Clinical characteristics and frailty of patients with mild cognitive impairment or dementia due to Alzheimer's disease: a real-world study

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OBJECTIVE

- To describe the clinical characteristics and frailty of patients with Mild Cognitive Impairment (MCI) or dementia due to Alzheimer's disease (AD), with a focus on patients at the early symptomatic stages

CONCLUSION

- These data, relating to variables such as patient severity, BMI, and comorbidities, may provide valuable insights into the health and vulnerability of patients with MCI and AD dementia, enabling more personalized care, better resource allocation and improved patient outcomes
- A notable proportion of patients with MCI and Mild AD dementia classification were categorized as frail
- Further analysis is needed to understand the factors that significantly predict frailty in patients with MCI and AD dementia

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STUDY DESIGN

- Data were drawn from the Adelphi Real World AD Disease Specific Programme™ (DSP™), a cross-sectional survey with elements of retrospective data collection of primary care physicians and specialists (neurologists, geriatric psychiatrists, geriatricians, psychiatrists, neuropsychiatrists, and neurosurgeons), in Germany, France, Italy, Spain, the United Kingdom, Japan, and the United States, between December 2022 and March 2024
- The DSP methodology has been previously published, validated[1-3], and found to be consistent over time[4]
- Physicians completed patient record forms, which captured information on the patient's demographic and clinical characteristics, current symptoms, need for caregiver support, current treatment, and management for their next nine consecutively consulting patients aged ≥50 years with a diagnosis of MCI (encompassing prodromal AD, predementia, and amnestic/non-amnestic MCI due to either suspected AD or undetermined etiology), or AD dementia
- Theou et al. (2023)[5] developed a ten-step procedure using characteristics related to overall health and aging, including disease symptoms, comorbidities, and daily living requiring assistance, to create a Frailty Index (FI)
- In line with Theou's procedure, a FI was constructed based on 12 health deficit questions, outlined in Table 1. Those with <5% missing data were included and recoded to 0 (no deficit)-1 (deficit) scales, with percentiles used to recode continuous variables
- The variables in Table 1 were screened out based on age correction (negative correlation, or a correlation coefficient less than 0.02). The mean of the remaining variables were used to create the FI on a 0-1 scale, with 0 indicating no deficit, and 1 indicating full deficit; Analyses with non-missing data were descriptive
- In line with Gordon et al.[6], 'frail' has been defined as a score of >0.25 and 'not frail' as <0.25. Data has been presented overall and for those with a physician determined disease severity of MCI or dementia due to AD where the physician has indicated a mild severity

Table 1: Variables used for constructing the FI

Variable	Included in the FI post-screening
Physician-reported patient severity at time of data collection	Yes
BMI (Weight and Height)	Yes
Whether the patient drives	No
Need for respite care	No
Concomitant conditions	Yes
Hospitalisations in the last 12 months	Yes
Current symptoms	Yes
Activities of daily life requiring assistance	Yes
Need for caregiver support	Yes
Level of independence	Yes
Number of treatment classes prescribed at time of data collection	Yes
Total number of consultations in the last 12 months	Yes

BACKGROUND

Disease Epidemiology and Establishing Frailty

- AD is a progressive, neurodegenerative disease, which develops along a continuum, ranging from preclinical brain changes that are asymptomatic (preclinical AD), to MCI, to AD dementia of increasing degrees of severity (mild, moderate, and severe)[7]
- Frailty, a term widely used to denote a loss of reserves in energy, cognition, and overall health[8], is a common condition experienced by patients with AD[9]
- Assessment tools have been developed to construct an outcome variable for frailty, but research into these assessments in a real-world setting, particularly in the MCI and Mild AD populations, is limited
- Incorporating an index of frailty into analysis of AD patient populations in the real-world would provide important insights for physicians, caregivers, and policy makers

KEY RESULT

Table 2: Patient characteristics, by Not frail or Frail Classification

Characteristic		Overall	Not frail (FI < 0.25)	Frail (FI ≥ 0.25)
FI score				
	n	*5551*[1]	*4377*	*1174*
	mean (SD)	0.17 (0.12)	0.12 (0.06)	0.36 (0.09)
Female				
	n (%)	2859 (51.5)	2198 (50.2)	661 (56.3)
Age (yrs)				
	n	5551	4377	1174
	mean (SD)	76.5 (8.4)	75.6 (8.4)	79.7 (7.7)
Weight (Kg)				
	n	*5348*[1]	*4227*	*1121*
	mean (SD)	71.0 (13.7)	71.3 (13.7)	69.9 (13.7)
Height (cm)				
	n	*5417*[1]	*4274*	*1143*
	mean (SD)	167.0 (9.1)	167.3 (9.1)	166.2 (9.1)
Physician-reported patient severity at time of data collection, n (%)				
	n	*5421*	*4253*	*1168*
	MCI	2017 (37.2)	1804 (42.4)	213 (18.2)
	Mild AD	935 (17.2)	906 (21.3)	29 (2.5)
	Moderate AD	1684 (31.1)	1256 (29.5)	428 (36.6)
	Severe AD	785 (14.5)	287 (6.7)	498 (42.6)
Total number of consultations in the last 12 months				
	n	*5551*	*4377*	*1174*
	median [IQR]	4.0 [2.0-6.0]	3.0 [2.0-6.0]	5.0 [3.0-9.0]
MMSE score				
	n	*3587*	*2799*	*788*
	mean (SD)	19.7 (4.9)	20.8 (4.3)	15.7 (5.0)

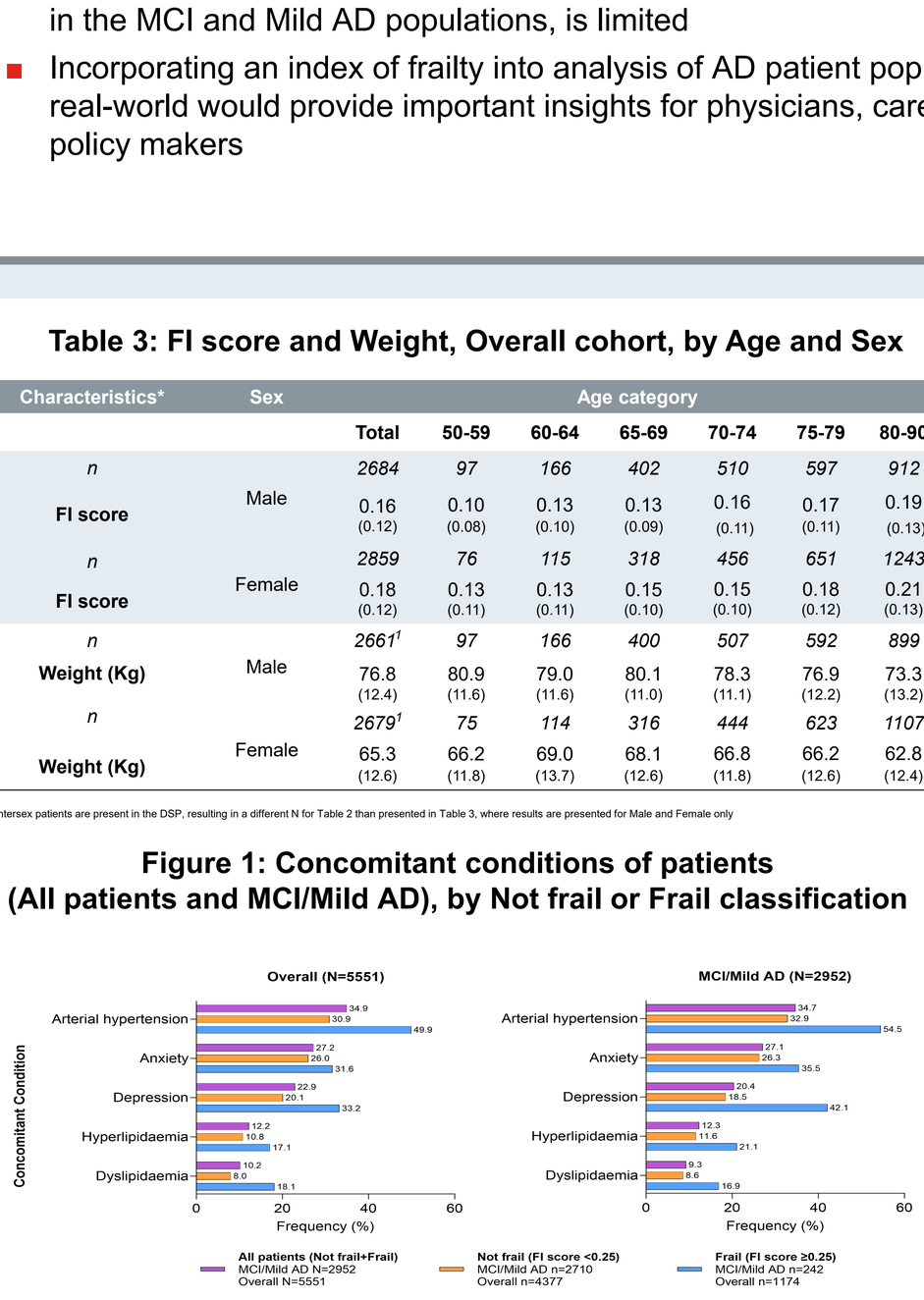
[1]Outliers for height/weight data were excluded from the analysis

Table 3: FI score and Weight, Overall cohort, by Age and Sex

Characteristics*	Sex	Total	50-59	60-64	65-69	70-74	75-79	80-90
n		*2684*	*97*	*166*	*402*	*510*	*597*	*912*
FI score	Male	0.16 (0.12)	0.10 (0.08)	0.13 (0.10)	0.13 (0.09)	0.16 (0.11)	0.17 (0.11)	0.19 (0.13)
n		*2859*	*76*	*115*	*318*	*456*	*651*	*1243*
FI score	Female	0.18 (0.12)	0.13 (0.11)	0.13 (0.11)	0.15 (0.10)	0.15 (0.10)	0.18 (0.12)	0.21 (0.13)
n		*2661*[1]	*97*	*166*	*400*	*507*	*592*	*899*
Weight (Kg)	Male	76.8 (12.4)	80.9 (11.6)	79.0 (11.6)	80.1 (11.0)	78.3 (11.1)	76.9 (12.2)	73.3 (13.2)
n		*2679*[1]	*75*	*114*	*316*	*444*	*623*	*1107*
Weight (Kg)	Female	65.3 (12.6)	66.2 (11.8)	69.0 (13.7)	68.1 (12.6)	66.8 (11.8)	66.2 (12.6)	62.8 (12.4)

[1]8 intersex patients are present in the DSP, resulting in a different N for Table 2 than presented in Table 3, where results are presented for Male and Female only

Figure 1: Concomitant conditions of patients (All patients and MCI/Mild AD), by Not frail or Frail classification



- In this study, 779 physicians reported data on 5551 patients. Mean±standard deviation (SD) patient age was 76.5±8.4 years, 51.5% were female, and 37.2% had MCI
- Female patients had a mean weight of 65.3±12.6 kg and BMI of 24.9±4.2 kg/m2, while male patients had a mean weight of 76.8±12.4 kg and a BMI of 25.6±3.5 kg/m2
- In this study, 21.1% of patients with an MCI or AD dementia diagnosis were classified as frail. Of those with an MCI/Mild AD dementia diagnosis, 8% were classified as frail
- 18.2% of patients diagnosed with MCI at data collection were frail, while this percentage was 2.5% among patients with Mild AD dementia at data collection
- Patients with a frail classification in the overall cohort experienced comorbidities which included arterial hypertension (49.9%), anxiety (31.6%), depression (33.2%), hyperlipidaemia (17.1%), and dyslipidaemia (18.1%). Comorbidities for MCI/Mild AD dementia patients with a frail classification can be seen in Figure 1
- The highest percentile (90th) mean FI score was 0.43±0.07 for females and 0.43±0.08 for males. This was 0.02±0.01 and 0.02±0.01 in the lowest percentile (10th), respectively. Within the highest and lowest frailty percentiles, 58.0% and 44.0% of patients were female, respectively
- Patients in the highest percentile experienced comorbidities which included arterial hypertension (52.0%), anxiety (32.3%) and depression (35.0%). In the lowest percentile, comorbidities included arterial hypertension (9.2%), anxiety (14.7%), and depression (9.9%)

Limitations

- The DSP is based on a pseudo-random sample of physicians or patients. While minimal inclusion criteria governed the selection of participating physicians, participation was influenced by their willingness to complete the survey
- As patient severity is reported based on physician opinion, when overlapping disease characteristics are present, difficulties may arise in determining the specific level of severity between MCI and Mild AD dementia

List of abbreviations

AD = Alzheimer's Disease ; BMI = Body Mass Index ; DSP = Disease Specific Programme ; FI = Frailty Index ; IQR = Interquartile range ; MCI = Mild Cognitive Impairment ; MMSE = Mini Mental State Examination ; N = Number ; SD = Standard deviation

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