high number of drug usage, cognitive impairment, problems experienced when opening medicine packaging, and memory problems.

With regard to depression, no significant association was found between depression and MA. However, previous studies identified depression as having a negative influence on MA between specific diseases states, such as cardiovascular diseases (MacLaughlin et al., 2005).

Mahtani, Heneghan, Glasziou, and Perera (2011) believe that in order to improve the levels of MA, patient adherence should be regarded as the second stage in the complex process of taking medication, as the first stage is patient concordance to take the prescribed medication. Patient and healthcare professional reach an agreement as to the behaviour to be adopted. Initially, we expected MA among the sampled individuals to be higher given the fact that they were being followed-up and were closer to healthcare services than the remaining elderly population. As these expectations were not confirmed, it is recommended that community in general should play a more active role in elderly care, thus preventing their isolation and discrimination by offering them constant support. With respect to healthcare professionals, a prospective analysis of each patient's healthcare plan should be performed so as to implement corrective measures aimed at improving MA among this population.

This study has some limitations related to the use of a convenience rather than a probability sampling and to the fact that several variables associated with the patient's disease were not considered, as well as type of medication and group homogeneity according to the type of disease. Thus, special attention should be given to the extrapolation of results to the population. Still, we believe that the study objectives were met since the socio-demographic characteristics and the level of MA of this population were identified. It can be concluded that mental status is the main variable associated with non-adherence.

Conclusion

The results confirm that this population has low MA. Mental status has a significant influence on the MA of dependent older people. Despite no statistical association was found, the results indicate that a low level of income, living alone and depression have a negative influence on MA. Thus, these factors should

be taken into account while planning interventions aimed at increasing MA among the elderly. Further studies should investigate factors influencing MA in more homogeneous groups, particularly among people with similar diseases, so that an intervention plan to increase the specificity of the results and the interventions may be designed and applied to different populations, while focusing on action research.

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