

Examining Sex and Age Differences in Cognitive Symptoms Following Concussion in Older Adults

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HIGHLIGHTS

- Concussions in older populations are a growing public health concern, especially as older adults are often not screened
- Patients aged >50 years old with concussion who were seen at the Toronto Western Hospital Concussion Clinic were included in this study.
- Significantly more females than males presented with concussion ($p < 0.05$).
- There were some cognitive symptom differences between older and younger adults after concussion (hallucinations, feeling impatient/cranky)
- Further analysis is needed to elucidate sex and age differences after concussion in older adults

BACKGROUND

Concussions are one of the **leading causes of injury in adults over the age of 65** (older adults). Common cognitive symptoms after concussions include: headache, dizziness, memory problems, sensitivity to light and noise, blurred vision, and fatigue.

Children, adolescents, and adults typically experience concussions at school and work (67.2%). Older adults typically experience concussions at home (42.6%) and due to falls



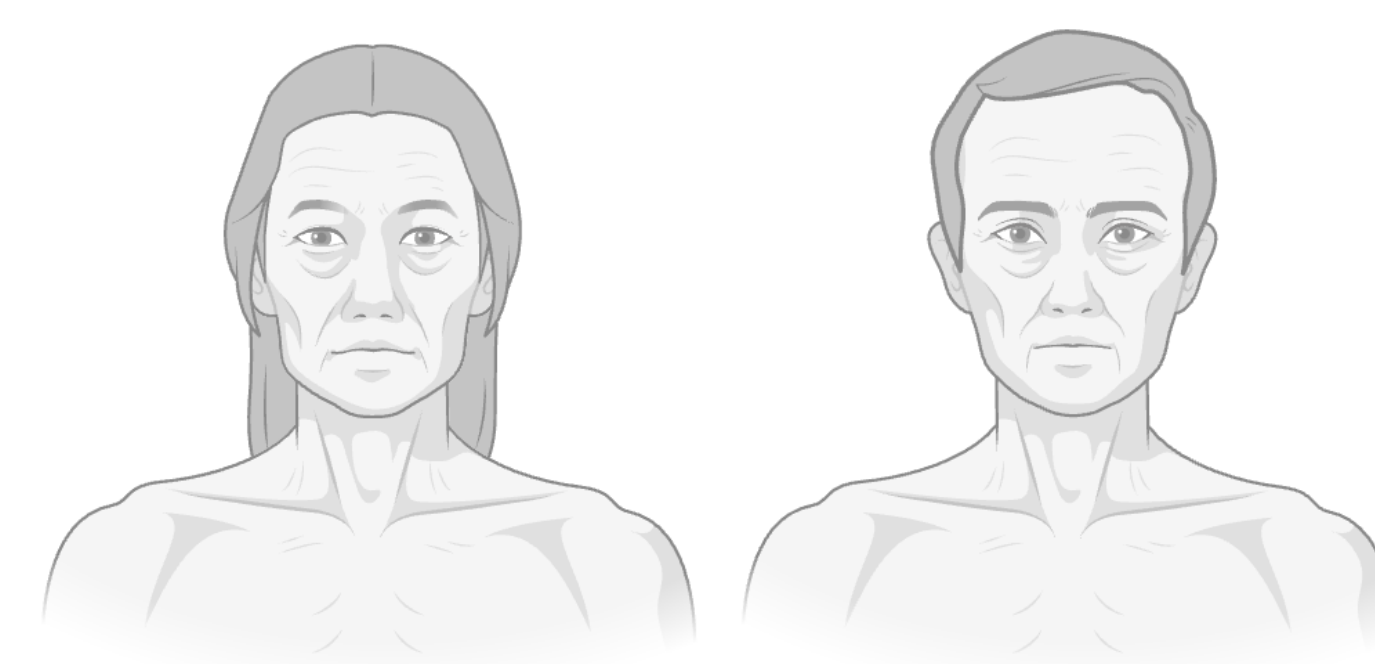
In a quality assessment survey administered to primary healthcare physicians, only 50% felt confident in managing concussion symptoms in older adults themselves.

So, concussion may be left undiagnosed and the true symptomatic profile may not be fully captured

Symptom profiles of concussion in older adults report conflicting differences between younger populations. Therefore, clearer cognitive profiles in older adults with concussions can help update existing treatment and management.

In both younger and older adults, Females are more likely to be diagnosed with concussion and may experience different cognitive symptoms post-concussion in comparison to males, however, the literature is not fully resolved on this

A lack of clarity on the cognitive symptom profile in older adults with concussion, as well as specific sex differences



METHODS

Retrospective Observational Study

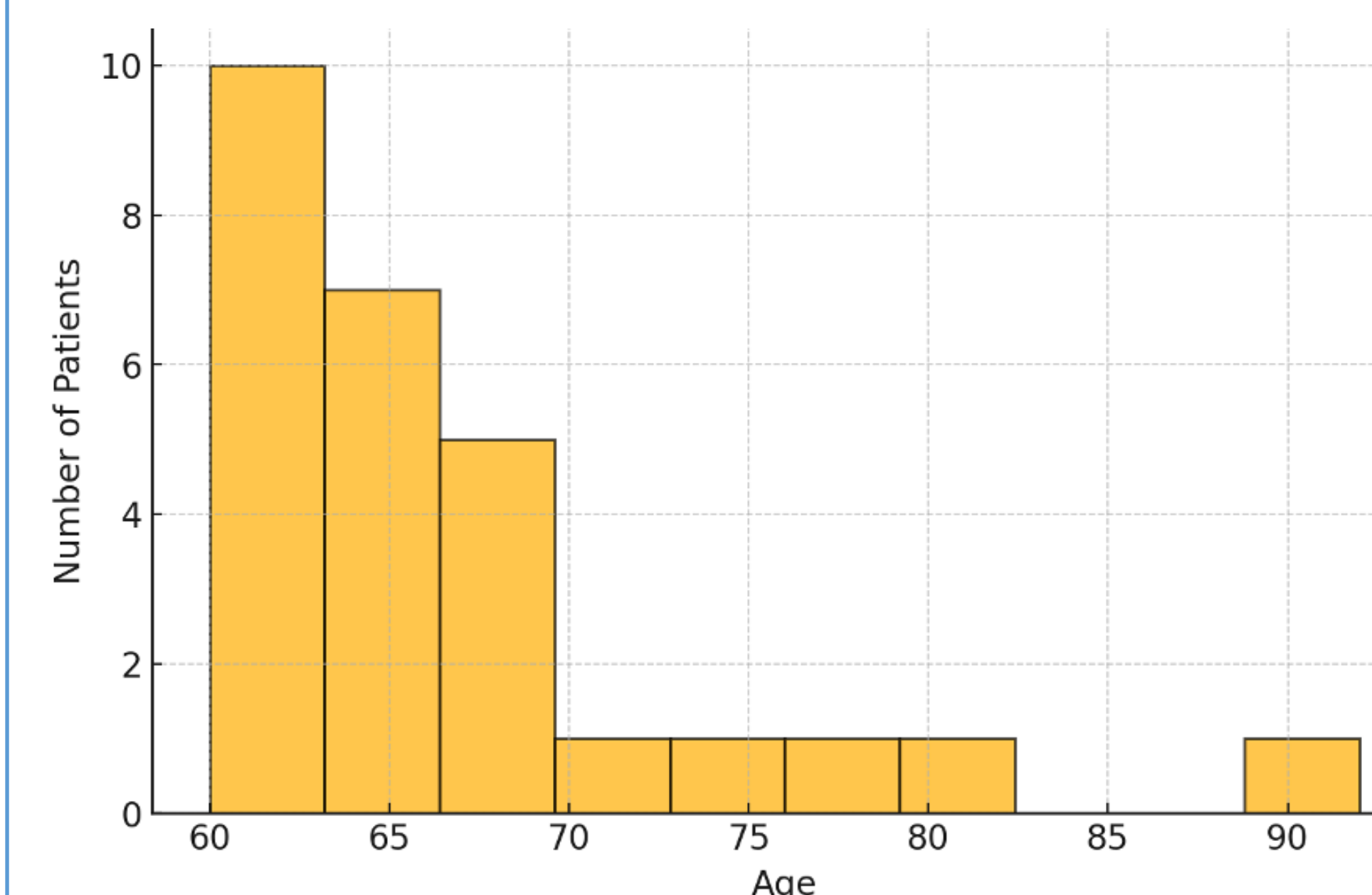
- All patients presented to the University Health Network (UHN) Memory Clinic at the Toronto Western Hospital with a diagnosis of concussion within the past three years (from Jan. 2022- Jan. 2025)
- All patients were above the age of 50 years at the time of appointment
- All data were collected systematically from REDCAP from patients' appointments, and all patients provided their informed consent for their data to be used for research purposes
- A total of **76** patients were eligible for this study
- 50** Females and **26** Males were included in this study
- Demographic data including age, educational background, and sex, memory scores, psychiatric symptoms, TORCA scores, etc., were included for analysis purposes

Data Analysis

- Age and sex differences in mild cognitive impairment, dementia prevalence after concussion diagnosis
- Age and sex differences in memory-based scores from reported TORCA scores
- Age and sex differences in psychiatric symptoms experienced by all patients
- All analysis was completed in R Studio.

RESULTS

Figure 1: Age Profile of Concussion Patients



- The mean age of patients seen at the concussion clinic was **69 years**
- Significantly more older adults (65+) reported experiencing hallucinations after concussion diagnosis
- Significantly more adults between the ages of 50-64 reported feeling impatient/cranky and having difficulty coping with delays or waiting for planned activities

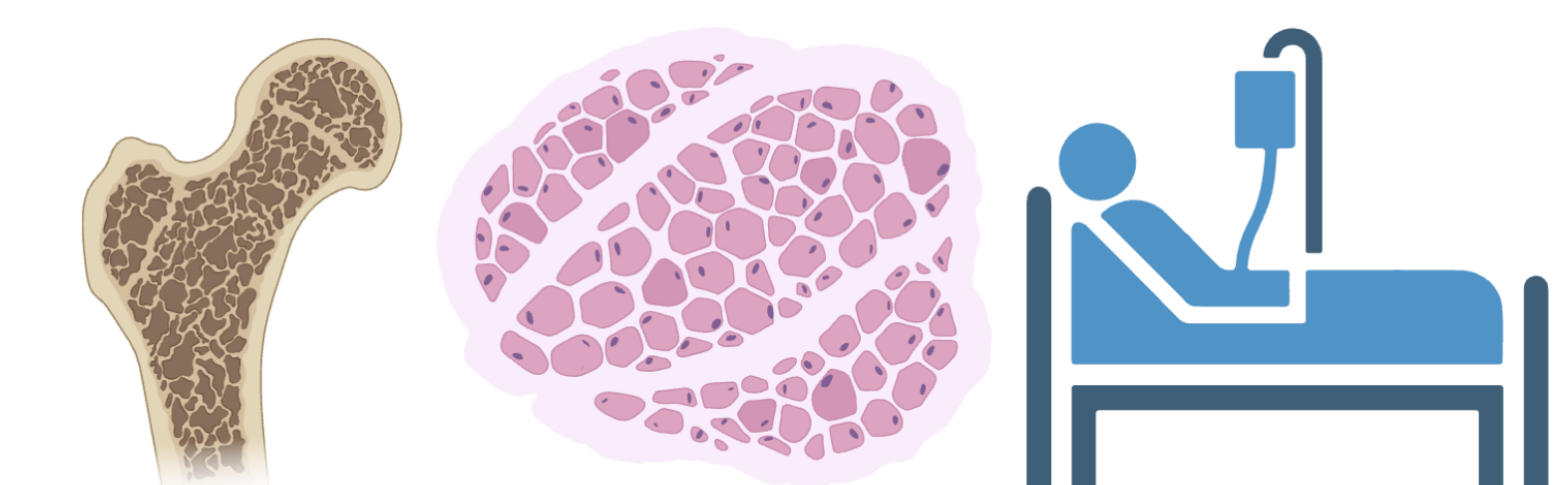
Table 1: Sex Distribution of Concussion Patients by Cognitive Status

	Cognitively Normal	MCI	Dementia	TORCA Scores
Females	29	3	17	274.2
Males	10	5	9	256.5

- Fewer females with concussion had MCI (6%) in comparison to males (21%)
- Dementia prevalence was similar across females (35%) and males (38%), and was not statistically significant
- Overall TORCA scores were not significantly different between males and females, however females had significantly higher memory– immediate recall scores ($p = 0.04$, 18.79 vs. 15.79)

CONCLUSIONS

As is supported by the literature, more females report concussion in comparison to males. This could suggest that sex differences in neck musculature, falls risk, bone and muscle mass loss, etc., contribute to this difference. Additionally, while there were some age differences in cognitive symptoms after concussion, most symptoms were not significantly different between the two age groups. This suggests a need for a larger sample size and increased repetition.



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