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Accident and emergency consultations for head injuries in older adults

SHORT REPORT

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Background

Head injuries are a common reason for hospitalisation, and patients often arrive via accident and emergency departments. This study aimed to investigate changes in accident and emergency consultations due to head injuries for patients ≥ 50 years.

Material and method

Electronic reimbursement claims by accident and emergency doctors for patients ≥ 50 years in the period 2006–23 were reviewed. Consultation rates were calculated for each year and across four age intervals. Head injuries were identified using the diagnostic codes for concussion and head injury, and these were merged in the analyses.

Results

In the age group ≥ 50 years, the overall consultation rate in accident and emergency departments increased from 21 674 per 100 000 inhabitants in 2006 to 22 444 in 2023. The consultation rate for head injuries increased from 92 to 270 per 100 000 inhabitants. For the age group 50–66 years, the increase was from 83 to 166, for the age group 67–79 years from 86 to 269, for the age group 80–89 years from 138 to 698, and for the age group ≥ 90 years from 277 to 1420.

Interpretation

Accident and emergency consultations due to head injuries increased in all age groups ≥ 50 years. Among patients ≥ 90 years, the consultation rate was more than five times higher in 2023 compared to 2006.

Main findings

The consultation rate for head injuries increased from 92 to 270 per 100 000 inhabitants aged ≥ 50 years during the period 2006–2023.

The largest rise in accident and emergency consultations due to head injuries was among those aged ≥ 80 years.

Nearly half of all head-injury patients admitted to hospital arrive via the accident and emergency department (1). The Emergency Primary Health Care Manual recommends a low threshold for admission, but home observation may be advisable in cases of minimal head injury, normal consciousness, normal clinical examination findings and no risk factors (2). Most head injuries are mild, but the consequences can be more severe in older adults. A Canadian study found that patients over the age of 60 had poorer outcomes than younger patients with head injuries of a similar severity (3). Falls are the dominant cause of head injuries among the older population (3). This study aimed to analyse changes in the number of accident and emergency consultations due to head injuries for patients ≥ 50 years in the period 2006–2023.

Material and method

The dataset consists of data from electronic reimbursement claims by accident and emergency doctors for the period 2006–23, previously used in the compilation of *Statistics from out-of-hours primary health care 2023* (4). Paper-based reimbursement claims and reimbursements paid to patients when the doctor does not have an agreement for direct settlement are not included in the dataset. These are estimated to account for 4.9 % of all visits to the accident and emergency department in 2006 (5), 2.1 % in 2009 (6) and fewer than 1 % after 2010 (7). Consultations and visits to patients in nursing homes are remunerated by other means and are not included in this dataset.

Consultations were included in the study if the patient was ≥ 50 years old and the reimbursement claim contained one of the consultation fee codes in the standard tariff (2ad, 2ak or 2fk).

Consultation rates were calculated for each year, with the denominator defined as the population figure from Statistics Norway (8), minus the number of long-term nursing home residents (9). Since Statistics Norway's data series on nursing homes only started in 2007, the figure from that year was used in the

calculation of the denominator for 2006. The data were divided into four age groups following the classification in Statistics Norway's statistics on nursing home patients.

Accident and emergency doctors use the ICPC-2 (International Classification of Primary Care) diagnostic system. In this study, the diagnostic codes for concussion (N79) and other head injury (N80) were merged into one category: 'head injury'. Diagnostic criteria for concussion include head trauma with temporary loss of consciousness or neurological sequelae. Head injury is defined as trauma to the head with cerebral damage (10). The total number of injuries (not just head injuries) was also registered using the same ICPC codes that the Norwegian Institute of Public Health used in its report on the injury situation in Norway (*Skadebildet i Norge*) (11). The data include all electronic reimbursement claims in the period and are presented without confidence intervals.

Anonymised data files were provided by the Norwegian Control and Payment of Health Reimbursements Database (KUHR). The annual *Statistics from out-of-hours primary health care* were reviewed by the data protection officer at the Norwegian Labour and Welfare Administration (NAV) and the data protection officer for research (4). Since it is not possible to identify individuals in the dataset, either directly or indirectly, the project is not subject to reporting requirements under the Personal Data Act.

Results

The total number of accident and emergency consultations among patients ≥ 50 years old increased from 323 098 in 2006 to 456 432 in 2023, corresponding to 21 674 and 22 444 per 100 000 inhabitants, respectively. Injury consultations totalled 42 085 in 2006 and 50 777 in 2023, corresponding to 2823 and 2497 per 100 000 inhabitants, respectively.

The number of consultations due to head injuries increased from 1375 in 2006 (92 per 100 000 inhabitants) to 5491 in 2023 (270 per 100 000 inhabitants). Female patients were slightly overrepresented in all years, with the lowest proportion in 2010 (50.3 %) and the highest in 2023 (54.3 %). Table 1 shows the number of consultations in different age groups for each year.

Table 1

Annual number of accident and emergency consultations due to head injuries in four age groups

Year	Age (years)				Total
	50–66	67–79	80–89	≥ 90	
2006	757	330	232	56	1 375
2007	753	307	279	77	1 416
2008	971	398	291	66	1 726

Year	Age (years)				Total
2009	942	429	337	111	1 819
2010	1 078	488	391	114	2 071
2011	1 241	590	446	133	2 410
2012	1 280	615	458	147	2 500
2013	1 288	692	473	169	2 622
2014	1 155	616	472	165	2 408
2015	1 215	695	532	203	2 645
2016	1 317	762	540	235	2 854
2017	1 239	873	542	261	2 915
2018	1 416	997	679	264	3 356
2019	1 499	1052	755	319	3 625
2020	1 304	999	777	348	3 428
2021	1 469	1 124	901	403	3 897
2022	1 705	1 488	1 066	458	4 717
2023	1 941	1 718	1 313	519	5 491

Figure 1 shows that the consultation rate due to head injuries increased in all age groups. In the 50–66 age group, the rate doubled. Compared to 2006, the consultation rate in 2023 was three times higher in the 67–79 age group and five times higher in the 80–89 and ≥ 90 age groups.

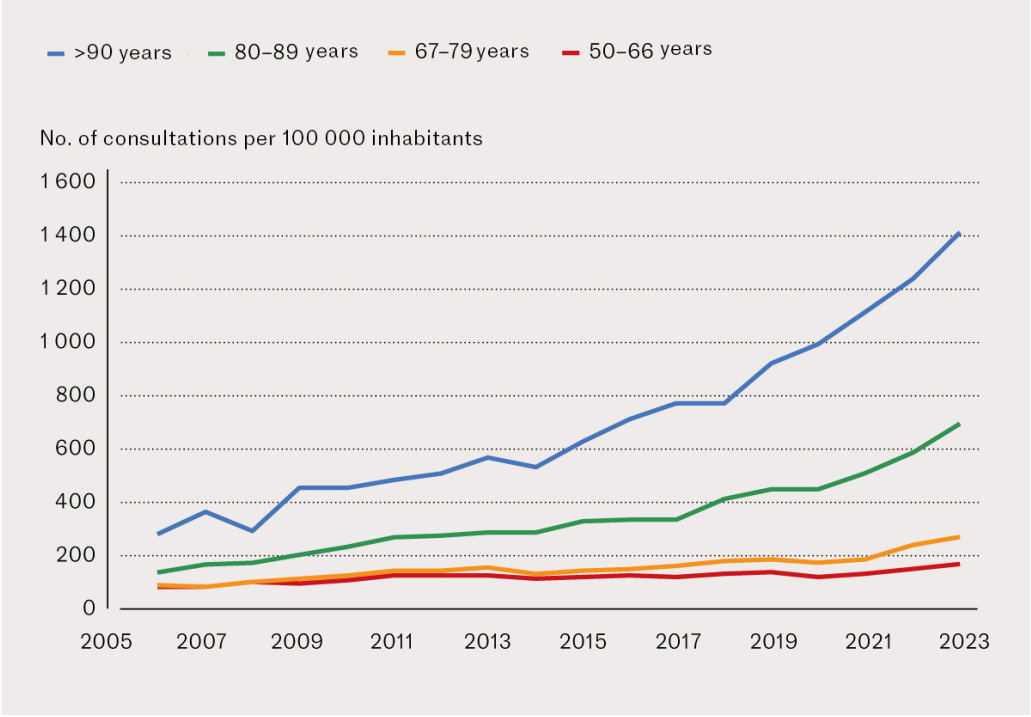

Figure 1 Annual accident and emergency consultation rates due to head injuries for four age groups in the period 2006–2023.

Discussion

This study shows that accident and emergency consultations due to head injuries increased substantially in the age groups ≥ 80 years in the period 2006–2023. The number of consultations in this age group was more than six times higher in 2023 than 2006. The consultation rate was more than five times higher, suggesting that the increase is due not only to the ageing population, but to a growing incidence of head injuries. The number of older adults living at home is rising sharply, and this population group is more prone to falls (3).

The threshold for contacting the accident and emergency department after a head injury may have changed during the period, which could have a bearing on the findings of the study. Most patients call the accident and emergency department beforehand and are either advised to wait or to attend for an examination (12). Both the Emergency Primary Health Care Manual and the Scandinavian guidelines for head injuries from 2013 recommend a low threshold for hospitalisation (2, 13), and according to the decision support tool for telephone triage (*Legevaktindeks*), advanced age or frailty is a factor that warrants prompt clinical assessment (14). This may help explain the higher incidence of accident and emergency consultations among the older population, but it is uncertain whether the new threshold for contacting the accident and emergency department after a head injury can fully explain the sharp rise in consultations in recent years, as found in this study.

The Norwegian Patient Registry also shows a rise in hospital admissions due to head injuries, but the data are not broken down into age groups (15). The admission rate for head injuries was 948 per 100 000 inhabitants in 2016, which is the first year we have statistics for. The corresponding figure for 2023 was 1116 per 100 000 inhabitants. The Cause of Death Registry publishes the number of deaths due to falls, but not specifically for head injuries (16). It shows that the death rate due to falls among those aged ≥ 80 has increased from 106 per 100 000 inhabitants in 2006 to 250 in 2023.

This study found a significant increase in accident and emergency consultations for head injuries among the older population. When considered alongside registry data showing both an increase in hospital admissions for head injuries and a rising mortality rate from fall-related injuries among the older population, this study suggests that the findings reflect a genuine increase in the risk of head injuries for older adults living at home. The Norwegian Directorate of Health recently published national clinical guidelines on fall prevention in older adults (17). Fall prevention measures should be implemented for older adults with head injuries in the accident and emergency department. Such measures could include home visits by a nurse, physiotherapist and/or occupational therapist.

The article has been peer-reviewed.

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