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Screening for elder mistreatment in a Swiss emergency department: a prospective cohort study

Henk B. Riedel, Tanguy Espejo, Thomas Dreher-Hummel, Roland Bingisser, Christian H. Nickel

Emergency Department, University Hospital Basel, University of Basel, Basel, Switzerland

Summary

AIM OF THE STUDY: The mistreatment of older adults is a global and complex problem with varying prevalence. As there are no data on the prevalence of elder mistreatment in European emergency department populations, we aimed to translate and culturally adapt the Emergency Department Senior Abuse Identification (ED Senior AID) tool for German use, assess the positive screen rate for elder mistreatment with the German version, and compare characteristics of patients who screened positive and negative.

METHODS: To assess the prevalence of elder mistreatment, we created a German version of the ED Senior AID tool. This tool identifies intentional or negligent actions by a caregiver or trusted person that cause harm or risk to an older adult. Then, the German ED Senior AID tool was applied to all consecutively presenting patients aged ≥65 years at our academic emergency department in the Northwest of Switzerland from 25 April to 30 May 2022. Usability was defined as the percentage of patients with completed assessments using the German ED Senior AID tool.

RESULTS: We included 1010 patients aged ≥65 years, of whom 29 (2.9%) screened positive with the ED Senior AID tool. The patients who screened positive were older, more severely cognitively impaired, hospitalised more frequently, and presented with higher frailty scores than those who screened negative. Mortality up to 100 days after presentation was comparable in all patients (p = 0.861), regardless of their screening result. The tool showed good usability, with 73% of assessments completed.

CONCLUSION: This is the first prospective investigation on the prevalence of elder mistreatment in a European emergency department setting. Overall, 2.9% of patients screened positive using a validated screening tool translated into German.

TRIAL REGISTRATION: This study was registered with the National Institute of Health on ClinicalTrials.gov with the registration number NCT05400707.

Prof. Dr. med. Christian H. Nickel
Emergency Department
University Hospital Basel
Petersgraben 2
CH-4031 Basel
christian.nickel[at]usb.ch

Introduction

Mistreatment of older adults is a global social and health problem [1]. Its prevalence in community-dwelling older adults was estimated at up to 15% [2]. While physical mistreatment, involving intentional actions to inflict pain or injury, might be more apparent and overt, neglect is the more common form of mistreatment in older adults [3–6]. Neglect, which refers to the failure of the assigned caregiver to fulfil the needs of an older dependent adult, can present, for example, as poor hygiene, pressure sores, and dehydration [5, 7–9]. Other forms of mistreatment can be emotional or psychological, which involves intentional actions aimed at causing emotional pain or injury, and financial, which involves the improper use or misappropriation of an older adult's money or property [4, 5, 9]. Sexual mistreatment, defined as non-consensual sexual contact of any kind, was reported less frequently [2, 5].

Previous studies have shown all forms of mistreatment to be associated with mortality [5, 6, 10, 11], depression [5, 12], emergency department visits [13–15], and hospitalisations [16]. Nevertheless, the reported numbers are low [17, 18] since emergency department screening is barely established [3, 5]. Therefore, data on the prevalence of elder mistreatment in the emergency department are scarce and primarily based on retrospective data and surveys from the USA and Singapore. Most studies did not use a dedicated screening tool and showed a prevalence ranging from 0.01% to 0.03% in older adults presenting to the emergency department [17, 18]. Such low numbers make unreported cases likely and indicate a potential failure to identify mistreatment cases [19, 20]. Studies using screening tools for elder mistreatment demonstrated a positive screening rate of 4%–7% among older adults presenting to the emergency department in the US [7, 21]. No studies have examined the prevalence of elder mistreatment in European emergency departments, with or without the use of a dedicated screening tool.

Since older adults who have experienced mistreatment are probably more likely to visit the emergency department, emergency department staff might be uniquely positioned to recognise elder mistreatment [13, 20]. The Emergency Department Senior Abuse Identification (ED Senior AID) tool [7] was developed and validated in North America to screen for elder mistreatment in the emergency department and showed high sensitivity and specificity [21]. The Emergency Department Senior Abuse Identification tool uses questions to gather information about physical, emotional, and financial aspects and also involves a physical examination [7, 22]. Professionals can use this tool to iden-

tify potential mistreatment cases in the emergency department and take appropriate actions involving social services or law enforcement early on if needed.

As the validated tool is in English, our aims included translating and culturally adapting the Emergency Department Senior Abuse Identification tool for use in German-speaking regions, screening for elder mistreatment with the German version, and comparing the characteristics of patients who screened positive and negative.

Materials and methods

Study design and setting

This study was conducted at the University Hospital Basel in Switzerland. This tertiary academic urban hospital has >55,000 emergency department visits per year, of which approximately one-third are aged ≥65 years. Western Europeans (Caucasian) comprise two-thirds of the regional population, with the remainder mainly from Mediterranean countries and Eastern Europe [23]. This prospective observational cohort study was designed for quality control using routine data at emergency department presentation. It included all consecutive patients presenting to the emergency department from 25 April to 30 May 2022. Inclusions were conducted 24 hours a day, seven days a week. Elder mistreatment was defined as the intentional or negligent action by a caregiver or trusted person causing harm or risk to an older adult in the past six months [24].

Ethics

This study received ethical approval from the Local Ethics Committee (Project-ID: 236/13; http://eknz.ch) and was conducted according to the principles of the Declaration of Helsinki. It was registered with the National Institute of Health on ClinicalTrials.gov and assigned the registration number NCT05400707. It was reported according to the STROBE guidelines [25].

Selection of participants

All consecutive patients who presented to the emergency department during the study period were eligible. Patients who refused to consent or could not communicate (e.g. immediate transfers to the operating room or treatment in the resuscitation bay) were excluded. Per previous recommendations, patients presenting with mild cognitive impairment [26] who could give verbal consent were not excluded to minimise bias. This analysis excluded all patients aged <65 years.

Data collection

A dedicated study team screened and interviewed every patient during the study period. The study team consisted of trained medical students.

The Emergency Department Senior Mistreatment Identification (ED Senior AID) tool was translated into German following the ISPOR guidelines [7, 27]. Two independent forward translations into German were made. These were then aligned by having the translators compare their versions. The resulting common version was independently translated back into English by two native English speakers. These back-translations were then compared to the original. All translations were harmonised to ensure conceptual equality between the original and the translation. No cross-cultural adaptations were needed. The resulting German translation of the Emergency Department Senior Abuse Identification tool was then used and can be found in the appendix of this article (Figure S1). The study team performed the first two steps, and the attending physician in charge performed the subsequent steps.

The study team conducted the first step, which uses a cognitive test, the Abbreviated Mental Test-4 (AMT-4), to evaluate the patient's cognitive ability. In this test, the patient is asked four questions about their age, birthday, place, and year [28]. The second step consists of a series of questions designed to cover all areas of elder mistreatment. It was performed after the cognitive test by a study team member.

The attending emergency department physicians performed the third and fourth steps. In the third step, the attending physician decided if the patient could reliably report mistreatment or if they should receive a physical assessment for mistreatment. In the last step, the attending physician decided if mistreatment was suspected. If the attending physician was confident about the patient's ability to report mistreatment but was still unsure if they should suspect elder mistreatment, they could return to step three and conduct a physical assessment for elder mistreatment. After this additional physical assessment, the attending physician had to make a final decision on the suspicion of elder mistreatment [7].

Machine-readable case report forms were used to record all data. These were then scanned and cleaned in a two-step process. In the first step, the emergency department administrators corrected handwriting issues. In the second step, an external company, digx GmbH, transferred the data to a database.

Baseline demographics, the National Early Warning Score (NEWS) and the Clinical Frailty Scale (CFS) assigned at triage were extracted from the electronic health records.

Cohorts

Some patients re-presented during the study period. Due to re-presentations, we formed two separate cohorts. Cohort 1 included only index presentations of all unique patients aged ≥65 years for whom the Emergency Department Senior Abuse Identification tool was completed.

Cohort 2 included the presentations of patients re-presenting during the study period, as this could be a subtle hint of elder mistreatment. Some presented twice during the study period, while others presented three times. Cohort 2 included all presentations of patients who re-presented during the study period, including their index presentations and subsequent visits.

Outcomes

The primary outcome of this study was the positive screening rate of elder mistreatment using the Emergency Department Senior Abuse Identification tool in a tertiary academic urban emergency department.

The secondary outcomes of this study were the characteristics of patients that screened positive and their hospitalisation rate, as well as the tool's usability, defined as the percentage of fully completed assessments.

Statistical analysis

In the descriptive analysis, metric variables are presented as means with standard deviations, and categorical variables are presented as counts and frequencies. We compared the characteristics and results of the Emergency Department Senior Abuse identification tool of patients who screened positive and negative. We also aimed to distinguish the features of patients who underwent screening and those who did not. Moreover, we explored differences between patients who presented once and those who presented multiple times. Missing data were tested for bias using the Kruskal–Wallis test, Chi-square test, or Fisher's exact test, as appropriate. This analysis aimed to compare the characteristics of missing data with the overall study population. All analyses were performed using R studio software (version 4.2.2) [29].

Results

From 25 April to 30 May 2022, 5,369 consecutive presentations were recorded, 1,450 of which were by patients aged ≥65 years. Of these, 379 presentations were not or incompletely screened for elder mistreatment and subsequently excluded from further analysis. Therefore, the analysis included 1,071 presentations by 1,010 patients aged ≥65 years.

For further analysis, we formed two separate cohorts. Cohort 1 included only index presentations of all 1,010 unique patients aged ≥65 years for which the Emergency Department Senior Abuse Identification tool was used.

Cohort 2 comprised 56 patients, of whom 51 presented twice and five presented thrice during the study period. This cohort comprised 56 index presentations (included in Cohort 1), 56 second presentations (excluded from Cohort 1), and five third presentations (excluded from Cohort 1; figure 1).

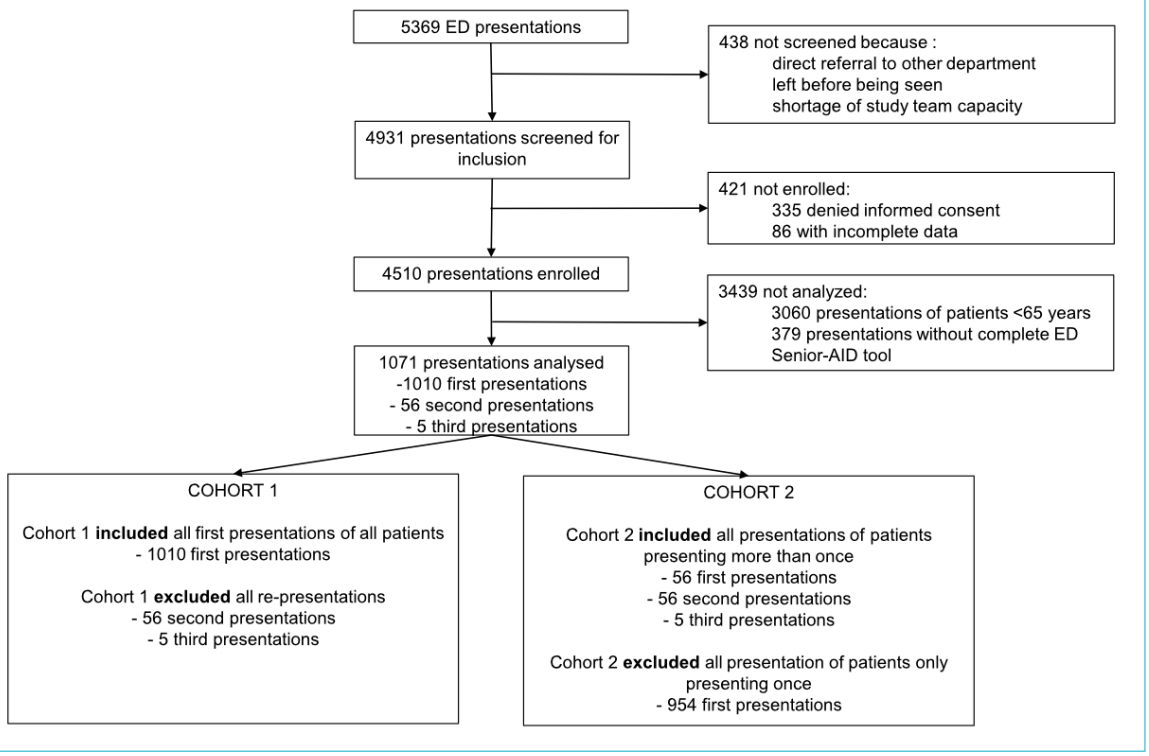
The Emergency Department Senior Abuse Identification tool was intended to be used in all 1450 presentations during the study period. The Emergency Department Senior Abuse Identification tool was completed for 73.9% of presentations, with 379 not assessed using the Emergency Department Senior Abuse Identification tool. For comparison, the Emergency Severity Index was missing for six presentations (i.e. a completion rate of 99.6%). In incomplete assessments, the components most often missing concerned the second step, the questions about elder mistreatment (Table S1 in the appendix).

Patients excluded from our study due to incomplete or missing data were more frail, as assessed by the CFS, had a higher mortality, and were assigned higher (more urgent) triage levels than the patients with complete data (Table S2 in the appendix).

Cohort 1

Among the 1,010 patients with only an index presentation, the median age was 78 (interquartile range [IQR]: 72.00–85.00) years, and 525 (52.0%) were female. Twenty-nine patients (2.9%) screened positive for elder mistreatment with the Emergency Department Senior Abuse Identification tool. In addition, 589 patients (58.3%) were hospitalised; 25 of the 29 (86.2%) positively screened pa-

Figure 1: Flow chart of the study population. The chart shows the recruitment procedure of emergency department presentations for which the Emergency Department Senior Abuse Identification (ED Senior AID) tool was used.



tients were hospitalised. The patients who screened positive had significantly higher ages, Clinical Frailty Score, the National Early Warning Score (NEWS), and cognitive impairment, as evaluated by the AMT-4 test, than those who screened negative (table 1). Mortality inside and outside of the hospital was comparable among all patients, regardless of their screening result (up to 100 days post-presentation [p = 0.861] and in-hospital [p = 0.628]).

In the first step, the AMT-4 was administered to all patients in Cohort 1: 855 (84.7%) responded correctly to all four questions, 79 (7.8%) to three, 42 (4.2%) to two, 21 (2.1%) to one, and 13 (1.3%) to none (table 2). Patients who screened positive had more incorrect responses than those who screened negative (p <0.001; table 1).

In the second step, the study team personally interviewed all patients. Of the 1,010 patients in Cohort 1, 309 (30.6%) reported needing help with at least one of the following: bathing, dressing, shopping, banking, or meals. Of these patients, 4 out of 304 (1.3%) reported that they lacked help for any of these activities of daily living; none of these patients screened positive for elder mistreatment. Of the 296 who received help, 31 (10.5%) reported that their caregiver was not always there when they were needed; 4 of these 31 patients screened positive. Psychological and emotional mistreatment was reported most often by patients in Cohort 1. Physical and financial mistreatment were reported less often (table 3).

In the third step, the attending physician was interviewed about the patient's ability to report mistreatment. Attending physicians were confident in 836 (82.8%) of all patients and not confident in 174 (17.2%) in Cohort 1, leading to a subsequent physical assessment to identify mistreatment.

The most common physical findings resulting in a positive screen in Cohort 1 were poor control of medical problems in 32/174 (18.4%) patients. Dehydration symptoms were found in 24/181 (13.3%) patients. Evidence of neglect (18/181, 9.9%), malnutrition (16/181, 8.8%), and swollen or tender areas on palpation (13/181, 7.2%) were also common (table 4). As elements were not mutually exclusive, 53 patients displayed 117 elements suggesting mistreatment, 21 displayed one, 15 displayed two, 11 displayed three, 3 displayed four, and 3 displayed five or more. After the physical assessment, the attending physician suspected mistreatment in 21 (12.1%) patients who underwent physical assessment in Cohort 1. Since the evidence for elder

Table 1:
The baseline characteristics of all index presentations. Data are presented as medians (interquartile ranges) for continuous variables and numbers (percentages) for categorical variables.

		All	Negative screen	Positive screen
n (%)		1010 (100%)	981 (97.1%)	29 (2.9%)
Age (years), median (IQR)		78.00 (72.00–85.00)	78.00 (72.00–85.00)	84.00 (79.00)
Sex (female), n (%)		525 (52.0%)	506 (51.6%)	19 (65.5%)
Admitted, n (%)		589 (58.3%)	564 (57.5%)	25 (86.2%)
National Early Warning Score, median (IQR)		1.00 (0.00–2.00)	1.00 (0.00–2.00)	2.50 (0.25–4.00)
Clinical Frailty Scale, median (IQR)		3 (3–5)	3 (3–5)	6 (5–6)
Nursing home patients, n (%)		105 (10.4%)	105 (100%)	0
Correct AMT-4 answers, n (%)	0	13 (1.3%)	13 (1.3%)	0
	1	21 (2.1%)	17 (1.7%)	4 (13.8%)
	2	42 (4.2%)	40 (4.1%)	2 (6.9%)
	3	79 (7.8%)	78 (8.0%)	1 (3.4%)
	4	855 (84.7%)	833 (84.9%)	22 (75.9%)

AMT-4: Abbreviated Mental Test-4; IQR: interquartile range.

Table 2:
The Abbreviated Test-4 (AMT-4) results for the index presentations. Data are shown as the number (percentage) of all patients.

	Correct, n (%)	Incorrect, n (%)	If false, n of positive screens
What is your age?	928 (91.9%)	82 (8.1%)	5
What is your date of birth?	975 (96.5%)	35 (3.5%)	3
What is this place?	955 (94.6%)	55 (5.4%)	3
What is the year?	904 (89.5%)	106 (10.5%)	6

Table 3:
The responses to the elder mistreatment screening questions at the index presentations. Data are shown as the number (percentage) of all patients. Missing data affects questions 1a (n = 5) and 1b (n = 4).

	No, n (%)	Yes, n (%)	If yes, n of positive screens
1. Have you needed help with bathing, dressing, shopping, banking, or meals?	701 (69.4%)	309 (30.6%)	18
1a. If yes, have you had someone who helps with this?	4 (1.3%)	300 (98.7%)	0 vs 17*
1b. If yes, is this person always there when you need them?	31 (10.5%)	265 (89.5%)	4 vs 13*
2. Has anyone close to you called you names and put you down?	980 (97.0%)	30 (3.0%)	4
3. Has anyone told you that you give them too much trouble?	982 (97.2%)	28 (2.8%)	3
4. Has anyone close to you threatened you or made you feel bad?	989 (97.9%)	21 (2.1%)	1
5. Has anyone tried to force you to sign papers or use your money against your will?	996 (98.6%)	14 (1.4%)	2
6. Has anyone close to you tried to hurt you or harm you?	1002 (99.2%)	8 (0.8%)	2

* For questions 1a and 1b, the number of positively screened patients is shown relative to both answers.

mistreatment increases with the number of elements, the percentage of positively screened patients increased accordingly (figure 2).

Of all presenting patients, 104 (10.3%) were residents of nursing homes or long-term care facilities; none of these screened positive for elder mistreatment. Residents of nursing homes and long-term care facilities incorrectly answered questions on the AMT-4 significantly more often than community-dwelling older adults ($p < 0.001$). They presented fewer signs and symptoms in the physical assessment, suggesting a lower rate of mistreatment than community-dwelling older adults ($p = 0.034$).

Cohort 2

Cohort 2 comprised 56 patients, of which 51 presented twice and five presented thrice during the study period. This analysis included 56 index presentations (included in Cohort 1), 56 second presentations (excluded from Cohort 1), and five third presentations (excluded from Cohort 1). Among the 56 patients in Cohort 2, the median age was 80 (IQR: 75.00–86.00) years, and 22 (39.3%) were female. No patient screened positive at their index presentation with the Emergency Department Senior Abuse Identification tool (table 5).

At the second visit, different attending physicians evaluated the 56 re-presenting patients and screened two (3.6%) as positive for elder mistreatment, of which one was subsequently hospitalised.

At the third visit, different attending physicians evaluated the six patients re-presenting again; none screened positive after evaluation with the Emergency Department Senior Abuse Identification tool.

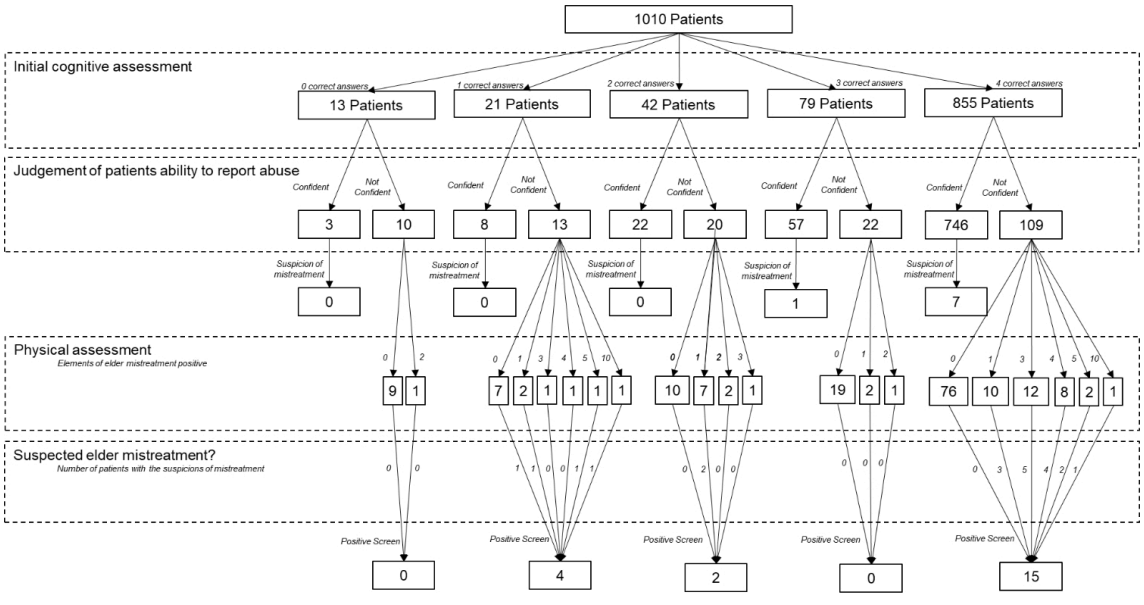
Discussion

In this prospective single-centre study of consecutive patients aged ≥65 years presenting to an urban emergency department, we provided a German version of the Emergency Department Senior Abuse Identification tool and assessed its performance regarding usability and positive screening rate for elder mistreatment. Twenty-nine (2.9%) of all

Table 4:
The physical assessment results for the index presentations.Data are shown as the number (percentage) of all patients. Missing data affects questions 6 (n = 3, 1.6%), 8 (n = 1, 0.6%), 9 (n = 2, 1.1%), 10 (n = 2, 1.1%), and 12 (n = 2, 1.1%). The symptoms are not mutually exclusive.

		No	Yes	If yes, n of positive screens
Elements highly suggestive of Mistreatment	1. Bruising in unusual location, multiple bruises, or large bruises?	170 (97.7%)	4 (2.3%)	2
	2. Are burn patterns suggestive of intentional injury?	174 (100%)	0	0
	3. Patterned injuries?	172 (98.9%)	2 (1.1%)	1
	4. Abrasions or lacerations suggestive of intentional injury?	173 (99.4%)	1 (0.6%)	1
	5. Evidence of neglect?	146 (83.9%)	18 (16.1%)	10
Elements which may suggest Mistreatment	6. Evidence of dehydration?	148 (86.5%)	23 (13.5%)	7
	7. Evidence of poor control of medical problems?	142 (81.6%)	32 (18.4%)	15
	8. Evidence of malnutrition?	157 (90.8%)	16 (9.2%)	9
	9. Swollen or tender area on palpation?	160 (93.0%)	12 (7.0%)	5
Specific circumstances	10. Genital trauma or infection – evidence of sexual mistreatment?	171 (99.4%)	1 (0.6%)	0
	11. Fractures concerning for mistreatment?	173 (99.4%)	1 (0.6%)	1
	12. The current problem has been present for a long time – is the unusual delay in seeking medical attention concerning for mistreatment?	165 (95.9%)	7 (4.1%)	6

Figure 2: Flow chart of the outcomes of all patients. The chart shows the Emergency Department Senior Abuse Identification (ED Senior AID) tool for every patient disaggregated by the outcomes.



presenting older adults screened positive for elder mistreatment. The patients who screened positive were older, frailer (as assessed by the Clinical Frailty Scale), more cognitively impaired, and assigned more urgent triage categories than those who screened negative. The positively screened patients were also hospitalised more frequently. Mortality up to 100 days after presentation was comparable regardless of the screening result.

The prevalence of elder mistreatment in the emergency department setting is not well established. A survey conducted in Singapore of 62,826 patients aged ≥65 years who presented to an emergency department between 1994 and 1997 revealed a prevalence of elder mistreatment of 0.03% [18]. A retrospective health record analysis for ICD-10 codes of six million patients aged ≥60 years in a US emergency department setting reported a prevalence of 0.01% [17]. Neither of these studies utilised a dedicated screening tool for elder mistreatment. Development and validation studies of the Emergency Department Senior Abuse Identification tool in the US reported positive screening rates for elder mistreatment in emergency departments of 4%–7% [7, 21], which can be compared to the 2.9% found in our study using the German version of the same tool. As retrospective evaluations found a substantially lower prevalence than prospective studies, the true prevalence is likely closer to the numbers reported by prospective studies using a dedicated tool.

In Switzerland, no data exists on the prevalence of elder mistreatment in the emergency department setting. The only available prevalence data focused on violence against community-dwelling older adults and were collected in 2000 via a survey by the Swiss Federal Statistical Office. This survey showed that 3.9% of community-dwelling older adults had experienced an act of violence (including robberies) over the past 12 months [30]. In subsequent years, the Swiss Federal Statistical Office removed this question from the survey [31]. Additionally, two smaller studies explored the perceptions of community-dwelling older adults and healthcare workers on elder mistreatment in Switzerland [32, 33].

Patients with more than one presentation had the same positive screening rate for elder mistreatment as those with single presentations, which is inconsistent with previous studies [13–15].

The characteristics of patients who screened positive for elder mistreatment were comparable to previous studies. They were older [34] and had greater cognitive impairment [3] and frailty [15, 34] than those who screened negative. All these factors have been suggested as risk factors for mistreatment [3, 15, 35] and institutionalisation [36].

One study suggested that patients who had experienced mistreatment were referred more often to emergency departments [14]. This observation would put emergency department personnel in a uniquely favourable position to identify potential mistreatment cases through simple routine screening in the emergency department and take appropriate actions involving social services or law enforcement early on if needed. As previously suggested, the high screening burden could be reduced by implementing a prescreen [37].

The lower positive screening rate in our cohort compared to the original validation cohort [21] could be explained by several differences. First, elder mistreatment might occur less often due to financial issues in high-income countries. Second, institutionalised patients appear to receive high-quality care. Third, signs of elder mistreatment, such as malnutrition, might be confused as signs of "normal" ageing since they mimic chronic health conditions [38].

The usability of the Emergency Department Senior Abuse Identification tool can be assumed in our setting since almost 75% of screenings were completed. However, questions about elder mistreatment were incomplete in one-quarter of all cases, leading to exclusion from this study (table S1 in the appendix).

Previous studies have suggested that asking these types of questions might cause discomfort for healthcare providers and patients [39]. However, patients with missing data had higher morbidity, frailty, urgency, and mortality (table S2 in the appendix). Therefore, these factors could have compromised usability, particularly urgency. The comparison to the prevalence of elder mistreatment in community settings [2, 3, 17, 40] is difficult since time and resources play an important role. In the community, 10.5 home visits by nursing in-home caretakers were needed to suspect one case of mistreatment on average [41]. However, one might expect that elder mistreatment is not much rarer in emergency department presenters. Therefore, easy-to-use and standardised tools are needed for early detection [3, 42].

Despite emerging screening tools, there is a lack of evidence regarding their impact on outcomes [43, 44]. The US Preventive Services Task Force even concluded in a 2018 recommendation statement that there is insufficient evidence to assess the balance of benefits and risks of routine screening for elder mistreatment in clinical settings [44]. This recommendation statement is currently being reviewed. Therefore, gathering evidence is vital, particularly

Table 5:
Baseline characteristics of individual patients stratified by number of presentations. For patients with multiple presentations to ED within study period, baseline characteristics for first presentation are presented.

	All	Single presentation	Multiple presentations
n (%)	1010	954 (94.5%)	56 (5.5%)
Age (years), median (IQR)	78.00 (72.00–85.00)	78.00 (72.00–85.00)	80.00 (75.00–86.00)
Sex (female), n (%)	525 (52.0%)	503 (52.7%)	22 (39.3%)
Admitted, n (%)	591 (58.5%)	564 (59.1%)	25 (44.6%)
National Early Warning Score, median (IQR)	1.00 (0.00–2.00)	1.00 (0.00–2.00)	1.00 (0.00–2.00)
Clinical Frailty Scale, median (IQR)	3.00 (3.00–5.00)	3.00 (3.00–5.00)	3.00 (3.00–5.00)
Nursing home patients, n (%)	104 (10.3%%)	98 (10.3%)	6 (10.7%)

IQR: interquartile range.

in emergency settings that tend to be a sentinel for issues of vulnerable populations.

Limitations

The findings of this single-centre study conducted in Northern Switzerland during spring may not apply to different seasons or facilities in other parts of the world. The lack of a gold standard for recognising elder mistreatment makes it challenging to compare our study to others, potentially underestimating the prevalence of elder mistreatment. In addition, we were unable to investigate the interrater reliability of the ratings. The higher burden of morbidity, frailty, urgency, and mortality among patients with missing data for the Emergency Department Senior Abuse Identification tool may have led to a selection bias, potentially influencing the overall positive screening rate and usability. Since we implemented it into our study, the Emergency Department Senior Abuse Identification tool has been extended into the Elder Mistreatment Screening and Response tool, which includes a pretest to reduce the screening burden on healthcare providers [45]. The higher screening burden of the original tool might have impacted the actual prevalence and usability. Furthermore, the first multicentre validation study of the Emergency Department Senior Abuse Identification tool established a gold standard using a longitudinal, expert, all-data panel to validate all positive and 10% of randomly selected negative cases. Therefore, we did not apply this gold standard and cannot report performance criteria [21]. Lastly, we did not formally obtain feedback regarding the tool's usability from the physicians who used it.

Conclusion

The presentation of an older adult to the emergency department is a sentinel event, and emergency departments are uniquely positioned to detect elder mistreatment.This study is the first to examine the prevalence of elder mistreatment in a European emergency department. Its positive screening rates and risk factors were comparable to non-European data, indicating a wider problem. Indeed, with increasing older populations, elder mistreatment could become a further challenge in healthcare globally. Therefore, implementing such elder mistreatment screening in the emergency department could potentially enhance case identification and improve patient outcomes.

Data sharing

Our data is currently not publicly accessible. However, it is available upon reasonable request to the corresponding author.

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Potential competing interests
All authors have completed and submitted the International Committee of Medical Journal Editors form for disclosure of potential conflicts of interest. No potential conflict of interest related to the content of this manuscript was disclosed.

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Appendix

Table S1:
Missing values across all presentations of patients aged ≥65 years during the study period (n = 1450).

		Patients aged ≥65 years, n(%)
Emergency Severity Index		6 (0.4%)
Clinical Frailty Scale		421 (29.0%)
Components of the Emergency Department Senior Abuse Identification tool		
Abbreviated Mental Test-4	What is your age?	282 (19.4%)
	What is your date of birth?	281 (19.4%)
	What is this place?	282 (19.4%)
	What is the year?	280 (19.3%)
Elder mistreatment questions	1. Have you needed help with bathing, dressing, shopping, banking or meals?	268 (18.5%)
	2. Has anyone close to you called you names and put you down?	323 (22.3%)
	3. Has anyone told you that you give them too much trouble?	323 (22.3%)
	4. Has anyone close to you threatened you or made you feel bad?	323 (22.3%)
	5. Has anyone tried to force you to sign papers or use your money against your will?	323 (22.3%)
	6. Has anyone close to you tried to hurt you or harm you?	324 (22.3%)
Decisions	Judgement of Patient`s ability to report mistreatment	213 (14.7%)
	Uncertain if the patient was mistreated and should receive a physical evaluation	179 (12.3%)
	Elder mistreatment suspected	212 (14.6%)

Table S2:
The baseline characteristics of all patients disaggregated by missing data. Data are presented as medians (interquartile ranges) for continuous variables and numbers (percentages) for categorical variables. No missing data represents all patients included in our analysis. Missing data represents all patients excluded because they were missing part of the Emergency Department Senior Abuse Identification tool.

	All	No missing data	Missing data
n	1450	1071	379
Age (years), median (IQR)	78.00 (72.00–85.00)	78.00 (72.00–85.00)	78.00 (71.50–86.00)
Sex (female), n (%)	750 (51.7%)	548 (51.2%)	202 (53.3%)
Admitted, n (%)	878 (60.6%)	625 (58.4%)	253 (66.8%)
National Early Warning Score, median (IQR)	1 (0–2)	1 (0–2)	1 (0–3)
Clinical Frailty Scale, median (IQR)	4 (3–4)	3 (3–5)	4 (3–6)
1-day mortality, n (%)	14 (1.0%)	4 (0.4%)	10 (2.6%)
7-day mortality, n (%)	29 (2.0%)	7 (0.7%)	22 (5.8%)
30-day mortality, n (%)	51 (3.5%)	17 (1.6%)	34 (9.0%)
In-hospital mortality, n (%)	35 (2.4%)	10 (0.9%)	25 (6.6%)

IQR: interquartile scale.

Figure S1: The German translation of the Emergency Department Senior Abuse Identification (ED Senior AID) tool. The figure shows the German translation of the ED Senior AID tool used in this study to screen for elder mistreatment in our Swiss tertiary academic urban emergency department.