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Medication Management Ability in Older Patients: Time for a Reappraisal

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Introduction

The ability of appropriately managing medications is crucial to assure medical adherence, especially in elders with multimorbidity and multiple drugs regimens. Older adults usually take an average of 7 drugs per day but up to 40% of them fail to take medications as prescribed, with unintentional drugs non-adherence [1-2]. Adhering to drug regimens is a complex task that includes cognitive, physical, functional and socioeconomic abilities. Several instruments have been identified to assess medication management ability with these tools fell in the category of patients that used own medications or a simulated medication regimen [3-6]. DRUGS and Med Mai De instruments 5-6, that both used patients' own medications, showed adequate intra and inter-rater reliability, Moreover, DRUGS tool showed a good correlation with cognitive function, responsiveness to change and applicability in different clinical settings [7-11]. So far, no systematic assessment of drugs management ability has been implemented into routine clinical practice. To fill this gap of knowledge, the present study was sought to assess the medical management ability in hospitalized elders and the main clinical factors associated with potential drug management inability.

Subjects and Methods

100 consecutive patients admitted to the Ospedale Policlinico San Martino, Geriatric unit, Genoa, Italy (January-June 2017) were enrolled. Thirty patients were excluded for clinical instability, 6 patients died, 10 patients refused to participate the study and 8 patients withdrew the study. Thus, 46 patients entered the study after written informed consent was obtained. The local Ethical Committee approved the study. Patients were included if they had >65 years, moderate multimorbidity (CIRS<6) [12], clinical stability and the hospital discharge drug regimen included the target drugs packaging (see above).

Exclusion criteria were end stages chronic diseases, (CIRS >6), and inability to participate the study. Demographic variables, residence, marital status, and in home assistance were collected. All patients received abbreviated comprehensive geriatric assessment (MMSE: CIRS; BADL, IADL, GDS) [13-16]. Hand-grip dynamometer (Camry; EH101 Units: Kg/ libbers. Maximum capacity 90 Kg/198 pounds. Power 2X 1.5 V AAA batteries. Tolerance +/- 0.5 Kg to 1 pound) was used to assess sarcopenia. DRUGS tool 5 was administered 48-72 hours before hospital discharge, to assess, respectively, person's ability to identify drugs, to open containers, to take out the correct number and drugs posology and to appropriately verbalize the prescribed drug and dose for these packaging:

-pills blister,

-tablets,

-child resistant closure droplets,

-insulin (Apidra Solostar) pen,

-inhalers devices (e.g. Aliflus diskus inhaler; Bretaris inhaler).

Statistics

Data were expressed as mean ± SD. Non-parametric Pearson correlation was used to correlate two variables. Non -parametric t test (Mann -Whitney) test was used to estimate differences between two variables.

Non-parametric Kruskal -Wallis analysis was used to estimate differences among three or more variables. A p value <0.05 was considered statistically significant.

Graph Pad 5.0 b version was used to perform the statistical analysis.

Results

Patients' mean age was 86.64 ± 1.01 years; female (n=30); male (n=16). Seventy-one % of patients lived alone at home with 29 % receiving in home assistance.

Patients' clinical phenotype (Table 1) was frail, characterized by severe sarcopenia and disability.

All patients failed to manage their medication, fulfilling, on average, the first task (e.g. ability to identify drugs) out of the four requested for each drug packaging: (Aliflus diskus: 1.37 ± 0.19;

Table 1: Patients' clinical characteristics based on abbreviated comprehensive geriatric assessment.

Assessment tool	Mean ± SD
MMSE	20.38±0.35
CIRS	4.15 ± 0.27
CIRS severity	1.98± 0.05
IADL	2.62 ± 0.35
BADL	3.13± 0.33
GDS	7.20 ± 0.52
Mean drugs	6.17 ± 0.42
Hand-grip	9.76 ± 0.90

*no missing da

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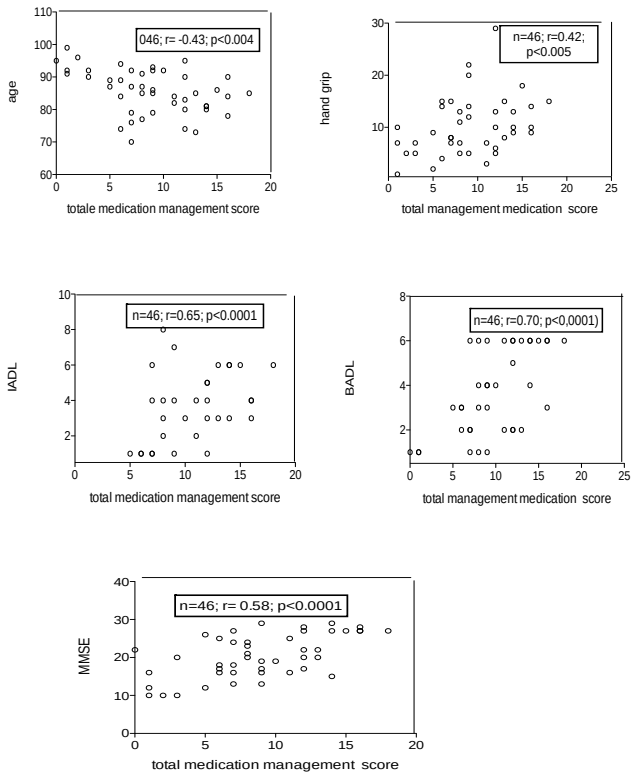

Figure 1: The Pearson correlation analysis between DRUGs score and age, sarcopenia (hand-grip), functional status (BADL, IADL) and cognitive status (MMSE).

Bretaris 1.11 ± 0.19; Apidar Solostar 1.60 ± 0.16; Pills Blister 2.35 ± 014; tablets 1.33 ± 0.17; child resistant closure droplets 1.42 ± 0.16).

A negative correlation between age and DRUGS score (n=46; r= -0.43, p<0.001) was shown. In addition, a positive correlation between DRUGS, BADL (n=46, r=0.70, p<0.0001), IADL (n=46; r=0.65, p<0.001), MMSE (n=46; r= 0.58, p<0.0001) and hand-grip (n=46; r=0.42, p<0.005), respectively, was found (Figure 1).

The worsening of DRUGS score was associated with the severity of cognitive deficit (moderate dementia: MMSE 19 -11 points) (KW 12.84 p<0.01) and (severe dementia: MMSE ≤ 10 points) (KW 29.91 p<0.001), respectively.

Similarly, moderate functional decline (BADL< 4/6 points) was associated with DRUGS worsening (U 497: p<0.01).

A handgrip < 9Kg correlated with DRUG score worsening (U 338; p<0.005).

Multimorbidity was not associated with impaired drug management (p ns).

Medication management ability for Aliflus diskus inhaler correlated with age (n=46; r=-0.38, p<0.0008), BADL (n=46; R=0.42, p<0.003), CIRS severity (n=46, r=0.45, p<0.0018), CDT (n=46, r=-0.36, p<0.001), and MMSE (n=46; r=0.38, p<0.009).

Similarly, Bretaris inhaler correlated with age (n=46, r=-0.34, p<0.003), with MMSE (n=46, r=0.51, p<0.001), BADL (n=46, r=0.54, p<0.005), IADL (n=46, r=0.60, p<0.0001).

Conversely, the medication management ability of child resistant closure droplets mainly correlated with hand-grip (n=46; r=0.60, p<0.0001) as well as Apidra Solostar did (n=46, r=0.60, p<0.0001).

Pills blister correlated with sarcopenia (n=46; r= 0.66, p<0.0001), IADL (n=46; r=0.62; p<0.0001) and cognitive status (n=46; R=0.43, p<0.0002).

Discussion

This exploratory study indicates that elders' medical management ability mainly relies on cognitive performance, functional status and sarcopenia [17-19].

Intriguingly, comorbidity and multiple drugs regimens were not associated with drug management ability. It could be hypothesized that the analysis of comorbidity clusters 20, instead of the number of chronic diseases, could better help in stratifying elder's higher incompliance. Similarly, certain drugs packaging and the complexity of drug regimens, instead of the cumulative drugs number, may be mostly implicated in this impaired ability [21-22].

Sarcopenia was responsible for the lower ability with medical blister pills, children resistant closure droplets and pen insulin while the use of inhaler devices required a more integrated processing (mental, functional, physical).

Limitations to this study are the small size and the single hospital setting with results under power and selection bias. In hospital complications (delirium and exceeding disability) may hamper the assessment accuracy.

The strengths rely on the real-world assessment of hospitalized elders with the performance-based analysis of several drugs and packaging.

Hypothetically, the sample implementation, the longitudinal and multivariate analysis, and the inclusion of a wider drugs range could improve the understanding of this geriatric syndrome. Further studies are warranted to select clinical parameters that could accurately predict impaired elderly medical management ability, to enable a multidisciplinary intervention for patient's enhanced compliance [23-24].

References

1. Kim J, OParish AL. Polypharmacy and medication management in older adults. Nurs Clin North Am. 2017; 52: 457-468.
2. Venneire E, Hearnshaw H, Van Royen P, Denekens J. Patient adherence to treatment three decades of research. A comprehensive review. J Clin Pharm Ther. 2001; 26: 331-342.
3. Elliott RA, Marriott JL. Standardized assessment of patients' capacity to manage medications: a systematic review of published instruments. BMC Geriatr. 2009; 9: 27-35.
4. Fritsch MA, Gray CD. Correlation of the medication management evaluation instrument with compliance in geriatric patients. Journal of Pharmacy Technology. 1998; 14: 18-21.
5. Edelberg HK, Shallenberger E, Wei JY. Medication management capacity in highly functioning community-living older adults: detection of early deficits. J Am Geriatr Soc. 1999; 47: 592-596.
6. Orwig D, Brandt N, Gruber-Baldini AL. Medication management assessment for older adults in the community. Gerontologist. 2006; 46: 661-668.
7. Hutchison LC, Jones SK, West DS, Wei JY. Assessment of medication management by community-living elderly persons with two standardized assessment tools: a cross-sectional study. Am J Geriatr Pharmacother. 2006; 4: 144-153.
8. Edelberg HK, Shallenberger E, Hausdorff JM, Wei JY. One-year follow-up of medication management capacity in highly functioning older adults [see comment]. J Gerontol A Biol Sci Med Sci. 2000; 55: M550-553.
9. Edelberg HK, Rubin RN, Heller DM, Dadiomova Y. Does DRUGS predict functional loss in a di verse population of ambulatory older adults? : Preliminary results. J Am Geriatr Soc. 2002; 50: S37.
10. Laky SL, Gray SL, Borson S. Assessment of older adults' Knowledge of and preferences for medication management tools and support systems. Ann Pharmacother. 2009; 43: 1011-1019.
11. Stoehr GP, Lu SY, Lavery L, Bilt JV, Saxton JA, Chang CC, et al. Factors associated with adherence to medication regimens in older primary care patients: the Steel Valley Senior Survey. Am J Geriatr Pharmacother. 2008; 6: 255-263.
12. Conwell Y, Forbes NT, Cox C, Caine ED. Validation of a measure of physical illnessn burden at autopsy: the Cumulative Illness Rating Scale. J Am Geriatr Soc. 1993; 41: 38-41.
13. Folstein MF, Folstein SE, McHugh PR. "Mini-mental state". A practical method for grading the cognitive state of patients for the clinician. J Psychiatr Res. 1975; 12: 189-198.
14. Katz S, Downs TD, Crash H, Grotz RC. Progress in development of the index of ADL. Gerontologist. 1970; 10: 20-30.
15. Lawton MP, Brody EM. Assessment of older people: self-maintaining and instrumental activities of daily living. Gerontologist. 1969; 9: 179-186.
16. Lesher EL, Berryhill JS. Validation of the Geriatric Depression Scale--Short Form among inpatients. J Clin Psychol. 1994; 50: 256-260.
17. Anderson K, Jue SG, Madaras-Kelly KJ. Identifying patients at risk for medication mismanagement: using cognitive screens to predict a patient's accuracy in filling a pillbox. Consult Pharm. 2008; 23: 459-472.
18. Nikolaus T, Kruse W, Bach M, Specht-Leible N, Oster P, Schlierf G. Elderly patients' problems with medication. An in hospital and follow up study. Eur J Clin Pharmacol. 1996; 49: 255-259.
19. Beckman A, Bernsten C, Parker MG, Thorslund M, Fastbom J. The difficulty of opening medicine containers in old age: a population –based study. Pharm World Sci. 2005; 27: 393-398.
20. Velilla M, Gaminde Inda Id. Comorbidity and multimorbidity indexes in the eldelry patients. Med Clin (Barc). 2011; 136: 441-446.
21. DiMatteo MR, Haskard KB, Williams SL. Health beliefs, disease severity and patient adherence: a meta-analysis. Med Care. 2007; 45: 521-528.
22. Beckman AGK, Parker MG, Thorslund M. Can elderly people take their medicine? Patient Educ Couns. 2005; 59: 186-191.
23. Steele KM, Ruisinger JF, Bates J, Prohaska ES, Melton BL, Hipp S. Home-based comprehensive medication reviews: pharmacists' impact on drug therapy problems in geriatric patients. Consult Pharm. 2016; 31: 598-605.
24. Shava FT, Chirikov VV, Rochester C, Zaghab RW, Kucharski KC. Impact of a comprehensive pharmacist medication-therapy management. J Med Econ. 2015; 18: 828-837.

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