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Functional and Cognitive Performances in a Geriatric Population in Home Care

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ABSTRACT

During 2018 the Home Care Unit takes care of 882 patients, with need of nurses and physiotherapists.

The aim of this study is to evaluate the functional and cognitive performances of our patient's population. We evaluated the patients using: Barthel Index (BI), Mini Nutritional Assessment (MNA), Norton scale (NS), Clinical Dementia Rating Scale (CDR), pain evaluation with Numerical Rating Scale (NRS) or Pain Assessment in Advanced Dementia (PAINAD).

***Results:** male 398 (45.2%), female 484 (54.8%), mean age 80.1, BI 40.9, MNA 6.9, NS 14.1. The main pathology are: skin ulcers 359 patients (40.8%), orthopaedic disease 110 patients (12.5%), neurological disease 88 patients (10%), urinary disorders 53 patients (6%), neoplastic disease 45 patients (5.1%), cardiovascular disease 42 patients (4.8%).*

The male vs female have statistically significant higher BI (44.1 vs 38.3) e NS (14.3 vs 13.8) (t-test $p<0.05$). 278 patients (31.5%) have pressure ulcers (PU), 604 patients have no PU.

194 patients (21.8%) have cognitive disorders (CDR≥2), 688 patients have no cognitive disorders (CDR<2). 88 patients with cognitive disorders (45.4%) have PU with chi-square statistically significant ($P<0.05$) if related to no cognitive disorders patients (27.6%). Patients with cognitive disorders have lower BI (13.5 vs 48.6) and NS (10.7 vs 15.1) non statistically significant. 88 patients with cognitive disorders (45.4%) have dysphagia with chi-square statistically significant ($P<0.05$) if related to no cognitive disorders' patients (14.3%).
No differences in pain evaluation or nutritional status.

***Conclusion:** the application of CDR permits to classify patients with cognitive disorders, who have a worse functional status with higher presence of pressure ulcers and dysphagia.*

Keywords
Cognitive disorders, Home care, Pressure ulcers.

Introduction
The growing complexity in the care needs of an ageing population is related to the current demographic change. Older population has a higher life expectancy and is in better health for longer periods, but there is a higher probability to develop chronic conditions and functional disabilities [1].

Ageing population is expected to create a growing demand for health-care staff, in particular specialist nurses in geriatric care [2].

It is becoming important to manage the health and social care of frail older adults, especially in those who are homebound. Home-based primary care provides comprehensive care to older adults with complex needs. The are different outcomes like identifying risk of falls, medication adherence, reducing caregiver burden and reducing hospitalisation. The purpose is to ensure more appropriate

primary and community care.

Nurses in home-based care play a special role establishing long-term relationship with patients and cultivating a strong professional identity [3].

In recent years, several European countries have created community-based services for older people to replace care in hospitals [4]. The high quality of care is important to reduce improper medication, late or incorrect diagnoses, inadequate treatment of chronic pain, pressure ulcers and inappropriate use of chemical [4].

The main nurses' skills in home-based care are the following: care planning according to nursing procedure, knowledge of rehabilitation equipment, evaluation and treatment of skin lesions like pressure ulcers, vascular lesions, diabetic ulcers, surgical wounds. It's also important the health education of caregiver in prevention of pressure ulcers, dietary changes in malnutrition or dysphagia, falls prevention and skin care.

Aim of the Study

The aim of the study was to evaluate the functional and cognitive performances of patients in care at the Home Care Unit. Considering that frailty increases the risk to present functional decline, falls, hospitalizations and death, we assessed a multidimensional evaluation to detect the patient's frailty and their needs.

Methods

An observational study design was used.
The multidimensional evaluation was done at the first visit at home by the care manager and was registered in the medical records. The multidimensional evaluation was made up of different areas.

The functional status was evaluated using BI [5,6]: a severe dependence on the activities of daily living was detected by a score lower than 60 of 100. For the analysis of the nutritional status we used MNA [7,8]: a score lower than 11 of 14 suggested a higher risk of malnutrition.

NS was used for evaluate the risk of developing a PU [9], where a score lower than 14 of 20 indicated a moderate risk. Because the cognitive status is important to plan clinical interventions, we introduced CDR [10,11] for evaluating the cognitive status.

Patients with no cognitive disorders had a CDR score less than 2. A CDR score equal or higher than 2 suggested the presence of cognitive disorders: CDR 2 identified a mild dementia, CDR 3 a moderate dementia, CDR 4-5 a severe dementia. Pain evaluation in patients with no cognitive disorders was done using the NRS [12]; in patients with cognitive disorders was used PAINAD [10,12].

In medical records we also registered the main pathology, evaluated as the main need that required the activation of home care. The evaluation and staging of PU was done according to European Pressure Ulcer Advisory panels (EPUAP). The presence of swallowing disorders was also detected.

Results

During 2018 the Home Care Unit of Paxme Group takes care of 882 patients, living in Regione Lombardia-Italy, with need of nurses and physiotherapists. For all the patients was done the multidimensional evaluation.

The main pathology in the population were: 359 skin ulcers (40.8%), 110 orthopaedic disease (12.5%), 88 neurological disease (10%), 53 urinary disorders (6%), 45 neoplastic disease (5.1%), 42 cardiovascular disease (4.8%). We can see that the skin ulcers care is the most important need of our population.

Table 1 illustrates the demographic characteristics of the population: 398 male (45.2%) and 484 female (54.8%), mean age was 80,1 ± 13,8 ys. The total days of care were 42519 and a mean days of care of 48,2 ± 5,3.

	N°	Age	Days of care	BI	MNA	NS
All patients	882	80,1 ± 13.8	48,2 ± 5.3	40,9 ± 29.9	6,9 ± 4.8	14,1 ± 3.9
Male	398	77,4 ± 23.4	47,6 ± 5.8	44,1 ± 29.5*	7,1 ± 4.9	14,3 ± 3.8*
Female	484	82,1 ± 12.9	48,7 ± 22.2	38,3 ± 29.9*	6,8 ± 4.7	13,8 ± 3.9*

Table 1: Demographic and functional characteristic of the population.
* t-test $p<0.05$.

The BI of all patients (40,9 ± 29,9) highlights a severe dependence on the activities of daily living. The patients have a MNA (6,9 ± 4.8) suggestive for an higher risk of malnutrition and a NS (14,1 ± 3.9) suggestive for a moderate risk of developing PU.

According to the gender we observe a statistically significant difference in BI and NS between male and female: the female have a worse BI (38,3 ± 29,9 vs 44,1 ± 29,5) and NS (13,8 ± 3,9 vs 14,3 ± 3,8) score.

The results about the cognitive status, evaluated with the CDR, are illustrated in table 2: 78,2% of patients had no cognitive disorders, 21.8% had cognitive disorders. No differences in male and female.

		no cognitive disorders - CDR <2	cognitive disorders - CDR ≥2
All patients	n°	688	194
	%	78.2%	21.8%
Male	n°	323	75
	%	81%	19%
Female	n°	365	119
	%	75.4%	24.6%

Table 2: Cognitive status of the population.

In table 3 we can see that CDR score 2 and 3 are the most frequent in patients with cognitive disorders, 51% and 38% respectively. Only 11% have severe dementia (CDR 4-5). A similar distribution

is observed in male and female.

		CDR 2	CDR 3	CDR 4-5
All patients	n°	99	75	20
	%	51%	38%	11%
Male	n°	48	23	4
	%	64%	30%	6%
Female	n°	51	52	16
	%	42.8%	43.7%	13.6%

Table 3: CDR score in the patients with cognitive disorders.

The main features of population divided in according to CDR results are showed in table 4. Patients with CDR ≥ 2 showed lower BI and NS score than patients with CDR<2, 13,5 ± 18,7 vs 48,6 ± 27,8 and 10,7 ± 2,8 vs 15,1 ± 3,6 respectively. There was no statistically significant differences using t-test.

	Age	Days of care	BI	MNA	NS
no cognitive disorders - CDR <2	78,7 ± 14,2	48,9 ± 23,2	48,6 ± 27,8	6,7 ± 5,2	15,1 ± 3,6
cognitive disorders - CDR ≥2	84,7 ± 10,9	45,4 ± 20,9	13,5 ± 18,7	7,5 ± 2,9	10,7 ± 2,8

Table 4: Demographic and functional characteristic in the population divided by CDR scores.

We found that PU were presented in 31.5% of the population, 28.1% of male, 34.3% of female. The staging of PU in the population showed the following results: I stage 13%, II stage 40%, III stage 31%, IV stage 16%.

In table 5 are showed the results about the PU in the population divided by CDR score. Patients with cognitive disorders had a higher percentage of PU if related to no cognitive disorders patients, 45.4% and 27.6% respectively. This distribution is statistically significant using chi square test.

		Absence of PU	Presence of PU
no cognitive disorders - CDR <2	n°	498*	190*
	%	72,4%	27,6%
cognitive disorders - CDR ≥2	n°	106*	88*
	%	54,6%	45,4%

Table 5: Pressure ulcers in the population divided by CDR scores. * chi-square test, p<0,05.

The presence of swallowing disorders is represented in table 6: also this distribution is statistically significant using chi square test. Patients with cognitive disorders had a higher percentage of swallowing disorders if related to no cognitive disorders patients, 45.4% and 14.3% respectively.

The evaluation of pain detected a presence in 14% of population, with no differences in the population divided by CDR score.

		Absence of swallowing disorders	Presence of swallowing disorders
no cognitive disorders - CDR <2	n°	590 *	98 *
	%	85,7%	14,3%
cognitive disorders - CDR ≥2	n°	106 *	88 *
	%	54,6%	45,4%

Table 6: Swallowing disorders in the population divided by CDR scores. * chi-square test, p<0,05.

Discussion and Conclusion

The main objective of home-based primary care is to improve medication management, reducing hospital admission and hospital bed days, delay the admission to long-term care. The nurses of home-based primary care have to ensure that patients receive appropriate care, contributing also to bettering the quality of life of a vulnerable population [1].

In this study we want to demonstrate that a multidimensional evaluation is needed to manage the health of older adults and that the detection of cognitive disorders is required to plan a specific health program.

In a geriatric population the risk of malnutrition and the risk of developing PU are strictly related; the nurses have to consider the risks and plan a specific care. The evaluation of swallowing disorders is another important step in geriatric nursing: dysphagia is a cause of dehydration, malnutrition and increases the risk of aspiration pneumonia.

The application of CDR permits to identify patients with cognitive disorders, though they had no history of cognitive disorders. A history of neurological disease, including not only dementia, are presented in 10% of population: the use of CDR detected 21.8% of cognitive disorders.

We can affirm that the use of CDR is useful to plan nurse's intervention and to better identify the patient's risk.

In our population the patients with CDR ≥ 2 have a worse functional status and a higher risk of PU, a higher presence of PU. They also have a higher presence of swallowing disorders.

This data demonstrate that activities of nurses in home-based primary care have to include not only nursing services, but also preparing family members for their role as caregivers [3]. The health education plays a central role in the nurse's job, especially in prevention of pressure ulcers, education in managing the swallowing disorders and malnutrition.

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