Performance of Emergency Severity Index and Patient Acuity Category Scale in geriatric triage

Eunizar Omar[1], Lin Ziwei[1], Lee Wen Di[2], Sameera Ganti[3]

1. Sengkang General Hospital, Singapore, 2. Ministry of Health Holdings, Singapore 3. University Malaya Medical Center, Malaysia

Introduction

Conventional triage tools such as the Emergency Severity Index (ESI) and the Patient Acuity Category Scale (PACS) may inadequately reflect the complexity of geriatric presentations. This study compared ED outcomes between geriatric and non-geriatric patients stratified by ESI and PACS categories.

Methodology

A retrospective study was conducted of all adult ED attendances at a tertiary hospital between **February and May 2021**. Patients were categorised as **geriatric (≥65 years)** or **non-geriatric(<65 years)**. Outcomes included **ED length of stay (EDLOS)** and **admission rates**, analysed across ESI(1–5) and PACS(1–4) categories. Multivariate regression adjusted for gender, race, and arrival mode.

Results

ED LOS
- Geriatric patients (G) had significantly longer unadjusted EDLOS.
- Adjusted EDLOS was 76.1 min higher (95% CI: 70.8–81.4, $p<0.001$) in G especially in PACS 1–3 and ESI 2–4

ADMISSION RATES
- G had 41.9% higher unadj admission rate.
- After adjustment, the odds of admission were **4.7X higher in G, 5.1X higher in ambulance patients and 1.1X higher in female ($p<0.001$).**
- Race was not predictive of admission
- Geriatric effect varied by triage category. The greatest disparity was in ESI 1 (OR 65) and PACS 2 (OR 28). No significant differences were noted in ESI 5 and PACS 4.
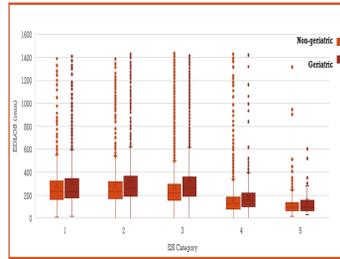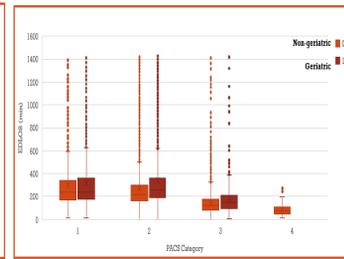

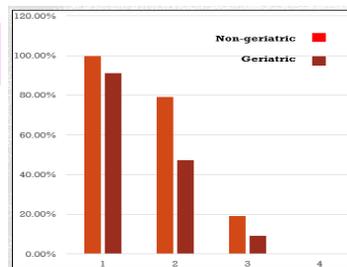Fig 1. EDLOS by PACS (unadj)

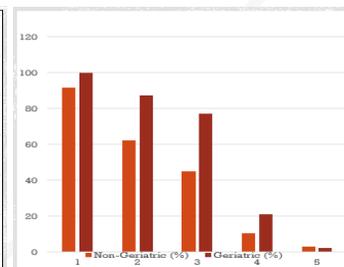Fig 2. EDLOS by ESI (unadj)

Fig 3. Admission rate by PACS (unadj)

Fig 4. Admission rate by ESI (unadj)

Discussion

Older patients may _present with atypical symptoms, have reduced functional reserves and multiple comorbidities and may be on multiple medications hence requiring more complex evaluation_. Current triage tools prioritise vital signs and presenting complaints which may underestimate severity in older patients.

Undertriage in the geriatric population could result in _operational strain, higher resource utilization and greater clinical risk_ due to delayed interventions, potentially worsening outcomes for older adults.

Conclusion

The ESI and PACS risk under-triaging older adults. Future work should explore **age-sensitive or frailty-based triage refinements** to improve ED care for this vulnerable group.

References:

Zhang, Wenhui, et al. "The reliability and validity of triage tools in geriatric emergency departments: A scoping review." _International Emergency Nursing_ 77 (2024): 101509.

Jang, Kyeongmin, and Yon Hee Seo. "Characteristics of undertriaged older patients in the emergency department: Retrospective study." _International Emergency Nursing_ 75 (2024): 101477.