

Sex differences in caregivers' burden and perceptions of neuropsychiatric symptoms in Alzheimer's disease: A cross-sectional study

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BACKGROUND

- **Neuropsychiatric Symptoms (NPS) in Alzheimer's Disease (AD)** present in 80% of individuals with AD and are a major contributing factor to the socio-economic costs (Pless et al., 2023)
- **Caregiver Burden** is reported as medium to high in 60-70% of caregivers (Vu et al., 2022; Pudelewicz et al., 2019)
- **Caregiver Burden is both affected by and affects the incidence of NPS**, creating an ever-increasing vicious cycle (Pinyopornpanish et al., 2021)
- **Sex differences of perceived NPS** have been reported in individuals with AD, such as a **higher prevalence of depression in females compared to males** (Eikelboom et al., 2022)
- **Sex differences** are also reported in **caregiver burden**, which is **frequently more elevated in females** than males (Pudelewicz et al., 2019)
- However, few studies have explored **the complex interactions between caregiver sex, burden and NPS in AD**

OBJECTIVES

1. Compare caregiver burden and NPS reporting of caregivers of individuals with AD according to caregiver's sex.
2. Assess whether reported NPS vary according to the level of caregiver burden.

CONCLUSION

- Our data show **some sex differences** regarding the **NPS scores**, but not in **caregiver burden**, notably that **women caregivers tend to report higher levels of agitation and disinhibition** in their cares than their male counterparts
- Our data also show **significant positive correlation between caregiver burden, distress, and NPS**
- This may suggest **distinctive coping mechanisms and perceptions** regarding NPS and the role of caregiver according to sex
- **Emphasizes the need to consider sex and personal situation** when advising and supporting AD caregivers

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METHODOLOGY & RESULTS

- **Design: Cross-sectional analysis of the baseline results of a longitudinal cohort study currently ongoing at the cognition clinic at the CHUM.**
- **Eligibility Criteria:**
 1. **Individuals diagnosed with Alzheimer's disease** (aged ≥ 60 years)
 2. **Associated caregivers** (capability of reporting NPS [at least 4 days a week])
- **Variables:**
 1. **NPS:** Measured using the **Neuropsychiatric Inventory (NPI)**, which measures 12 symptoms according to frequency (F) and severity (S), which are multiplied (FxS) to give an overall composite score of symptom intensity
 2. **Caregiver Burden:** Measured using both the **Zarit Burden Interview (ZBI)** and the **NPI distress subscale (NPI-D)**
 3. **Sex at birth:** Biological variable; female [F] or male [M]

Statistical Methods:

1. **Kruskal-Wallis and t-tests** were used to determine group differences in NPS and caregiver burden
2. **Spearman correlations** were used between caregiver burden, sex and NPS

Table 1. Participant Demographic & Baseline data

	FEMALE N = 37	MALE N = 31	TOTAL N = 68
CAREGIVERS CHARACTERISTICS			
AGE (mean, SD; in yrs)	66.7±12.1	65.5±14.4	66.2±13.1
ZBI (mean, SD; x/80pts)	32.5±13.9	27.8±14.2	30.4±14.1
NPI-D (mean, SD; x/60pts)	9.8±7.3	9.1±6.9	9.5±7.1
RELATION TO PATIENT			
SPOUSE (%)	40.5	41.9	41.2
OFFSPRING (%)	40.5	54.8	45.6
PATIENT CHARACTERISTICS			
AGE (mean, SD; in yrs)	82.1±6.3	81.2±7.6	81.7±6.9
CDR (mean, SD)	1.6±0.6	1.6±0.9	1.6±0.8
SEX(%, F)	45.9	80.6	61.8
PREVALENCE OF AT LEAST ONE CLINICALLY SIGNIFICANT NPS (%)	83.8	67.7	76.5

Abbreviations: APA: Apathy. An NPS is deemed clinically significant if NPI FxS >3pts.

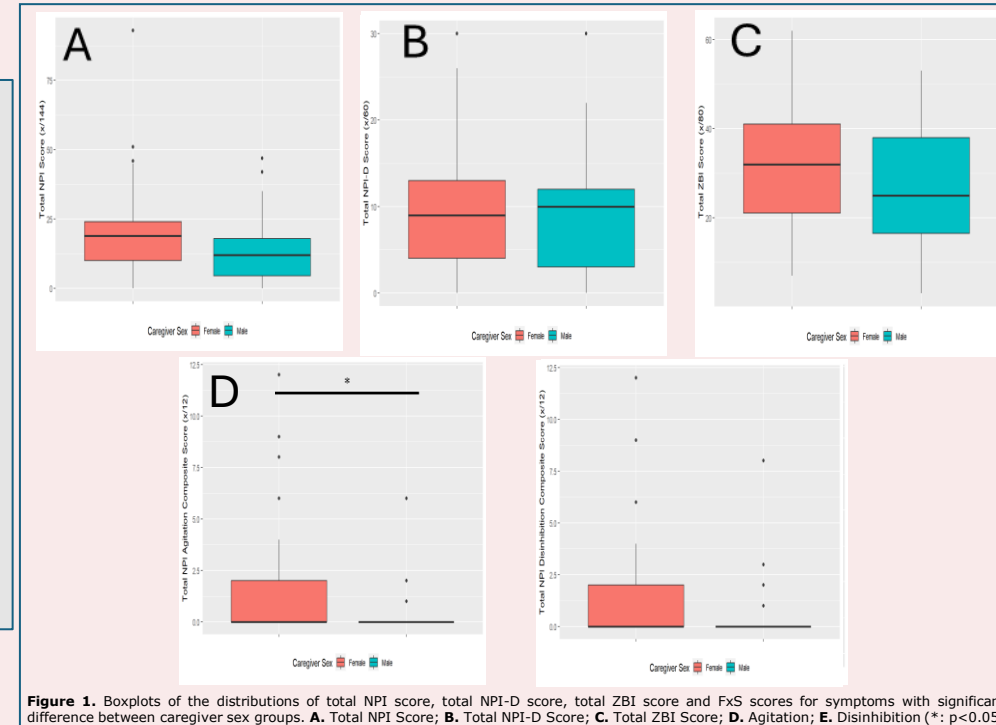


Figure 1. Boxplots of the distributions of total NPI score, total NPI-D score, total ZBI score and FxS scores for symptoms with significant difference between caregiver sex groups. **A.** Total NPI Score; **B.** Total NPI-D Score; **C.** Total ZBI Score; **D.** Agitation; **E.** Disinhibition (*: $p < 0.05$)

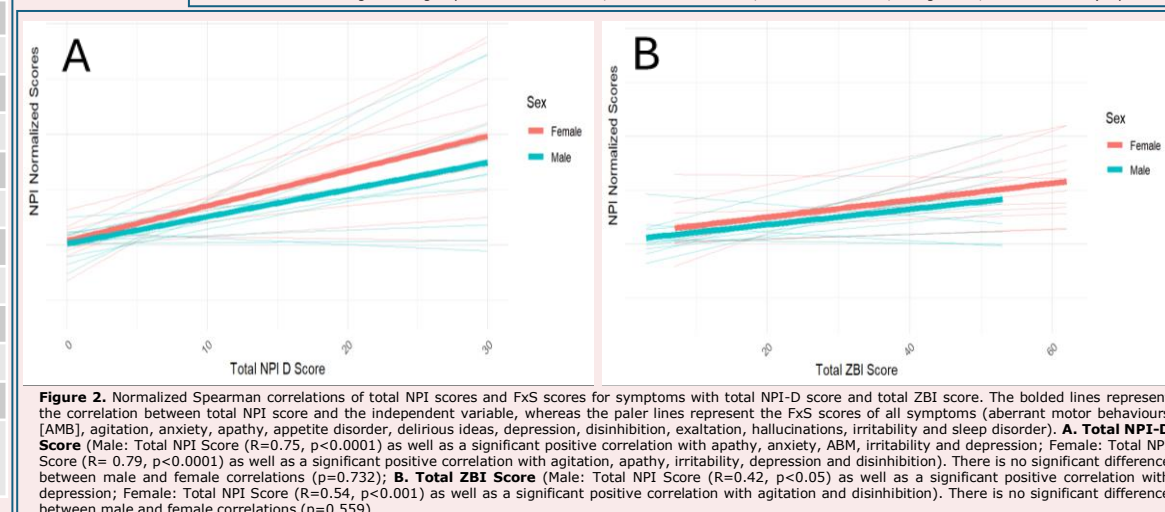


Figure 2. Normalized Spearman correlations of total NPI scores and FxS scores for symptoms with total NPI-D score and total ZBI score. The bolded lines represent the correlation between total NPI score and the independent variable, whereas the paler lines represent the FxS scores of all symptoms (aberrant motor behaviours [AMB], agitation, anxiety, apathy, appetite disorder, delirious ideas, depression, disinhibition, exaltation, hallucinations, irritability and sleep disorder). **A. Total NPI-D Score** (Male: Total NPI Score (R=0.75, $p < 0.0001$) as well as a significant positive correlation with apathy, anxiety, ABM, irritability and depression; Female: Total NPI Score (R= 0.79, $p < 0.0001$) as well as a significant positive correlation with agitation, apathy, irritability, depression and disinhibition). There is no significant difference between male and female correlations ($p = 0.732$); **B. Total ZBI Score** (Male: Total NPI Score (R=0.54, $p < 0.001$) as well as a significant positive correlation with depression; Female: Total NPI Score (R=0.42, $p < 0.05$) as well as a significant positive correlation with agitation and disinhibition). There is no significant difference between male and female correlations ($p = 0.559$)