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Association between polypharmacy and perceived multidimensional social support in geriatric patients with minor trauma

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Abstract:

OBJECTIVES: This study aimed to examine the relationship between polypharmacy, perceived social support, and medication adherence among geriatric patients presenting to the emergency department with minor trauma.

METHODS: A total of 72 geriatric individuals (≥ 65 years) presenting with minor trauma were included. Participants completed the Morisky Medication Adherence Scale-8 (MMAS-8; coded so that higher scores indicate poorer adherence) and the Multidimensional Scale of Perceived Social Support (MSPSS). Sociodemographic characteristics, living arrangement, place of residence, and medication use were recorded.

RESULTS: The mean age was 78.0 ± 7.82 years, and 54.2% of participants were female. The mean MMAS-8 score was 1.69 ± 2.38 (median = 0), indicating a highly right-skewed distribution. Medication adherence did not differ significantly across medication-count categories or by polypharmacy status (all $P > 0.05$), although MMAS-8 scores were numerically lower among participants with polypharmacy (≥ 5 medications). Perceived social support was substantially lower among participants living alone (all MSPSS subscales, $P \leq 0.001$). MMAS-8 scores showed a weak negative correlation with family support ($r_s = -0.243$; $P = 0.040$), whereas correlations with significant-other support and total support were not statistically significant ($P > 0.05$). Higher educational attainment was associated with higher perceived social support.

CONCLUSIONS: Among older adults presenting with minor trauma, perceived social support – particularly family support – was associated with better medication adherence, while living alone was linked to substantially lower support. The observed trend toward better adherence in the polypharmacy group should be interpreted cautiously. Multidisciplinary approaches integrating medication review and attention to social support may be beneficial in both emergency and primary care settings.

Keywords:

Emergency department, geriatrics, medication adherence, polypharmacy, social support

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Introduction

The global population is rapidly aging, and this demographic transition brings

challenges such as loneliness, living alone, and polypharmacy with unregulated medication use, which together impose a considerable burden on public health.^[1] Old age is characterized by both physical and psychological decline; therefore,

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Box-ED section**What is already known about this topic?**

- Among older adults, loneliness/living alone and polypharmacy are common; perceived social support is linked to better health outcomes and may influence medication adherence.
- Minor-trauma emergency department (ED) visits in geriatrics are frequent, and outcomes may be shaped by social as well as biomedical factors.

What is the conflict on the issue? Is it necessary for readers?

- Definitions of polypharmacy vary across studies, and adherence measures (including scoring direction/cut-points) are not uniform; evidence on the polypharmacy–adherence relationship is mixed.
- ED clinicians need clearer, context-specific evidence because discharge safety is influenced by living situation and support networks, in addition to clinical risk factors.

How is this study structured?

- Descriptive cross-sectional study; $n = 72$ adults aged ≥ 65 years presenting with minor trauma to a tertiary ED.
- Measures: Multidimensional Scale of Perceived Social Support (higher = more support); Morisky Medication Adherence Scale-8 coded here so that higher scores indicate poorer adherence.
- Analyses: Nonparametric tests (Mann–Whitney U /Kruskal–Wallis) and Spearman correlations.

What does this study tell us?

- Living alone was linked to substantially lower perceived social support; adherence tended to be poorer (not significant).
- Higher education was associated with higher perceived social support.
- Social support subscales strongly correlated with each other; family support showed a weak association with better adherence.

preventing morbidity and mortality requires not only physical well-being but also the maintenance of mental and social health.^[2] Social support is a key determinant of older adults' health, and reduced support has been associated with fewer healthy behaviors and higher mortality.^[3] Lower perceived social support may also increase susceptibility to loneliness, depression, and fall-related injuries or other trauma.^[4]

Population aging has increased demand for healthcare services and has been accompanied by rising rates of emergency department (ED) admissions among geriatric patients after minor trauma, typically low-energy events such as falls or collisions.^[4] We focused on minor trauma

because, although these events are often not immediately life-threatening, they frequently represent a sentinel presentation in older adults: They may signal underlying vulnerability related to medication practices (including polypharmacy-associated adverse effects and drug–drug interactions) and inadequate support networks that can compromise discharge safety and increase the risk of recurrent falls, repeat ED visits, and functional decline.^[4] Evaluating geriatric patients at the time of a minor-trauma ED visit, therefore, provides a practical opportunity to assess potentially modifiable factors – medication practices and perceived social support – that are relevant to prevention and safer transitions of care.^[4] The World Health Organization also highlights loneliness and social isolation as major public health problems in older adults and recommends addressing them as social determinants of health requiring early intervention.^[5]

In Türkiye, social and supportive care for the elderly is provided within a hybrid structure that combines health and social service components. Clinically, home health care services can be initiated through the national hotline of the Ministry of Health of the Republic of Türkiye, and focus on home visits, basic monitoring, and care coordination through hospital-based home health units and field teams.^[6] In parallel, the Ministry of Family and Social Services of the Republic of Türkiye defines institutional and community-based social services for the elderly (e. g., nursing homes and elderly care and rehabilitation centers) and manages the application or utilization processes.^[7] However, in Türkiye, the scope of long-term care is often shaped by need, suitability, and access to services, rather than being met uniformly within a universal framework, and the important role of family and informal care in daily care continues.^[8,9] This context is a systemic feature that should be particularly considered when interpreting “perceived social support” measures in ED-based studies.^[8,9]

Definitions of polypharmacy vary; in the broadest sense, it is the concurrent use of five or more medications, although minor/major classifications have also been proposed.^[10,11] With aging, physiological reserves decline and multimorbidity becomes more common, increasing vulnerability to adverse drug effects and drug–drug interactions; accordingly, medication adherence and regular use are critical for maintaining functional independence.^[12,13]

Hypotheses and aim: We hypothesized that lower perceived social support would be associated with poorer medication adherence among adults aged ≥ 65 years presenting to the ED with minor trauma. We also explored whether polypharmacy status was associated with adherence and perceived social support. Therefore,

this study aimed to examine polypharmacy, medication adherence, and perceived social support among individuals aged 65 years and older presenting to the ED with minor trauma.

Methods

Study design and setting

This descriptive cross-sectional study was conducted among adults aged ≥ 65 years who presented with minor trauma to the ED of a tertiary training and research hospital between June 15, 2024, and October 15, 2024.

Data were collected during working hours because trained investigators were available in these periods to obtain written informed consent and administer questionnaires in a standardized manner. Older adults may exhibit diurnal variation in cognitive performance and symptom perception; late afternoon/evening hours can be associated in some individuals with transient worsening in attention, orientation, fatigue, or agitation (e.g., “sundowning”-like patterns), which may affect the reliability of self-reported measures. In addition, perceived social support and discharge-related decision-making may vary by time of presentation because family members/caregivers are typically more reachable during daytime, whereas evening/night hours may involve reduced caregiver availability and increased vulnerability. Therefore, restricting data collection to working hours was intended to improve standardized administration conditions and reduce potential measurement variability. Nevertheless, patients presenting outside working hours may be under-represented; potential time-of-presentation selection and information bias were considered when interpreting the findings.

Minor trauma presentations are common in ED practice among older adults and, although often not immediately life-threatening, may represent a sentinel event indicating potentially modifiable vulnerabilities. These include medication-related adverse effects (e.g., dizziness, hypotension, sedation), potential drug–drug interactions, and limited support networks, all of which can compromise discharge safety and increase the risk of recurrent falls or repeat ED visits.

In this study, minor trauma was operationally defined as a low-energy trauma-related ED presentation (e.g., ground-level fall, slip/trip, minor collision/blunt impact), in which – after completion of acute ED assessment and management – the patient was hemodynamically stable, had no evidence of life-threatening injury, did not require immediate life-saving intervention, advanced airway/ventilatory support, emergent surgery, or intensive care, and

was able to complete study questionnaires reliably. Typical minor injuries included contusions, sprains, superficial lacerations, and suspected uncomplicated fractures managed conservatively. Patients with major trauma or high-energy mechanisms, unstable vital signs, polytrauma, major bleeding, suspected intracranial hemorrhage, or injuries requiring urgent operative management or intensive monitoring were not considered minor trauma and were excluded.

A total of 72 geriatric patients with current medication use were included. Eligible patients were consecutively recruited among those presenting with minor trauma during the study period, after completion of acute ED care and clinical stabilization.

Inclusion and exclusion criteria

Inclusion criteria

- Age ≥ 65 years
- Presentation with minor trauma and clinically stable after acute ED care
- Current use of at least one medication
- Able to speak and comprehend Turkish and be assessed adequately
- Literate
- Provided written informed consent.

Exclusion criteria

- Major trauma and/or unstable clinical condition requiring immediate life-saving intervention, intensive care admission, or emergent surgery
- Cognitive impairment, delirium, or reduced level of consciousness preventing valid self-report
- Severe communication barriers (e.g., profound hearing/vision/speech limitations) preventing questionnaire completion
- Refusal to participate or inability to provide informed consent.

Measures and data collection

Perceived social support was assessed using the validated Turkish version of the Multidimensional Scale of Perceived Social Support (MSPSS), which includes three subscales (Family, Friends, and Significant Other); higher scores indicate greater perceived social support. Because universally accepted clinical cutoff points for MSPSS are not consistently established across settings, MSPSS subscale and total scores were analyzed as continuous variables.^[14]

Medication adherence was assessed using the Turkish version of the 8-item Morisky Medication Adherence Scale (MMAS-8), for which Turkish validity and reliability have been reported in prior clinical samples.^[15] For interpretability and consistency across analyses, MMAS-8 was re-coded so that higher scores reflected poorer

medication adherence.^[15] Similar reverse-orientation scoring of the MMAS-8 (i.e., coding higher scores to reflect poorer adherence, with lower scores indicating better adherence) has been used in prior cross-sectional studies.^[16,17] This represents a reversal of score direction and does not change the underlying measurement structure; rank-based inferences (e.g., nonparametric comparisons and Spearman correlations) are invariant to this transformation.

Investigators recorded demographic characteristics, living arrangement (living alone vs. not), place of residence (urban vs. rural), and the number of concurrently used medications. Polypharmacy was defined as ≥ 5 concurrent medications

Ethics

Ethical approval was obtained from the Bandırma Onyedi Eylül University Rectorate Health Sciences Non-Interventional Research Ethics Committee in 2024-5 dated on May 17, 2025 (Approval No: 2024-96). Before enrollment, eligible patients were informed about the study and provided written informed consent.

Statistical analysis

All analyses were performed using IBM SPSS Statistics for Windows, version 25.0 (IBM Corp., Armonk, NY, USA). Continuous variables were summarized using mean $\pm$ standard deviation and median (minimum–maximum), as appropriate. Normality was assessed using the Kolmogorov–Smirnov and Shapiro–Wilk tests; because variables did not satisfy normality assumptions, nonparametric tests were applied. Mann–Whitney *U* tests were used for comparisons between two independent groups (e.g., sex or polypharmacy status), and Kruskal–Wallis tests were used for comparisons across three or more independent groups, with mean ranks examined when appropriate. When comparing three groups, the Kruskal–Wallis test was used for continuous outcomes. *Post-hoc* pairwise comparisons were planned only if the omnibus Kruskal–Wallis test was statistically significant; therefore, no *post-hoc* testing or Bonferroni adjustment was performed when the omnibus test was nonsignificant. Associations between MSPSS subscale/total scores and MMAS-8 scores were assessed using Spearman’s rank correlation. A two-sided $P < 0.05$ was considered statistically significant.

Sample size was determined pragmatically based on the expected number of eligible presentations during the study period and the capacity for standardized questionnaire administration. As the study did not aim to validate or re-develop the measurement instruments (for which Turkish validity and reliability have been established), the item-to-participant ratio rules used for factor-analytic scale validation were not

applied. Instead, we enrolled a consecutive series of eligible patients ($n = 72$) to provide an initial estimate of the distribution of MSPSS and MMAS-8 scores and their associations in this clinical context.

Results

Participant screening, exclusions, and final inclusion are summarized in Figure 1 (flow diagram). In brief, geriatric patients presenting with minor trauma were screened during the study period; those not meeting eligibility criteria (e.g., major trauma/clinical instability, inability to provide a valid self-report, refusal) were excluded, and 72 eligible patients with current medication use comprised the final analytic sample.

Participant characteristics

A total of 72 geriatric patients were included; 54.2% were female ($n = 39$), and 45.8% were male ($n = 33$) [Table 1].

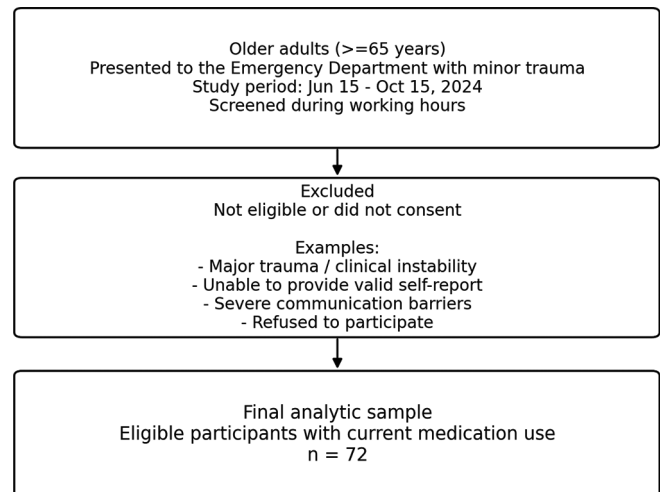


Figure 1: Participant flow diagram

Table 1: Sociodemographic characteristics of participants and polypharmacy status

Variable	n (%)
Gender	
Female	39 (54.2)
Male	33 (45.8)
Place of residence	
Urban	63 (87.5)
Rural	9 (12.5)
Education	
Literate	15 (20.8)
Primary school and above	57 (79.2)
Polypharmacy	
No	40 (55.6)
Yes	32 (44.4)
Living status	
Alone	22 (30.6)
Not alone	50 (69.4)

The mean age was 78.0 ± 7.82 years (median = 78; range: 65-99) [Table 2].

Distribution of medication adherence (Morisky Medication Adherence Scale-8)

MMAS-8 scores were highly right-skewed. Although the mean MMAS-8 score was 1.69 ± 2.38 , the median appeared to be 0, indicating pronounced skewness. Therefore, median (IQR) values are presented in the main results tables, and rank-based analyses were used throughout (As specified in the Methods, MMAS-8 was re-coded so that higher scores indicate poorer adherence).

Group comparisons: Medication adherence (Morisky Medication Adherence Scale-8)

MMAS-8 scores were comparable across sex (Mann-Whitney $U = 617.5$, $P = 0.746$) [Table 3]. For education, participants were grouped as literate versus primary school and above because the cohort was older and had a highly skewed education distribution – reflecting historical changes in Türkiye's education system and the absence (or near-absence) of university graduates

in the sample – resulting in sparse cell counts for finer educational categories. Using this data-driven dichotomization to ensure stable nonparametric comparisons, MMAS-8 scores did not differ significantly by educational level ($U = 355.0$, $P = 0.269$). MMAS-8 scores also did not differ by place of residence (urban vs. rural: $U = 197.0$, $P = 0.105$) [Table 3].

When participants were categorized by the number of concurrently used medications (single medication/2–4 medications/ ≥ 5 medications), the overall group comparison for MMAS-8 was not statistically significant (Kruskal-Wallis $\chi^2 = 4.659$; $df = 2$; $P = 0.097$). Accordingly, *post-hoc* pairwise comparisons were not performed.

When polypharmacy was defined as ≥ 5 concurrent medications, MMAS-8 scores were numerically lower (suggesting relatively better adherence under the study coding) in the polypharmacy group (mean 1.2 ± 2.2) compared with those without polypharmacy (mean 2.1 ± 2.4), but this difference was not statistically significant ($U = 505.0$; $P = 0.092$) [Table 3]. MMAS-8 scores were also not significantly different by living arrangement (living alone vs. not: $U = 459.5$; $P = 0.224$) [Table 3].

Table 2: Descriptive statistics of age, Multidimensional Scale of Perceived Social Support, and Morisky Medication Adherence Scale-8

Variable	Mean	SD	Median	Minimum	Maximum
Age (years)	78.00	7.82	78.00	65.00	99.00
MSPSS - family	16.00	4.28	16.00	6.00	27.00
MSPSS - friends	12.74	4.19	12.00	5.00	24.00
MSPSS - significant other	15.67	4.54	16.00	6.00	27.00
MSPSS - Total	44.40	12.33	43.50	17.00	78.00
MMAS-8	1.69	2.38	0.00	0.00	8.00

MMAS-8: Morisky Medication Adherence Scale-8, MSPSS: Multidimensional Scale of Perceived Social Support, SD: Standard deviation

Group comparisons: Perceived social support (Multidimensional Scale of Perceived Social Support)

Perceived social support showed clearer subgroup differences. Males reported significantly higher friend support than females (14.0 ± 5.0 vs. 11.6 ± 3.1 ; $U = 452.5$; $P = 0.030$; effect size $r = 0.256$) [Table 4]. No significant sex differences were observed for family support, significant-other support, or total support (all $P > 0.05$).

Table 3: Group comparisons for medication adherence (MMAS-8, re-coded)

Variable	Group 1 Mean $\pm$ SD; Median (IQR)	Group 2 Mean $\pm$ SD; Median (IQR)	Mann-Whitney <i>U</i>	<i>P</i> (two-tailed)	Effect size (<i>r</i>)
Sex	Female (<i>n</i> =39) 1.6 $\pm$ 2.1; 0.0 (0.0–4.0)	Male (<i>n</i> =33) 1.8 $\pm$ 2.7; 0.0 (0.0–3.0)	617.5	0.746	0.038
Education	Literate (<i>n</i> =15) 2.4 $\pm$ 2.5; 2.0 (0.0–5.0)	Primary school and above (<i>n</i> =57) 1.5 $\pm$ 2.3; 0.0 (0.0–2.0)	355.0	0.269	0.130
Residence	Urban (<i>n</i> =63) 1.5 $\pm$ 2.3; 0.0 (0.0–2.0)	Rural (<i>n</i> =9) 2.9 $\pm$ 2.4; 4.0 (0.0–5.0)	197.0	0.105	0.191
Living arrangement	Alone (<i>n</i> =22) 2.2 $\pm$ 2.6; 1.0 (0.0–5.0)	Not alone (<i>n</i> =50) 1.5 $\pm$ 2.3; 0.0 (0.0–2.0)	459.5	0.224	0.143
Polypharmacy	No (<i>n</i> =40) 2.1 $\pm$ 2.4; 1.0 (0.0–4.0)	Yes (<i>n</i> =32) 1.2 $\pm$ 2.2; 0.0 (0.0–1.0)	505.0	0.092	0.198

Group 1 and Group 2 represent the following categories, respectively: female and male (sex); literate and primary school or higher education (education); urban and rural (residence); living alone and not living alone (living arrangement); and absence and presence of polypharmacy (polypharmacy). Polypharmacy was defined as the concurrent use of five or more medications. Higher re-coded MMAS-8 scores indicate poorer medication adherence. SD: Standard deviation, IQR: Interquartile range, MMAS-8: Eight-item Morisky Medication Adherence Scale

Table 4: Group comparisons for perceived social support (Multidimensional Scale of Perceived Social Support)

Characteristic	Outcome	Group 1 - n, median (IQR)	Group 2 - n, median (IQR)	Mann-Whitney U	P (two-tailed)	Effect size (r)
Sex	Family	Female (n=39): 16.0 (13.0–18.0)	Male (n=33): 16.0 (14.0–19.0)	582.0	0.485	0.082
	Friends	Female (n=39): 11.0 (10.0–13.0)	Male (n=33): 13.0 (11.0–16.0)	452.5	0.030	0.256
	Significant other	Female (n=39): 16.0 (13.0–18.0)	Male (n=33): 16.0 (14.0–19.0)	557.0	0.326	0.116
	Total	Female (n=39): 42.0 (37.0–50.0)	Male (n=33): 44.0 (38.0–51.0)	533.5	0.213	0.147
Education	Family	Literate (n=15): 14.0 (10.0–16.0)	Primary school and above (n=57): 16.0 (14.0–19.0)	287.5	0.051	0.230
	Friends	Literate (n=15): 10.0 (8.0–12.0)	Primary school and above (n=57): 12.0 (10.0–15.0)	268.0	0.026	0.262
	Significant other	Literate (n=15): 13.0 (8.0–17.0)	Primary school and above (n=57): 16.0 (14.0–19.0)	251.0	0.014	0.290
	Total	Literate (n=15): 38.0 (26.0–44.0)	Primary school and above (n=57): 44.0 (40.0–50.0)	259.0	0.019	0.276
Residence	Family	Urban (n=63): 16.0 (14.0–19.0)	Rural (n=9): 15.0 (12.0–17.0)	212.0	0.221	0.144
	Friends	Urban (n=63): 12.0 (10.0–15.0)	Rural (n=9): 12.0 (8.0–12.0)	195.0	0.130	0.179
	Significant other	Urban (n=63): 16.0 (14.0–19.0)	Rural (n=9): 15.0 (12.0–17.0)	213.0	0.228	0.142
	Total	Urban (n=63): 44.0 (37.0–51.0)	Rural (n=9): 42.0 (36.0–44.0)	200.0	0.155	0.168
Living arrangement	Family	Alone (n=22): 13.0 (10.0–16.0)	Not alone (n=50): 16.5 (15.0–19.0)	287.0	0.001	0.381
	Friends	Alone (n=22): 10.0 (9.0–11.0)	Not alone (n=50): 13.0 (11.0–15.0)	289.5	0.001	0.377
	Significant other	Alone (n=22): 13.0 (8.0–15.0)	Not alone (n=50): 17.0 (14.0–19.0)	254.5	<0.001	0.427
	Total	Alone (n=22): 37.0 (36.0–43.0)	Not alone (n=50): 46.0 (42.0–51.0)	254.0	<0.001	0.427
Polypharmacy	Family	No (n=40): 16.0 (11.0–18.0)	Yes (n=32): 16.5 (14.5–19.5)	469.0	0.052	0.229
	Friends	No (n=40): 11.5 (9.0–13.5)	Yes (n=32): 12.0 (10.0–15.0)	513.0	0.148	0.171
	Significant other	No (n=40): 15.50 (10.0–17.5)	Yes (n=32): 17.0 (14.0–19.0)	454.0	0.034	0.249
	Total	No (n=40): 42.5 (30.0–49.0)	Yes (n=32): 44.0 (41.0–52.0)	477.0	0.064	0.218

Effect size r computed as $|Z|/\sqrt{n}$ with $n=72$ (overall sample). IQR: Interquartile range

Educational attainment was associated with higher perceived support. Compared with the literate group, participants with primary school and above had higher friend support ($U = 268.0$; $P = 0.026$), significant-other support ($U = 251.0$; $P = 0.014$), and total support ($U = 259.0$; $P = 0.019$) [Table 4]. Family support did not differ significantly between education groups ($U = 287.5$; $P = 0.051$).

Urban participants showed descriptively higher MSPSS scores than rural participants; however, none of these differences reached statistical significance (all $P > 0.05$). Given the small rural subgroup, these findings were interpreted cautiously, and effect sizes are provided to support interpretation.

In comparisons by polypharmacy status, significant-other support was higher in the polypharmacy group ($U = 454.0$; $P = 0.034$; effect size $r = 0.249$). Other MSPSS domains did not differ significantly by polypharmacy status.

Living arrangements showed the largest differences in perceived support. Participants living alone had substantially lower perceived support across all domains: Family support ($U = 287.0$; $P = 0.001$; $r = 0.381$), friend support ($U = 289.5$; $P = 0.001$; $r = 0.378$), significant-other support ($U = 254.5$; $P < 0.001$; $r = 0.428$), and total support ($U = 254.0$; $P < 0.001$; $r = 0.427$) [Table 4].

Correlations between Multidimensional Scale of Perceived Social Support and MMAS-8

To improve clarity, Spearman correlations are presented as a correlation matrix table [Table 5]. MSPSS subscales were strongly intercorrelated (all $P < 0.001$). MMAS-8 scores showed a weak negative correlation with family support ($r_s = -0.243$; $P = 0.040$). Correlations between MMAS-8 and friend support ($r_s = -0.169$; $P = 0.156$), significant-other support ($r_s = -0.224$; $P = 0.058$), and total support ($r_s = -0.228$; $P = 0.054$) were not statistically significant. Age was not correlated with MMAS-8 ($r_s = 0.042$; $P = 0.726$).

Discussion

In this study, we examined the relationship between perceived social support and medication adherence in older adults presenting to the ED with minor trauma, alongside social determinants including polypharmacy, cohabitation, and place of residence. Minor trauma in geriatric populations – often low-energy events such as falls or collisions – may serve as a sentinel presentation, offering an opportunity to identify medication-related risks and unmet social needs that may otherwise remain unrecognized in routine care.^[18]

Social support and adherence in the post-trauma context

Our findings align with the broader literature emphasizing the protective role of social support for

Table 5: Spearman's rho correlations between age, perceived social support subscales, and medication adherence (Morisky Medication Adherence Scale-8) (n=72)

	Age	Family	Friend	Significant other	Total support	MMAS-8
Age						
<i>r</i>	1.000	-0.063	0.102	0.009	0.018	0.042
<i>P</i>		0.599	0.392	0.943	0.878	0.726
Family support						
<i>r</i>	-0.063	1.000	0.706**	0.905**	0.942**	-0.243*
<i>P</i>	0.599		<0.001	<0.001	<0.001	0.040
Friend support						
<i>r</i>	0.102	0.706**	1.000	0.709**	0.851**	-0.169
<i>P</i>	0.392	<0.001		<0.001	<0.001	0.156
Significant other support						
<i>r</i>	0.009	0.905**	0.709**	1.000	0.951**	-0.224
<i>P</i>	0.943	<0.001	<0.001		<0.001	0.058
Total social support						
<i>r</i>	0.018	0.942**	0.851**	0.951**	1.000	-0.228
<i>P</i>	0.878	<0.001	<0.001	<0.001		0.054
Total Morisky score (MMAS-8)						
<i>r</i>	0.042	-0.243*	-0.169	-0.224	-0.228	1.000
<i>P</i>	0.726	0.040	0.156	0.058	0.054	

* $P < 0.05$, ** $P < 0.01$. Values are Spearman's rho (two-tailed P value). MMAS-8: Morisky Medication Adherence Scale-8

health behaviors and treatment adherence in later life.^[3,5] Higher perceived social support was associated with better adherence. In our scoring, lower MMAS-8 scores indicate better adherence; accordingly, higher MSPSS scores were associated with lower MMAS-8 scores. A 2024 cohort study from China similarly reported that social isolation was associated with poorer medication adherence among older adults with chronic disease, with this relationship partly mediated by reduced support and increased loneliness.^[18] In our sample, strong intercorrelations among MSPSS subdimensions indicate that support tends to cluster across domains, with total support largely shaped by family and significant-other networks.^[19] A meta-analysis including 122 studies also reported that stronger social support was associated with a lower risk of non-adherence.^[20] Mechanistically, social support may improve adherence by reducing stress and depressive symptoms and by providing practical assistance (e.g., reminders, transportation, and medication procurement).^[21]

Importantly, assessments were conducted shortly after an acute trauma event. Because the post-trauma period may involve acute stress, pain, and temporary changes in family contact or caregiving, perceived support may have been temporarily inflated or altered, potentially introducing measurement bias in MSPSS estimates in this setting. This context should be considered when interpreting absolute levels of perceived support.

Living alone as a key vulnerability marker

Living alone – closely related to loneliness and social isolation – is recognized as a determinant of adverse

outcomes in older age.^[5] In our study, participants living alone tended to report lower perceived support across MSPSS subscales, underscoring the practical relevance of documenting living arrangements as part of ED discharge planning. Reduced support among those living alone may compromise treatment continuity through difficulties obtaining medications, remembering regimens, physical limitations, or constrained resources.^[22] Even when injuries are minor, ED encounters can be used to identify patients who may benefit most from structured follow-up and linkage to social support resources.

Residence, sex, and education

Although rural residents showed poorer adherence and lower perceived social support descriptively, these findings should be interpreted cautiously. The rural subgroup was very small ($n = 9$), and mechanisms such as healthcare access barriers, transportation, eHealth literacy, and caregiving availability were not directly measured in this study.^[23] Similarly, while males reported higher friend support than females, adherence was not significantly associated with friend support in our analyses. Gendered patterns in social networks and support exchange may influence the type and availability of support in older age,^[3,24] and these patterns may not always translate into measurable differences in adherence.^[25,26] Educational attainment was associated with higher perceived support in multiple domains, which may reflect broader social engagement and resource access; however, causal interpretation is not possible in this cross-sectional design.

Polypharmacy and adherence: Interpreting a nonsignificant pattern

Large cohort studies demonstrate a dose–response relationship between persistent polypharmacy and adverse outcomes such as hospitalization, ED visits, and mortality.^[27] A hospital-based study from Guadeloupe also reported polypharmacy as a predictor of hospitalization among older adults admitted after falls.^[28] In this sample, however, polypharmacy was not significantly associated with medication adherence. The direction of the point estimates suggested lower MMAS-8 scores among those with polypharmacy (i.e., relatively better adherence under our coding); nevertheless, given the sample size and self-reported measures, this should not be interpreted as evidence that polypharmacy improves adherence and should be considered hypothesis-generating.^[29] One possible explanation is that patients with multiple chronic conditions may have more frequent healthcare contact and monitoring (e.g., regular physician/pharmacist visits) and greater caregiver involvement or family support. Additionally, because adherence was self-reported, reporting tendencies and social desirability may differ among patients taking multiple medications.^[29] If medication counts relied on patient reports rather than verified medication lists, misclassification could also have influenced observed associations. Variability in polypharmacy definitions across studies may further contribute to mixed findings.^[11] Prospective studies using objective adherence measures are needed to clarify directionality and mechanisms.^[30,31]

Clinical implications for minor-trauma ED care

Clinical guidance and recent evidence recommend comprehensive geriatric screening and coordinated discharge planning for older adults presenting to the ED after falls.^[32,33] ED-based multidisciplinary approaches – incorporating pharmacist-led medication review, physiotherapy/occupational therapy input, targeted education, and social work referral – are feasible and address modifiable risk factors.^[30,34] In the context of minor trauma, systematically identifying patients who live alone or report low support may strengthen transition-of-care planning by clarifying postdischarge assistance needs and directing resources to those at highest social risk.^[23] Finally, because data collection was conducted during routine working hours, the present findings may not fully represent older adults presenting overnight or on weekends; this may introduce selection bias in a 24/7 ED context and should be considered when generalizing results.

Limitations and strengths

This study has limitations. Its cross-sectional, single-center design and modest sample size restrict causal

inference and may limit generalizability. Recruitment during routine working hours may have introduced time-of-presentation selection bias, as older adults presenting overnight or on weekends may differ clinically and socially (e.g., caregiver availability). Subgroup comparisons – particularly for rural residents ($n = 9$) – should be interpreted cautiously due to small cell sizes. Outcomes relied on self-report (MMAS-8 and MSPSS), making findings susceptible to recall and social desirability bias, and MSPSS reflects perceived rather than objective support. Polypharmacy may have been misclassified if medication counts were not fully verified. Finally, assessments occurred shortly after an acute minor trauma event, which could have transiently influenced responses, and detailed geriatric syndrome assessments (e.g., frailty and cognition) were not feasible, leaving potential residual confounding. In our ED setting, a formal frailty score (e.g., Clinical Frailty Scale/Rockwood) or comprehensive cognitive testing was not routinely attainable because it typically requires standardized administration and corroboration of baseline functional status (often from caregivers), which may not be consistently available during acute care. Although patients with known dementia or Alzheimer's disease in the medical record or strongly suspected cognitive impairment (per family report or clinical impression) were excluded, baseline functional heterogeneity could not be fully quantified.

Despite these limitations, the study has notable strengths. Consecutive recruitment within a defined period and standardized, investigator-assisted questionnaire administration improved data completeness and measurement consistency in a challenging ED setting. In addition, eligibility was supported by clinician assessment of orientation and ability to provide reliable responses as part of routine ED evaluation, and cases with documented dementia or Alzheimer's disease or clear cognitive impairment were excluded, which likely improved the validity of self-reported measures. Importantly, evaluating perceived social support alongside medication adherence among older adults with minor trauma provides clinically relevant insight into discharge vulnerability and may help inform future larger, multi-center studies and targeted interventions.

Conclusions

This study underscores the close relationship between polypharmacy, perceived social support, and medication adherence among older adults presenting to the ED with minor trauma. Overall, medication non-adherence was frequent, and poorer adherence was more commonly observed among participants living alone, suggesting that social context may

shape everyday medication-taking behaviors in this vulnerable group. Notably, polypharmacy itself was not associated with worse adherence in our sample; adherence did not decline with increasing medication burden. Given the cross-sectional design and modest sample size, however, these patterns should be interpreted cautiously.

In contrast, perceived social support – particularly support from family and a significant other – showed a consistent association with better adherence. As perceived social support increased, MMAS-8 scores decreased in our scoring approach, indicating improved adherence. Collectively, these findings suggest that medication management in older adults should not be considered solely a pharmacological issue; it is also a social and psychosocial one, with implications for discharge safety and downstream outcomes after minor trauma.

From a clinical standpoint, ED-based, multidisciplinary approaches that incorporate medication review and reconciliation alongside assessment of social needs may be especially beneficial. Programs involving physicians, pharmacists, nurses, physiotherapists, and social support services could strengthen safe discharge planning, mitigate fall risk, and potentially reduce repeat ED visits. Future studies should adopt prospective, multicenter designs and incorporate objective adherence measures, while systematically evaluating key confounders such as cognitive status, loneliness, frailty, and health literacy to enable stronger causal inference and broader generalizability. In conclusion, strategies that optimize medication management and bolster social support – implemented both in emergency care and primary care – may represent a pragmatic pathway to improving adherence and overall well-being in older adults.

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Author contribution statement

NK: Design and Materials (equal), Analysis and Literature Review, Writing (lead). GÖÖ: Concept, Design, Materials, Literature review (equal), Data collection and processing (lead). FÖ: Design, Literature Review and Critical Review (equal). OE: Design, Processing, Literature Review and Critical Review (equal).

Conflicts of interest

None Declared.

Ethical approval

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