

Medication and polypharmacy in palliative care

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Background



The multi-morbidity associated with life-threatening chronic progressive disease determines the complexity of a patient in palliative care services¹



The severity and number of symptoms in the advanced stages require a complex pharmacological and non-pharmacological management²



The complexity of the therapeutic plan is perceived by the patient as a stressful factor, caused by the many prescribed drugs and complicated administration regimens³



The aim of this study is to identify the complexity of the therapeutic plan followed at home by the cancer or non-cancer patients needing palliative care, and to assess its impact on the burden of the family caregivers

1. Safford MM, Allison JJ, Kiefe CI. Patient complexity: more than comorbidity. The vector model of complexity. *J Gen Intern Med.* 2007;22:382–390.
2. Pask S, Pinto C, Bristowe K, et al. A framework for complexity in palliative care: A qualitative study with patients, family carers and professionals. *Palliative Medicine.* 2018;32:1078-1090.
3. Kraska J, Corlett SA, Katusiime B. Complexity of Medicine Regimens and Patient Perception of Medicine Burden. *Pharmacy (Basel).* 2019;7: 18

Study design

Period

February 1, 2019 - January 31, 2020

Location

Palliative Care Department, Municipal Hospital , Campia Turzii, Romania

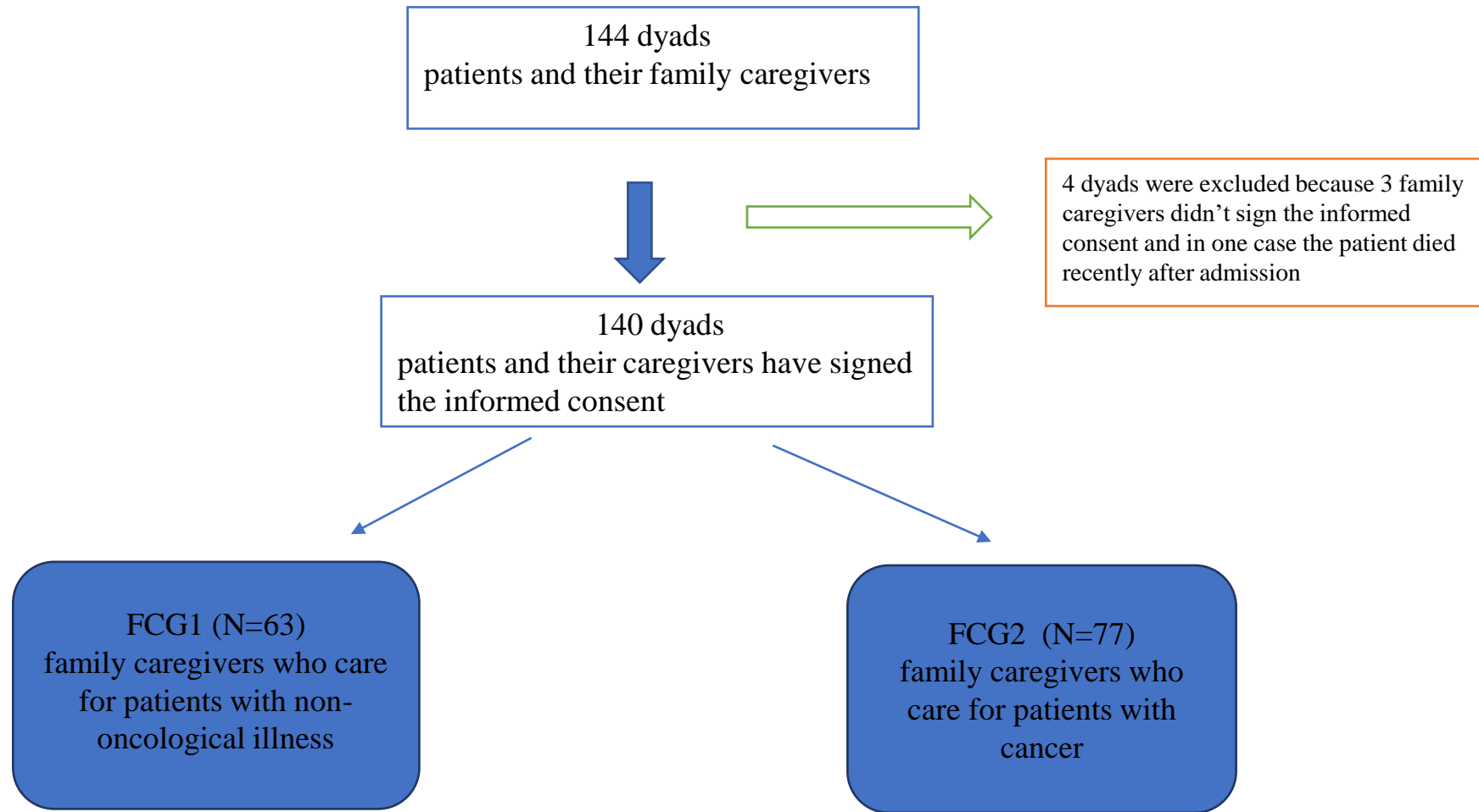
Type of study

Transversal observational study

Criteria of inclusion and exclusion of patient-caregiver pair

	Inclusion criteria	Exclusion criteria
Patients	Age over 18 years	Age under 18 years
	Diagnosis of chronic progressive disease with clear indications for palliative care ¹	No diagnosis of chronic progressive disease
	Written informed consent to participate in the study	No written informed consent
		Disease stage does not require palliation
Family caregiver	Age over 18 years	Age under 18 years
	No payment for care provided	Caregiver is paid for the work with patient
	Without conditions affecting cognitive function	Diagnosis of cognitive impairment
	Written informed consent to participate in the study	No written informed consent

1. <https://legislatie.just.ro/Public/DetaliiDocumentAfis/198281>. Ministerul Sanatatii. Ordin nr 253 din 23 februarie 2018 pentru aprobarea Regulamentului de organizare , funcționare și autorizare a serviciilor de îngrijiri paliative.



The algorithm for enrolling the subjects in the study. (Abbreviations: FCG1 -family caregiver's group who care for non-oncological patients and FCG2 – family caregiver's group who care for patients with cancer)

Instruments used

BSFC

- Includes 28 items assessing the burden
- The higher value means the heavier burden of care
- Total score may be between 0-84
- Cronbach' alpha index 0.92 ¹

MRCI

- Measuring three aspects of the therapeutic plan: ²
- Section A - route of administration
- Section B - number of drugs, dosage, frequency of administration including "when needed"
- Section C – additional recommendations regarding trituration, fractioning the pills, relation with food, administration according to a certain timetable or assessment scale

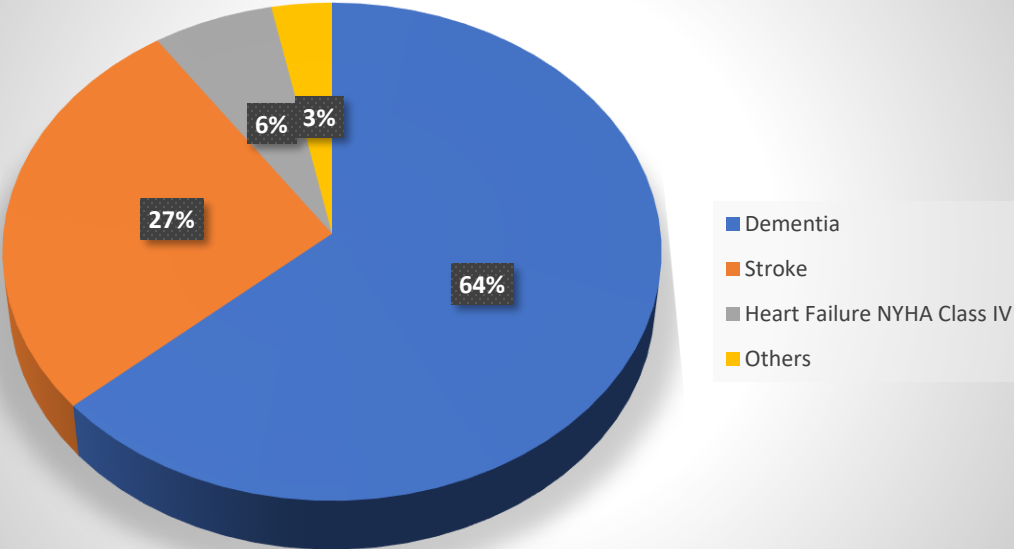
1. Gräßel E, Adabbo R: Perceived burden of informal caregivers of a chronically ill older family member: Burden in the context of the transactional stress model of Lazarus and Folkman. *Journal of Gerontopsychology and Geriatric Psychiatry*. 2011, 24, 143–154
2. George J, Phun YT, Bailey MJ et al. Development and validation of the medication regimen complexity index. *Ann Pharmacother*. 2004 , 38, 1369-76.

Characteristic features of the two patient groups

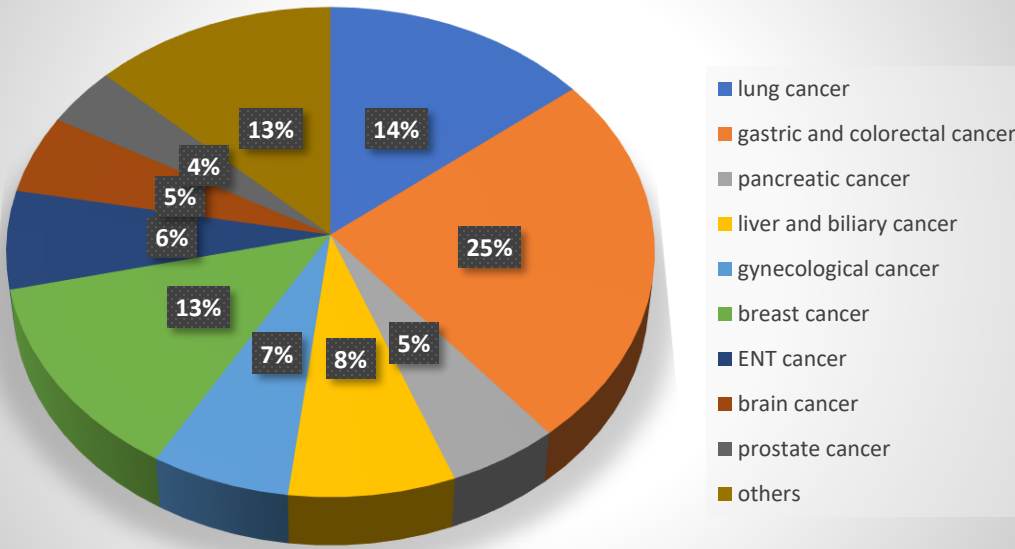
Parameter	Non-oncological group n=63	Oncological group n=77	p value
Age (years \pm SD)	78.38 \pm 9.98	72.3 \pm 11.90	<0.001
Male sex; n (%)	42 (66.67)	52 (67.53)	0.91
Rural background; n (%)	30 (47.62)	28 (36.36)	0.17
Multiple comorbidities; n(%)	27 (42.86)	26(33.77)	0.04
Barthel score 0-40 (very and totally dependent); n(%)	61 (96.83)	56 (72.73)	0.001
Median duration between diagnosis and initiation of palliative care - days (min-max)	1098 (82-2747)	283 (69-761)	0.001

Distribution of diseases in sample groups

Non-oncological group (FCG1)



Oncological group (FCG2)



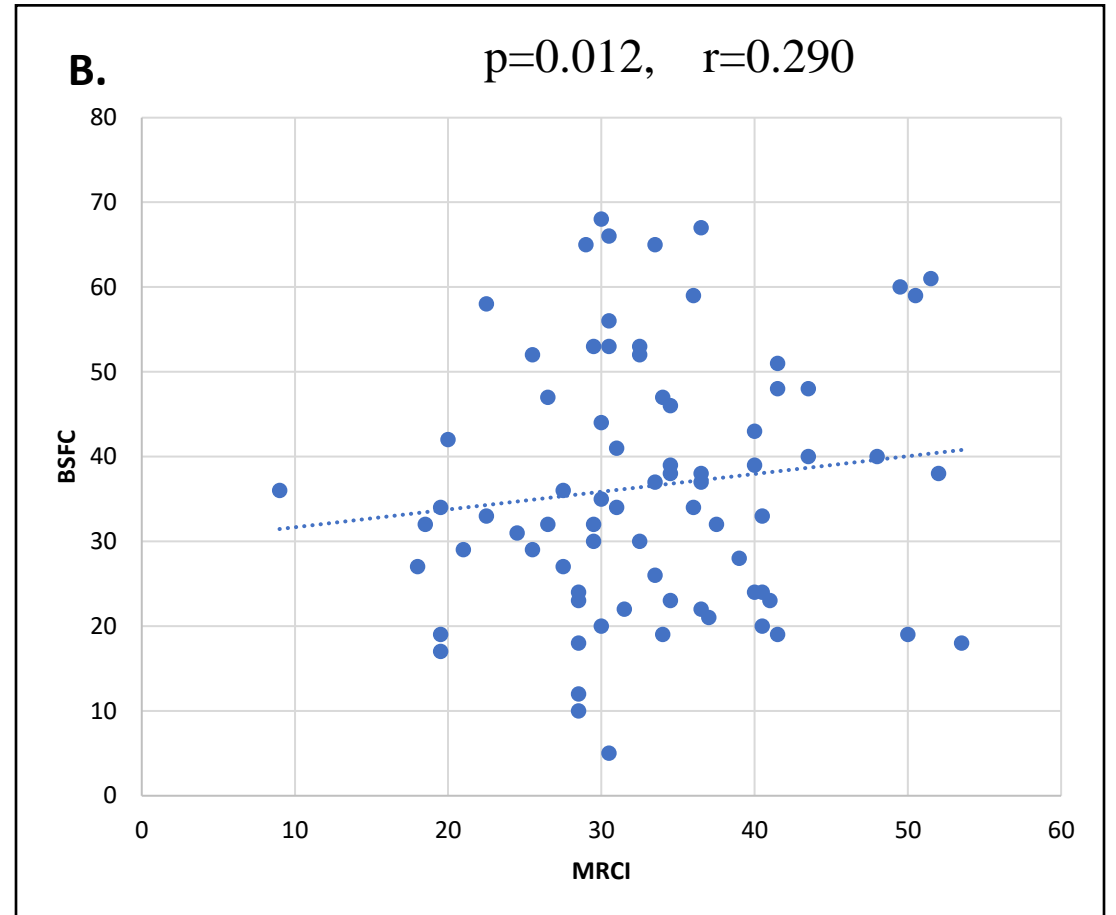
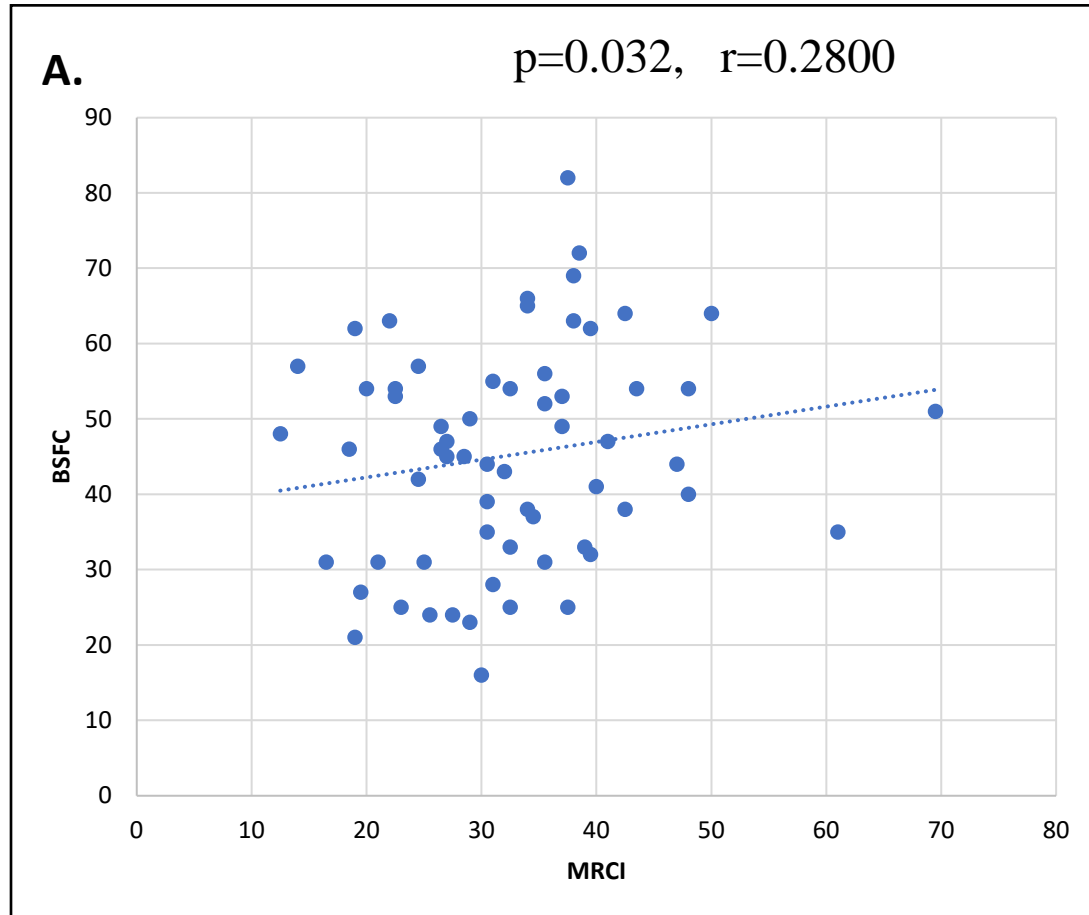
Characteristic features of the family caregiver subgroups

Parameter	Non-oncological group n=63	Oncological group n=77	p value
Age (years \pm SD)	58.3 (\pm 12.41)	54.7 (\pm 12.52)	0.06
Male sex; n (%)	20 (31.74)	23 (29.87)	0.81
Rural background; n (%)	17 (26.99)	21 (27.27)	0.96
First degree relatives; n (%)	51 (80.95)	63 (81.81)	0.89
Residence different from patients; n (%)	23 (36.51)	39 (50.65)	0.93
High burden of care –BSFC score 46-84; n (%)	33 (52.32)	22 (28.57)	0.004

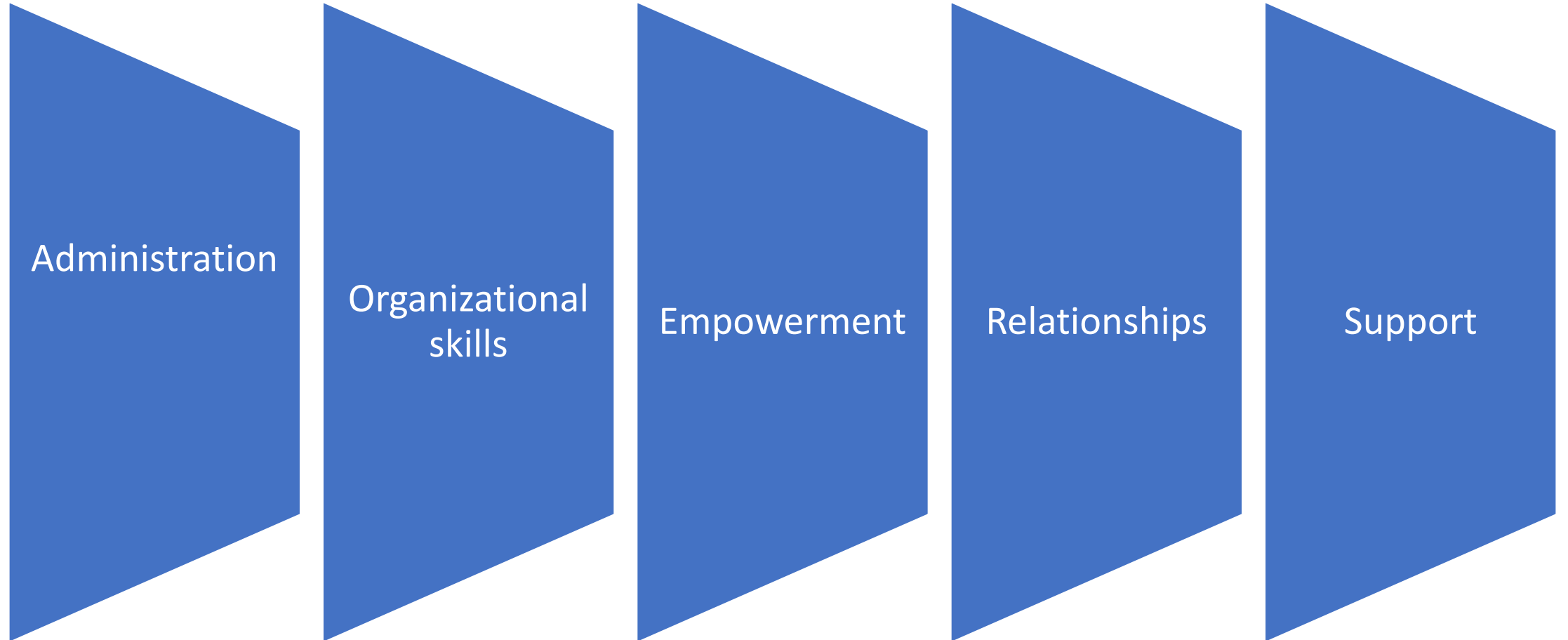
Variables regarding administration of medication, complexity of treatment regimen and burden on family caregiver

Variable	Non-oncological group	Oncological group	p
MRCI complexity score (score± SD)	33.12 ±10.39	32.94 ±8.25	0.66
No. of daily non-parenteral units (mean± SD)	8.25 ±4.94	5.89±4.93	0.004
No. of daily parenteral units (mean± SD)	4.84 ±3.12	6.51±3.48	0.002
BSFC (score± SD)	45.14 ±14.45	36.52±15.05	0.01

Correlation between the family caregiver's burden and the complexity of the treatment regimen in non-oncological (A) and oncological patients (B).



Burden of family caregivers have five themes:



Administration of medication

- Understanding the difference between generic and brand-names
- Time to peak drug effect
- The difference between short-acting/fast-release and long-acting/extended-release drugs and the danger of double dosing
- The fear of over and under-medicating the patients, and struggling to know when to give medication and how to administer it
- Concerns about the over-medicating the patients, about the use of morphine (negative connotations to it , side effects)
- Under-medicating and not relieving patients' suffering
- Insecurity and indecision about managing the therapeutic plan
- How medicine needs to be administered: pharmaceutical form (drops, liquid caused confusion for FCG), medication given at specific hours, with or without food, etc

Organizational skills

- FCGs identified organizational skills and techniques which they applied in order to effectively administer, track and monitor the effects of the medication
- Medication boxes, alongside written schedules or diaries in order to enhance their confidence and efficiency
- To maintain details of the medication in computer spreadsheets and handwritten note

Empowerment

- Confidence in their abilities to manage medicine at home
- FCGs often only took on the role “by default”, as there was no one else to do so, and took this commitment as part of a promise or duty to keep the patient at home for as long as possible
- When symptoms were not controlled by the medication administered by the FCGs, the feeling of disempowerment appeared, the care becoming a burden

Relationships

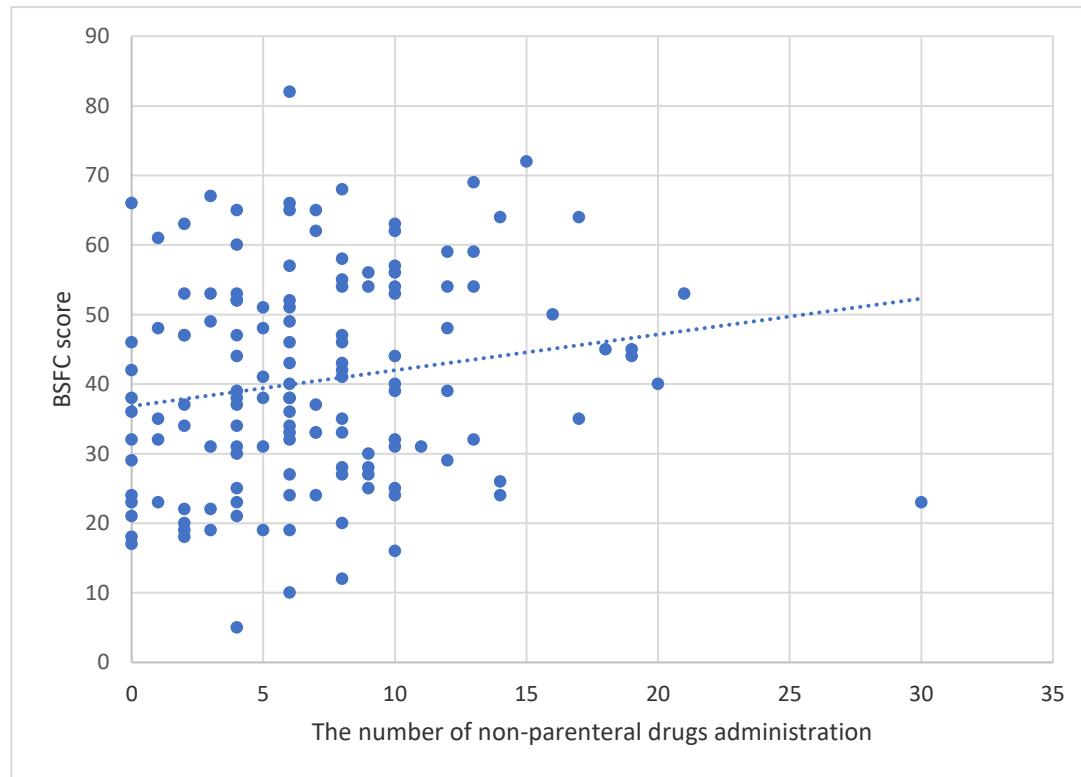
- Relationship dynamics have an impact on FCGs' abilities to optimize the management of medication
- Relationship between families and palliative care team and within families influenced medication management

Support

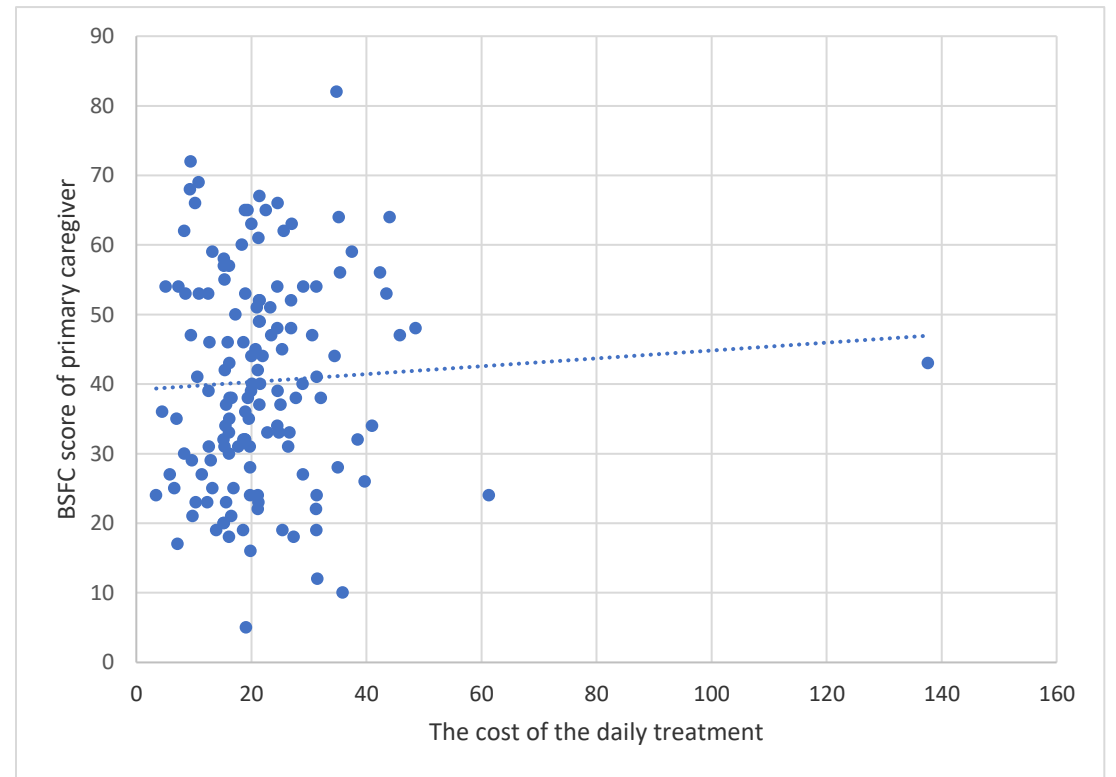
- Professional support
- Feeling unsupported led to feelings of isolation and abandonment
- Support can come in many ways, in order to create and maintain confidence while using medication
- Having medication drawn up in advance and being given written information was also reported to be a source of support
- Having more information on what each medication was for or a “trouble shooting guide” for what to do

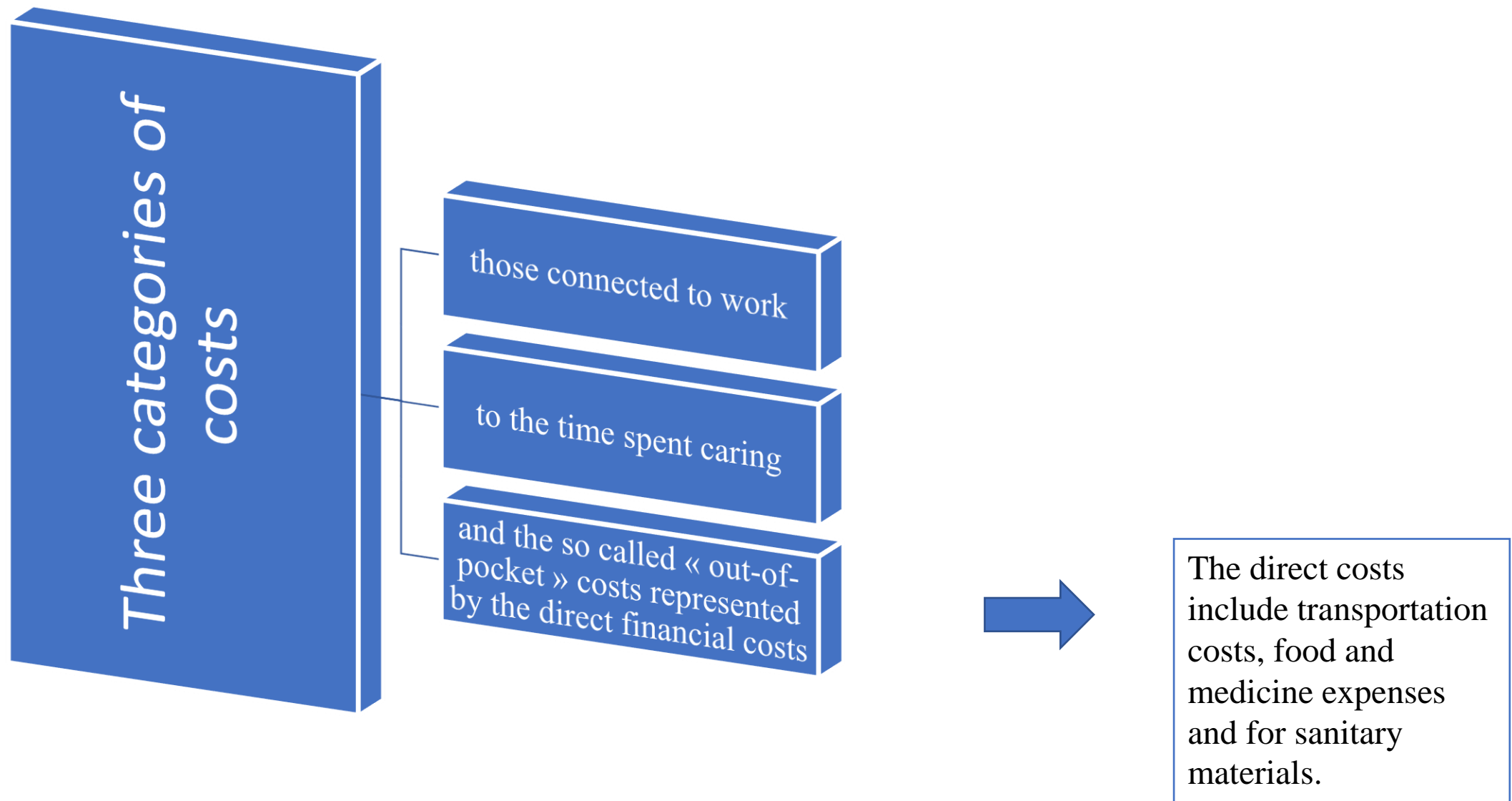
Correlation between caregiver's burden and the number of non-parenteral medicine daily administered to the patient with palliative needs (A) and with the daily cost of patient's treatment (B)

Correlation between caregiver's burden and number of non-parenteral units administrated (r=0.16 and p=0.044)



Correlation between caregiver's burden and cost of patient's daily treatment (r=0.05 and p=0.54)





1. Gardiner, C., Robinson, J., Connolly, M. *et al.* Equity and the financial costs of informal caregiving in palliative care: a critical debate. *BMC Palliat Care* **19**, 71 (2020). <https://doi.org/10.1186/s12904-020-00577-2>
2. Gott M, Gardiner C, Allen R, et al. No matter what the cost: a qualitative study of the financial costs faced by family and whānau caregivers within a palliative care context. *Palliat Med.* 2015;29(6):518–28.

Correlation between total cost estimated by the primary caregiver and the monthly cost of patient's medication

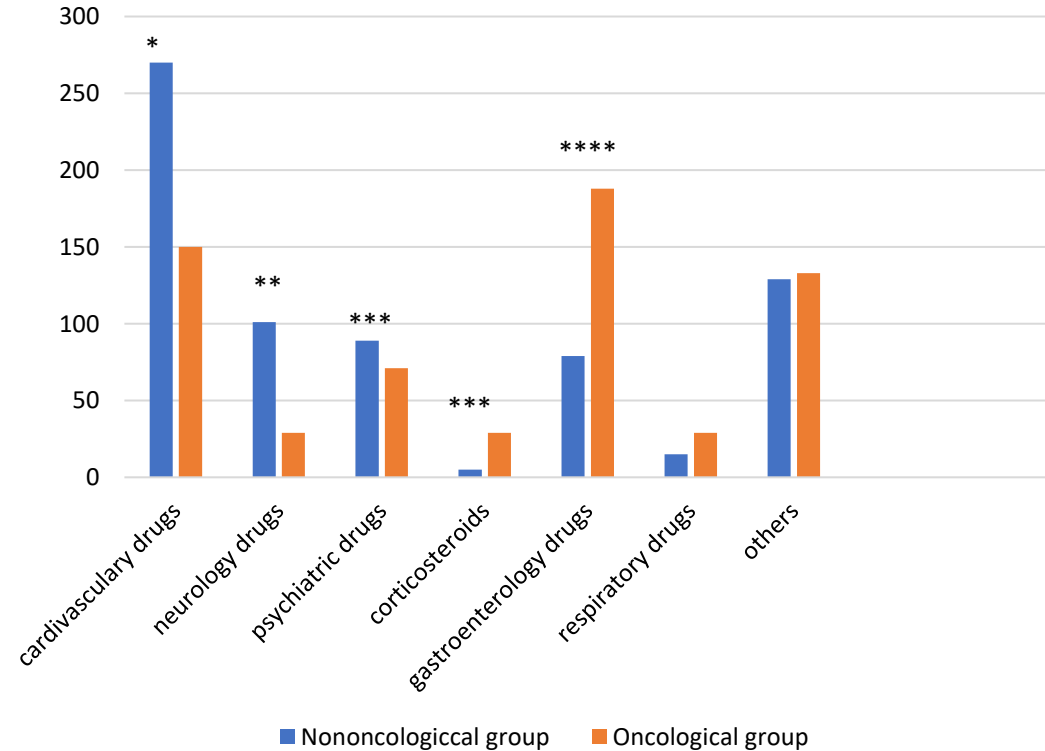
	N	Mean±SD	p Value
Monthly cost of medicine	140	657.01± 417.13	0.001
Total cost for patient care estimated by the caregiver	133	1309.40± 678.91	

- ✓ Sometimes the medication cost per month may exceed the patient's income per family member which imposes the feeling of burden upon all the family members.
- ✓ On average the spending amount on medication represents about half of the monthly sum that patients are spending on care.
- ✓ The correlation between the daily expenses on medication and the estimated amount spent by the patient for care is significantly statistic (p=0.001).

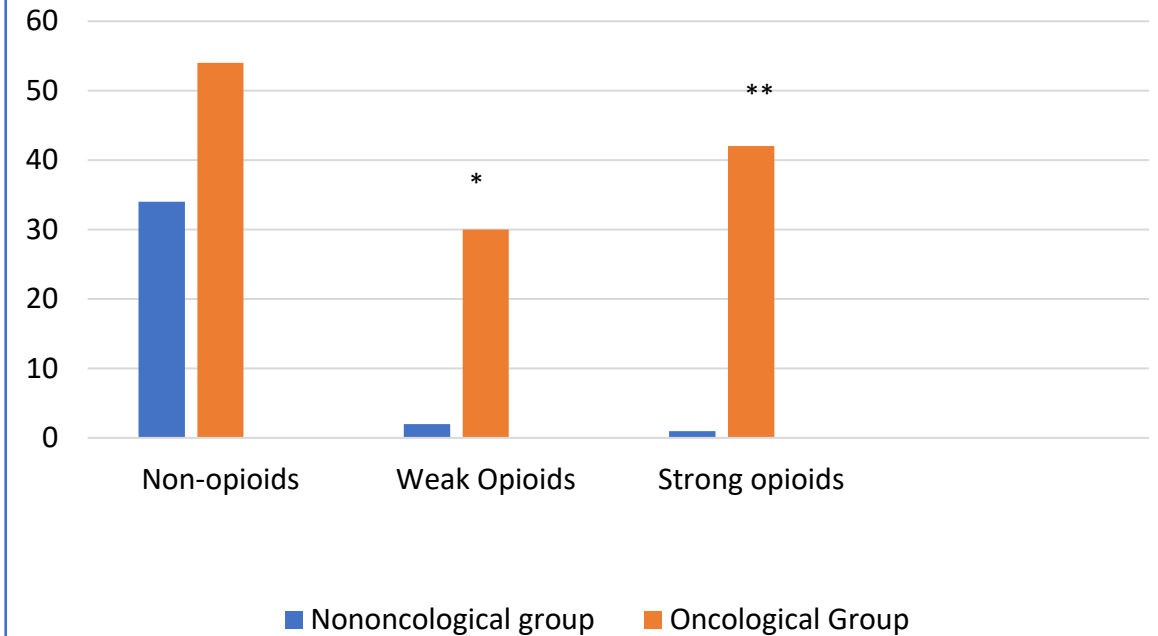
Non-oncological Group (FCG1)				Oncological Group (FCG2)			p Value (number of drugs prescribed)	p Value (number of patients)
Therapeutic Group	Number of drugs prescribed	Number of patients	Mean no of drugs prescribe/pat	Number of drugs prescribed	Number of patients	Mean No of drugs prescribed/pat		
	(% of 811)	(% of 63)		(% of 863)	(% of 77)	t		
Cardiovascular drugs	270 (33.29%)	59 (93.65%)	4.57	150 (17.38%)	49 (63.63%)	3.06	0.0001	0.0001
Neurology drugs	101 (12.45%)	49 (77.77%)	2.06	55 (6.37%)	38 (49.35%)	1.44	0.0001	0.0001
Respiratory drugs	15 (1.84%)	9 (14.28%)	1.66	29 (3.36%)	18 (23.37%)	1.61	0.53	0.87
Gastroenterology drugs	79 (9.74%)	36 (44.3%)	2.19	188 (21.78%)	39 (50.64%)	4.82	0.0001	0.44
Psychiatric drugs	89 (10.97%)	42 (66.66%)	2.11	71 (8.22%)	40 (51.94%)	1.77	0.05	0.23
Antidiabetic drugs	25 (3.08%)	16 (25.39%)	1.56	19 (2.20%)	13 (16.88%)	1.46	0.38	0.73
Antibiotics	38 (4.68%)	25 (39.68%)	1.52	29 (3.36%)	21 (27.27%)	1.38	0.24	0.81
Corticosteroids	5 (0.61%)	4 (6.34%)	1.25	29 (3.36%)	26 (33.76%)	1.11	0.0001	0.0001
Reno-genital drugs	10 (1,23%)	10 (15.87%)	1	6 (0.69%)	5 (6.49%)	1.2	0.29	0.11
Hemostatic drugs	2 (0.24%)	1 (1.58%)	2	8 (0.92%)	4 (5.19%)	2	0.32	0.2
Endocrine drugs	4 (0.49%)	4 (6.34%)	1	6 (0.69%)	4 (5.19%)	1.5	0.87	0.77
Crystalloid solutions	83 (10.23%)	43 (68.25%)	1.93	79 (9.74%)	44 (57.14%)	1.79	0.14	0.07
Vitamins and supplements	50 (6.16%)	24 (38.09%)	2.08	65 (7.53%)	39 (50.64%)	1.66	0.18	0.19
Non-opioid analgesics	34 (4.19%)	26 (41.26%)	1.3	54 (6.25%)	49 (63.63%)	1.1	0.11	0.09
Weak opioids	2 (0.24%)	2 (3.17%)	1	30 (3.47)	30 (38.96%)	1	0.0001	0.0001
Strong/Major opioids	1 (0.12%)	1 (1.58%)	1	42 (4.86%)	27 (35.06%)	1.55	0.0001	0.0001
Others	3 (0.36%)	3 (4.76%)	1	3 (0.34%)	3 (3.89%)	1	0.98	0.77

Medication used for patients with palliative needs

General medication prescribed in palliative care
(*p=0.0001, **p=0.0001, ***p=0.05,
****p=0.0001)



Medication used for pain control in palliative care (*p=0.0001, **p=0.0001)



Polypharmacy

- 20 of therapeutic drugs
- 30 units /day
- +/- other supplements
- polypharmacy is due to the association of several conditions and cross consultations of different medical specialties, which loads the treatment regimen
- Therapeutic plan for an 85-year-old patient

- Davia 10 mg 1tb/zi - 6 luni,
- Memantina 10 mg 1tb x 2/zi - 6 luni,
- Pramistar 600 mg 1tb/zi - 6 luni,
- Tanakan 40 mg 1tb x 2/zi - 6 luni,
- Asentra 50 mg 1tb/zi - 6 luni,
- Uniquet 50 mg 1/2tb dimineata + 1tb seara - 6 luni,
- Sermion 30 mg 1tb/zi - 6 luni,
- Betaserc 24 mg 1tb x 2/zi - 6 luni,
- Gabaran 300 mg 1tb x 2/zi - 6 luni,
- Xanax 0,25 mg 1tb/zi - 6 luni,
- Preductal 35 mg 1tb x 2/zi - 6 luni,
- Aspenter 75 mg 1tb/zi - 6 luni,
- Omez 20 mg 1tb/zi - 6 luni,
- Lagosa 150 mg 1tb x 2/zi - 2 luni,
- Essentiale Forte N 1tb x 2/zi - 2 luni,
- Actovegin 200 mg 1tb x 2/zi - 2 luni, pauza 1 luna si repeta - 6 luni,
- Alpha D3 0,5 mcg 2tb/zi - 6 luni,
- Ca, Mg, Zn 1tb x 2/zi - 10 zile/luna - 6 luni,
- Mydocalm 150 mg 1tb x 2/zi - 10 zile/luna - 6 luni,
- Voltaren Forte gel - de uns pe picioare seara.



Non-oncological patients

- 9.5- 10 agents taken by noncancer patients in acute care ¹
- 7.84 agents at admission in palliative care and 7.07 at death (p<0.05) ²
- **11.55 units/day**



Oncological patients

- 5.65 agents at admission in palliative care and 5.69 at death (p=0.37) ²
- 2.03-7.8 agents^{3,4}
- **10.18 units/day**

1. Sevilla-Sanchez D, Molist-Brunet N, Amblas-Novellas J et al. Potentially inappropriate medication at hospital admission in patients with palliative needs. *Int J Clin Pharm* 2017;39:1018-1030
2. Wenedy A, Lim YQ, Lin Ronggui CK, Koh GCH, Chong PH, Chew LST. A Study of Medication Use of Cancer and Non-Cancer Patients in Home Hospice Care in Singapore: A Retrospective Study from 2011 to 2015. *J Palliat Med.* 2019 Oct;22(10):1243-1251
3. Koh N, Koo W. Polipharmacy in palliative care: Can it be reduced? *Singapore Med J* 2002;43:279-283
4. Kotlinska-Lemieszek A, Paulsen O, Kaasa S, Klepstad P. Polipharmacy in patients with advanced cancer and pain: A European cross-sectional study of 2282 patients. *J Pain Symptom Manage* 2014;48:1145-1159

Directions for reducing polypharmacy in palliative care:



Health care professionals need to elaborate more informed care plans based on individualized needs of the patients.



Regular medication reviews with open communication between prescribers, patients and caregivers may be beneficial in overcoming the barriers to deprescribing.



Continuous assessment of potentially inappropriate medication in favour of adequate medicine according to clinical indications.

Conclusions

- The complexity of the treatment plan is significantly correlated with the care burden, especially regarding the number of drugs, timetable and frequency of administration.
- Optimizing the therapeutic regimen by giving up useless medication, education of the caregiver regarding administration and side effects will minimize uncertainty and the burden of care.
- The need to reduce the polypharmacy in palliative care through individualized therapeutic plans, continuous assessment of the patient and regular medication reviews.