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Madelyn Yiseth Rojas Castro,[1,2] Marta Avalos,[1,3] Benjamin Contrand,[1,2] Marion Dupuy,[4] Catherine Sztal-Kutas,[4] Ludivine Orriols,[1,2] Emmanuel Lagarde [1,2]

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[1]U1219, INSERM, Bordeaux, Nouvelle-Aquitaine, France
[2]U1219, Universite de Bordeaux, Bordeaux, Aquitaine, France
[3]SISTM Team, Inria, Talence, Aquitaine, France
[4]Calyxis, Centre of Risk Expertise, Niort, France

Correspondence to
Emmanuel Lagarde, Bordeaux, Aquitaine, France; emmanuel.lagarde@u-bordeaux.fr

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ABSTRACT

Background Home injury (HI) is a significant cause of mortality and morbidity in adults of all ages. Health conditions significantly impact HI among old adults, but little is known for other adults.

Study design Prospective cohort study.

Objective We assessed the associations between health-related factors and HI's risk in a French study, the MAVIE (*Mutualistes pour la recherche contre les Accidents de la VIE courante*) cohort.

Methods Poisson mixed models were fitted using health-related data information (diseases, treatments and disabilities) at baseline and the number of injuries prospectively recorded during the follow-up, adjusting for significant sociodemographics and exposure to a range of home activities. Attributable fractions were estimated based on risk ratio (RR) estimations measured in the fully adjusted models.

Results A total of 6146 dwelling adults aged 15 or older were followed up for 5.1 years on average. Vertigo or dizziness (RR=2.36, 95% CI 1.06 to 5.01) and sciatica or back pain (RR=1.49, 95% CI 1.08 to 2.05) were independently associated with an increased risk of HI. These two groups of conditions showed the most significant associations among people aged 15–49, whereas musculoskeletal diseases other than rachialgias and arthropathies were the most significant health-related risk factor in people aged 50 and older. Sciatica or back pain represented the highest burden of HIs in overall adults (8%) and among people aged 15–49 (12%).

Conclusion Our results suggest that adults with musculoskeletal disorders and vertigo or dizziness symptoms have a higher risk of HI, regardless of age.

INTRODUCTION

Home injuries (HIs) represent approximately one-third of the global burden of injuries.[1] In the EU-28, HIs caused an annual average of 85 000 fatalities, 1.5 million hospital admissions and 9 million emergencies between 2012 and 2014.[2] Home has been identified as the most prevalent location for injuries resulting in hospitalisation and is second to roads as the location for fatal injuries.[3] HIs affect people of all ages. However, among adults, HIs are more frequent in people aged 65 years or over. Falls are the principal mechanism of fatal and non-fatal HIs.[2]

Multiple studies have identified health-related factors associated with falls in the elderly, including lack of strength gait and balance; mobility impairment[4–6]; back pain[7 8]; arthropathies[6 9]; dizziness and vertigo[6 10 11]; obesity[12]; diabetes[5 6 9]; cardiovascular conditions[5 6 9]; chronic obstructive pulmonary disease[9]; urinary incontinence[6]; visual and hearing impairments[5]; cognition impairments caused by neurological conditions such as Parkinson's disease, Alzheimer's disease or other types of dementia[4–6]; and sleeping problems; anxiety; or depression.[4–6 9] Frailty status,[13] the presence of two or more concurrent conditions[6] and certain medications, such as psychotropics, antidepressants, anxiolytics, sedatives or hypnotics,[14] opioids,[15] cardiac medication, diuretics, antidiabetic medication[5] and polypharmacy,[16] are also associated with falls in the elderly.

Among young and middle-aged adults, understanding the impact of health risk factors on HI is poor.[17 18] Regarding the risk of occupational injuries, there is some evidence of the role of hearing impairments, neurotic illness, diabetes,[18] epilepsy and sedating medication.[19] Regarding falls in the bathroom, drugs and alcohol, cardiovascular disease, neuromuscular disorders and diabetes were identified as risk factors at all ages, especially 41–60 years old.[20] Conditions such as back pain, sleeping problems, anxiety, depression, cardiovascular diseases and diabetes can also be frequent in young and middle-aged adults, which justifies evaluating their impact on adults of all ages.

One of the objectives of the prospective MAVIE (*Mutualistes pour la recherche contre les Accidents de la VIE courante*) cohort study[21] is to identify new specific, modifiable risk factors to design interventions allowing to reduce predisposition and potential susceptibility to *Home, Leisure and Sports Injuries* (HLIs). The purpose of this study was to assess associations of health-related factors on the risk of non-fatal HI in adults of all ages.

We hypothesise that focusing on specific health-related factors to design prevention interventions, which have shown to be effective in reducing falls in the elderly, may also mitigate HIs in middle-aged and young adults.

METHODS

Study design and recruitment

The MAVIE cohort is a web-based prospective cohort study conducted in France, with a longitudinal follow-up of HLIs.[21] All households in France and French overseas territories were eligible to participate. The recruitment process began in

November 2014. This study analysed the data collected up to 31 December 2019.

Cohort management was entirely online, including invitations, registration and data collection. Participants were recruited through an email invitation sent to their insurees by three mutual insurance companies, press releases, social media, posters and flyers.

We asked potential participants to choose a household reference member in charge of completing a web-based questionnaire for the household. Consenting members of each household were asked to provide individual information. In an attempt to address the foreseeable under-representation of the elderly who may have difficulties using computers, caregivers were invited to represent and participate on behalf of one older person. We described other attempts to reduce bias in the MAVIE observatory in elsewhere.[21]

Follow-up

Every 3 months, household reference members received an email reminder to report any injury event to any consenting household members during the follow-up. If no injury had occurred, a link in the email allows reporting with a single click. An invitation to report events was also included in the monthly cohort newsletter. Still, events could be reported at any time.

Participant data and selection

The inclusion criteria for participation in the MAVIE cohort were as follows: (1) residing in France; (2) being able to answer the questionnaires in French; (3) having access to and being able to use the internet (at least the reference member). The baseline sample was defined as the participants aged 15 or over who answered at least one question of the individual inclusion questionnaire. We excluded those who lived in hospitals and retirement or long-term care institutions. We only considered participants whose follow-up could be confirmed (by injury or non-injury report, questionnaire update, death or study leave request). We also excluded those participants who did not answer the *daily schedule* questions, necessary for the calculation of *time-at-risk*.

Home injuries

This study focused on unintentional HIs or its premises. We excluded all events involving illnesses or medical symptoms. We excluded events that occurred before or on the same date as the date of consent and those for which information about the type of medical care or the circumstances of occurrence was not reported. Finally, we excluded injuries that occurred during sleeping time, considered unlikely.

Data included activity and location, mechanisms and type of medical care of the injury event. We defined HIs as severe when emergency care or hospital inpatient care was required.

Individual characteristics

Relative time distribution

Participants were asked to report their *typical daily schedule* on a weekday and on a weekend, the time spent at home and in different domestic settings (dining room, bedroom, garden, etc). The average duration was also reported for domestic work, gardening and do-it-yourself (DIY) activities. Time spent on each activity was categorised as *frequent* (over the 75th percentile), *occasional* or *null*.

Socioeconomic, demographic characteristics and alcohol consumption

Gender, age, occupational status, education level, living situation, household incomes and alcohol consumption were studied at baseline. Occupational status groups were *unemployed, homemakers, and retirees* and *students and employees*. Responses to education status were assigned to educational attainment levels by age groups. We considered a low level of education high school or vocational studies, or lower for participants aged 20–54, and primary studies or lower for other ages. Annual household incomes were assigned to classes according to the French population's percentiles reported in 2015 (low: ≤30th percentile, middle: 30th–80th percentile, high: ≥80th percentile). The categories of the frequency of alcohol consumption were less than two times a week, and two or more times a week.

Health conditions and medications

At inclusion, participants were invited to report their history of diseases and treatments over the previous 12 months.

Medical conditions were grouped into the following clinically homogeneous categories: cardiovascular diseases, respiratory diseases, digestive diseases, genitourinary diseases, endocrine diseases, sciatica or back pain, arthropathies, other conditions of the musculoskeletal system, eye diseases, depression, anxiety, sleeping disorders (including treatment with antidepressants, anxiolytics or hypnotics), migraine or headache, vertigo or dizziness, chronic mental diseases (Parkinson's disease, Alzheimer's disease or other senile dementia, epilepsy and antiepileptic medicines) and cancer. Participants were also asked to report whether they were suffering from impairments or disabilities related to vision, hearing, mental, intellectual, or psychological, and mobility.

We defined polypharmacy as a reported number of medications of four or more,[16] and comorbidity as the report of two or more diseases[22] at any time in the previous 12 months. The history of injuries (excluding sports injuries) over the past 12 months was also reported.

Statistical analyses

Data were analysed using R V.3.6.1 (The R Foundation for Statistical Computing, Vienna, Austria).

We defined the follow-up period (FP) from the consent date to the date of the last information reported: injury or non-injury report, the questionnaires update date, the cohort exit date, the death date. We calculated the proportion of time spent awake at home (PTAH) as the proportion of hours on a weekday or weekend when the person was neither away from home nor sleeping. We considered the *time-at-risk* as:

$$Time\text{-}at\text{-}risk = (PTAH_{w} \times No.\ FPw) + (PTAH_{wn} \times No.\ FPwn), \quad (1)$$

where $PTAH_{w}$ was the time spent awake at home regular weekday, $PTAH_{wn}$ on a regular weekend, $No.\ FP_{w}$ the number of weekdays in the follow-up period and $No.\ FP_{wn}$ the number of weekends. We calculated the proportion of *time-at-risk* as:

$$\%\ Time\text{-}at\text{-}risk = (Time\text{-}at\text{-}risk/Follow\text{-}up\ duration) \times 100\%. \quad (2)$$

Risk factor analysis

Poisson mixed models were used to fit the number of HIs during the estimated exposure distribution in the person-time at risk for injury. Random effects were included to consider the cluster structure of data in households. All models were fitted using the Template Model Builder R package.[23] Risk ratios (RR) were

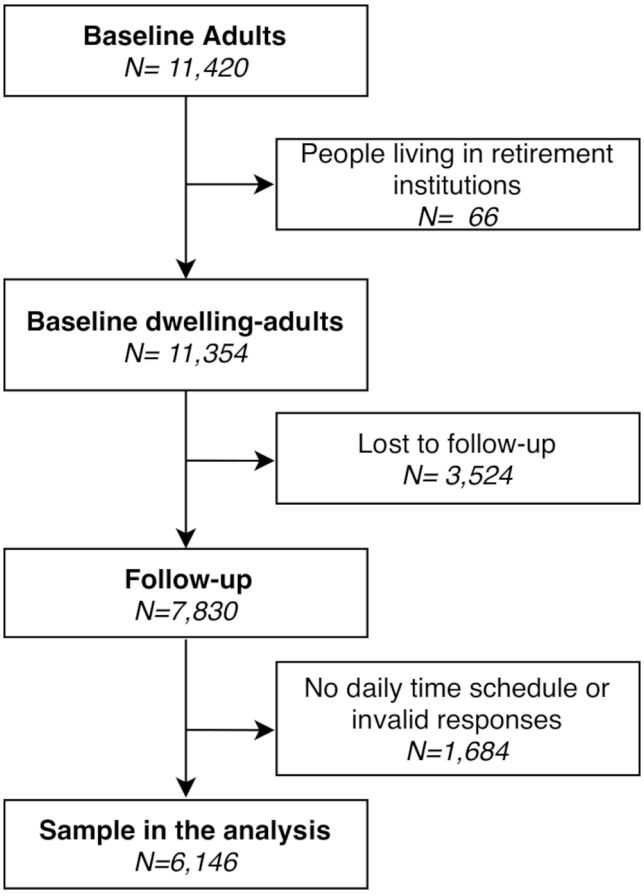

Figure 1 Flowchart of study participants.

calculated conditionally on the random effects, and the 95% CIs were calculated using the profile method.[24] We adopted a complete case approach.

We fitted individual crude regression models to each health condition. Then, we conducted a two-step variable selection procedure. First, we adjusted each model by age, gender and history of injuries in all models, and we selected the most important associations (p_{adj} <0.10). Second, we fitted the models to each health-related factor, adjusting for significant adjustment variables selected in the previous step. Finally, we selected the most important associations for the fully adjusted model (excluding comorbidity). Benjamini-Hochberg corrected p values were computed.[25] The same methodology was used to construct models stratified by two distinct age groups (15–49 years old and 50 years or older).

The attributable fraction (AF) was estimated using the adjusted RR of the fully adjusted models, as suggested by Flegal and colleagues.[26]

RESULTS

Between November 2014 and December 2019, 11 420 adults registered in the MAVIE cohort and responded to baseline questionnaires. Among them, 9429 were household reference members representing themselves and/or another household member. Sixty-six participants reported that living in a retirement institution, and 3524 participants did not provide follow-up data. Another 1684 participants did not provide their *daily schedule* (figure 1). The sample size was 6146 participants from 5122 households.

The median follow-up was 4.0 years (Q1=3.6, Q3=4.5). The overall follow-up duration was 4800 persons-time. The loss to follow-up was 13%.

Among the 6146 individuals of the study, 244 left the cohort during the follow-up. Nineteen of them were reported by the reference member to have died, 16 from illness and 3 of unknown causes. Thirty-one participants left the study due to changes in household composition. The remaining 191 participants did not report any reasons for leaving the study.

Socioeconomic, demographic characteristics and alcohol consumption levels were similar to those of the study sample and baseline sample (table 1). However, dropout was more frequent among young adults, students and employees, and among members of low-income households.

Baseline characteristics

Socioeconomic, demographic characteristics and alcohol consumption

Table 1 shows the socioeconomic, demographic characteristics and alcohol consumption of the sample at baseline. Sample characteristics differed from those of the overall French population. Participants aged 50–74 were over-represented (62% vs 35% in the French population, 2015). Students and employees were under-represented (49% vs 57%). People with low education attainment level were under-represented (8% vs 44%). Finally, only 12% of household reference members reported an annual income lower than the 30th percentile of French households.

The median proportion of time spent at home awake was 48% (Q1=36%, Q3=58%). Adults older than 50, unemployed, retirees, homemakers and those who reported gardening, DIY and domestic activities were those who spent the most time at home (online supplemental material 1).

Health conditions, diseases and medications

Among the 6146 participants, 67% reported at least one health condition (figure 2). They were older, with a median age of 60 compared with 35 for those who did not report any health condition. Figure 2 shows the most frequently reported health conditions by age group. Almost half of the participants (48%) reported more than one health condition. The most frequently reported conditions among adults aged 15–49 years were depression, anxiety or sleeping disorders, and among adults aged 50 and older, cardiovascular diseases. Eight per cent of participants reported at least one type of injury in the last 12 months.

Home injuries

During follow-up, 12% of the participants reported at least one HI, of which 946 occurred while awake. Most of HIs were minor injuries, and only 28% required either hospitalisation or emergency care. Falling was the main mechanism of HI (39%), domestic and gardening activities (42%), the most frequents activities and the garden (25%) the most frequent location (online supplemental material 2).

Health risk factor analysis

Adjusting for the selected variables of block 1 (online supplemental material 3), vertigo or dizziness, sciatica or back pain, arthropathies, other musculoskeletal system diseases, depression, anxiety or sleeping disorders, and comorbidity were associated with an increased risk of HI in adults of all ages with a small or moderate effect (block 2, online supplemental material 3). In the fully adjusted model (table 2), vertigo or dizziness and sciatica or back pain remained associated with an increased risk of HI

Table 1 Description of the demographic, socioeconomic and other characteristics at inclusion time of MAVIE (*Mutualistes pour la recherche contre les Accidents de la VIE courante*) dwelling adults: baseline and analysed sample

	Baseline sample	Analysed sample
	N (%)	N (%)
All	11 354	6146
Gender		
Male	5326 (47)	2933 (48)
Female	6028 (53)	3213 (52)
Age (years)		
15–29	1074 (9)	490 (8)
30–49	3251 (29)	1611 (26)
50–74	6542 (58)	3823 (62)
75+	487 (4)	222 (4)
Employment status		
Students, employees	4810 (52)	2998 (49)
Unemployed, retirees and homemakers	4395 (48)	3042 (51)
Missing	2149	106
Level of educational attainment by age*		
Low	823 (9)	474 (8)
High	8434 (91)	5658 (92)
Missing	2097	14
Living alone		
No	9116 (81)	4893 (80)
Yes	2135 (19)	1205 (20)
Missing	103	
Frequency of alcohol consumption		
Less of 2 times a week	4850 (60)	3422 (58)
2 times a week or more often	3247 (40)	2496 (42)
Missing	3257	228
DIY/gardening		
Never	3124 (39)	2080 (36)
Occasional	3339 (42)	2519 (43)
Frequent	1573 (20)	1228 (21)
Missing	3318	319
Domestic		
Never	1928 (24)	1284 (22)
Occasional	4499 (56)	3306 (57)
Frequent	1561 (20)	1201 (21)
Missing	3366	321
Household income level†	n=9429	n=5122
Low	1176 (14)	563 (12)
Middle	3320 (41)	1850 (40)
High	3655 (45)	2198 (48)
Missing	1273	511

*Level of educational attainment by age groups according to French population in 2015 (low: <50th percentile, high: ≥50th percentile).
†Household income according to percentiles of salaries of the French population in 2015 (low: ≤30th percentile, middle: 30th–80th percentile, high: ≥80th percentile), frequencies calculated using the household as the unit.
DIY, do-it-yourself; n, number of households; N, number of responders.

and with AFs of 1.9% and 8.1%, respectively. The contribution of depression, anxiety and sleeping disorders was also important (AF=5.5), but the association was weaker than the conditions named above (RR=1.28, 95% CI 0.96 to 1.70).

Results of the fully adjusted models were similar for participants aged 15–49, but the effects of sciatica or back pain and vertigo or dizziness were higher than among adults of all ages (table 3). The category of other musculoskeletal system diseases covered the only conditions significantly associated with the risk of HI among participants aged 50 or older (table 3). All models converged, and their residuals were validated, discounting problems, such as over/underdispersion and zero inflation.

DISCUSSION

To our knowledge, we present here the first study to evaluate the association of health conditions with the risk of non-fatal HIs in adults of all ages. In contrast with previous studies, we have measured individual time spent at home and the estimated exposure distribution in the person-time at risk for injury. This is particularly relevant since people suffering from a health condition may spend more time at home.

We followed up 6146 cohort participants residing in French households, of whom 12% suffered at least one HI over an average of 5.1 years. The same proportion was 14% among those who reported at least one health condition. Among the 21 health conditions reported at inclusion, we identified sciatica or back pain problems and vertigo or dizziness as the main risk factors, with an estimated AF of 8.1% and 1.9%, respectively.

This unprecedented finding of substantially increased risk of HI among adults under 50 years old with sciatica or back pain (RR=2.26) and vertigo or dizziness (RR=4.59) is striking not only because of these high association measures but also because of a substantial estimated AF (11.9% and 3.2%, respectively). For people over 50 years old, musculoskeletal diseases (other than rachialgia and arthropathies) are the only condition that remained significant in the fully adjusted model. These same factors associated with mobility emerged when we analysed only falls and unintentional struck, whereas this was not the case for other HIs. That suggests that most health conditions affecting the risk of HI are increasing the risk of falling. Other factors usually associated with injuries and falls, such as gender, age, vision and hearing impairments, polypharmacy and alcohol consumption, did not appear to be associated with an increased risk of HI in this study.

Musculoskeletal conditions (including back pain) and sciatica are well-known risk factors for occupational injury, likely due to overexertion. Overexertion was reported only in the 18% of injuries of people suffering from musculoskeletal conditions. Consistent with previous findings, the effects of arthropathies (RR=1.37) and other musculoskeletal conditions (RR=1.57) were more relevant among adults over 50 years old.[6 9] In contrast with previous studies, back pain did not appear to be associated with an increased risk of HI in adults over 50.[7 8] One possible explanation is that older people may favour chronic conditions over problems such as back pain when self-reporting. We hypothesise that poor posture might affect housework performance, increasing general injury susceptibility. Decreased cognitive function due to chronic pain[27] or opioid use[15] might also raise HI risk.

Vertigo or dizziness increased the risk of HI among young adults, but not among those aged 50 or older. This group of symptoms may be related to vestibular migraine, benign paroxysmal positional vertigo and Meniere's disease,[28] rather than age-related conditions such as Parkinson's disease, or cerebellum and oculomotor brainstem syndrome.[29] Other possible causes of vertigo, such as hypoglycaemic episodes or postural hypotension, have been partially controlled for by adjusting for other conditions such as endocrine diseases and cardiovascular diseases.

We found a slightly increased risk of HI among participants reporting depression, anxiety or sleeping disorders. Consistently,

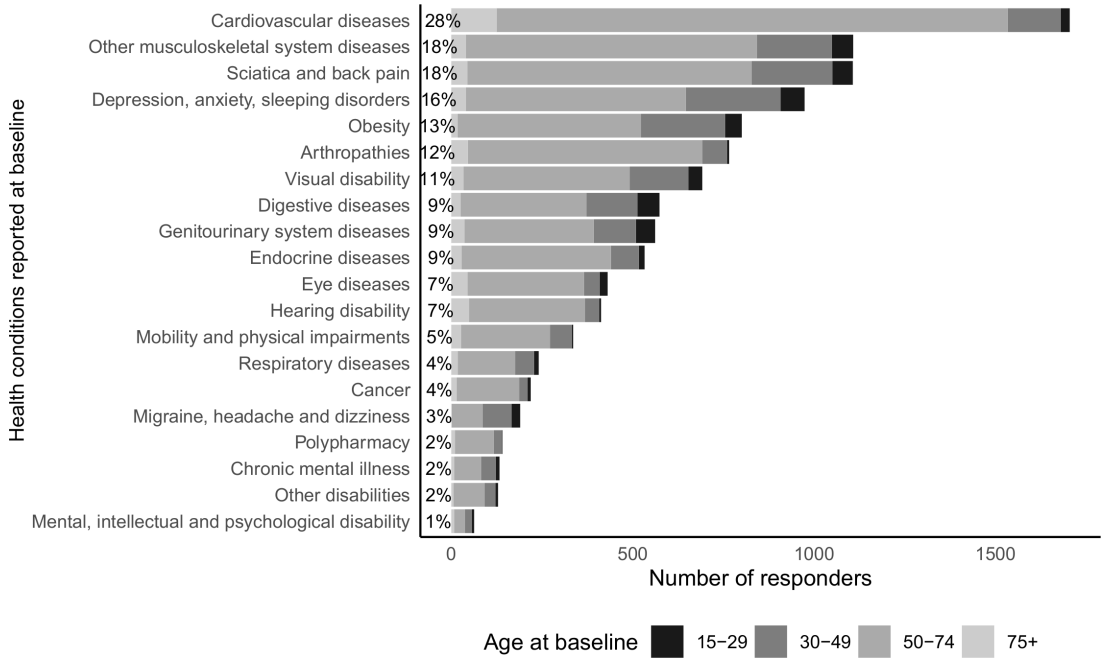

Figure 2 Self-reported health conditions at inclusion: Diseases reported during the 12 months prior to baseline, disabilities and obesity at the time of inclusion by the analysed dwelling adults of the MAVIE (*Mutualistes pour la recherche contre les Accidents de la VIE courante*) cohort, stratified by age groups (at inclusion). Sample size N=6146.

Palmer and colleagues highlighted an increased risk of occupational injury among people with emotional conditions and a moderate effect among sedative consumers.[18] Another explanation might be the difficulties in assessing risks and a reduced motivation to correct them in people who have affective psychological disorders.

Unlike other studies,[30] we found no association regarding age and disability. Because we could account for the time spent at home, our results confirm that exposure time is the main explanation.[31] A relevant self-perception of disability allows compensation for an increased risk of injury, enabling enhanced care in daily activities and avoiding risky tasks and domestic hazards. People with moderate conditions, more active in domestic work and less aware of risks might be more exposed to hazards together they might insufficiently regulate their behaviour. On the other hand, these effects may be mitigated by the beneficial impacts of domestic activities,[32] for example, by improving executive functions.[33]

Lessons for prevention from our results include better awareness of risks at home for people with diseases related to the musculoskeletal system. Our results also highlight the preventive role of physicians when dealing with vulnerable people. However, HI risk related to the level of activities should not discourage leisure activities and help raise awareness and adaptation of the living environment to the risks by mapping foreseeable hazards.

Table 2 Factors associated with the incidence of HI, relative to the time at risk at home, in adults of the MAVIE (*Mutualistes pour la recherche contre les Accidents de la VIE courante*) cohort (fully adjusted model)

	Fully adjusted model (N=3842, HI=529)			
	(%)	RR (95% CI)	P value	AF (%)
Vertigo or dizziness				
Yes (vs no)	(1)	**2.36 (1.06 to 5.01)**	**0.029**	1.9
Sciatica or back pain				
Yes (vs no)	(18)	**1.49 (1.08 to 2.05)**	**0.013**	8.1
Arthropathies				
Yes (vs no)	(12)	1.10 (0.75 to 1.58)	0.629	1.5
Other musculoskeletal system diseases				
Yes (vs no)	(18)	1.04 (0.75 to 1.42)	0.830	0.8
Depression, anxiety or sleeping disorders				
Yes (vs no)	(19)	1.28 (0.96 to 1.70)	0.084	5.5
Digestive diseases				
Yes (vs no)	(10)	1.10 (0.76 to 1.58)	0.603	1.1

Poisson model was adjusted by the offset term time spent at home during the follow-up, random effect in the variable household, age, gender, history of previous injuries, household income level, living alone, and DIY and gardening.
Bold indicates p values <0.05.
AF, attributable fraction; HI, number of home injuries; N, number of responders.

Limitations and strengths

Common limitations observed in volunteer-based cohorts and e-cohorts are low response rates, volunteer bias, loss of follow-up and self-administered questionnaires, leading to selection biases and missing and selective answers. Young adults and people from low socioeconomic groups and low levels of educational attainment were under-represented.[21] As with other e-cohorts,[34] we made continuous efforts to address representativeness, under-reporting of the outcome, data reliability and loss to follow-up.[21]

Back pain, sciatica, vertigo and dizziness are relatively prevalent conditions and sometimes show chronic patterns with frequent sick episodes. These two characteristics are generally associated with higher data reliability.[35] However, we cannot rule out the existence of misclassification, especially when the diagnostic criteria is 'vague', or the disease is perceived as 'less severe', or the diagnosed disease is confounded with symptoms or signs of illness.[36 37] We systematically requested the diagnosis dates to mitigate this problem. Among younger adults, we hypothesise a low level of misclassified cases because, being

Table 3 Factors associated with the incidence of HI, relative to the time at risk at home, in adults of the MAVIE (*Mutualistes pour la recherche contre les Accidents de la VIE courante*) cohort by age group

	Adjusted models			Fully adjusted models			
	(%)	RR (95% CI)	P_c	(%)	RR (95% CI)	P value	AF (%)
Age 15–49	(N=1887, HI=208)			(N=1804, HI=205)			
Sciatica or back pain							
Yes (vs no)	(14)	**2.40 (1.49 to 3.91)**	**<0.001**	(14)	**2.26 (1.40 to 3.65)**	**0.001**	11.9
Vertigo or dizziness							
Yes (vs no)	(2)	**4.95 (1.76 to 13.75)**	**0.002**	(1)	**4.59 (1.48 to 14.13)**	**0.007**	3.2
Comorbidity							
≥2 diseases (vs 1 disease or not disease)	(41)	**2.15 (1.45 to 3.22)**	**<0.001**	–	–	–	
Age 50+	(n=2915, HI=472)			(n=259, HI=468)			
Other musculoskeletal system diseases							
Yes (vs no)	(21)	**1.57 (1.19 to 2.07)**	**0.005**	(22)	**1.45 (1.05 to 1.98)**	**0.023**	9.3
Sciatica or back pain							
Yes (vs no)	(21)	**1.36 (1.03 to 1.80)**	**0.031**	(21)	1.09 (0.78 to 1.52)	0.602	2.2
Arthropathies							
Yes (vs no)	(17)	**1.37 (1.02 to 1.84)**	**0.036**	(18)	1.14 (0.81 to 1.59)	0.458	2.7
Comorbidity							
≥2 diseases (vs 1 disease or no disease)	(53)	**1.35 (1.05 to 1.75)**	**0.036**	–	–	–	

Poisson mixed models including offset term time spent at home during the follow-up and random effect in the variable household. Adjustment variables:
Age 15–49 (gender, history of injuries).
Age 50+ (gender, history of injuries, living alone, household income level, DIY/gardening, frequency of alcohol consumption).
Bold indicates p values <0.05.
AF, attributable fraction; HI, number of home injuries; N, number of responders; P_c, p values ANOVA type II corrected using the Benjamini and Hochberg (1995) method.

generally in very good health, a modest deterioration in their health status may be perceived as relatively important. Among older participants, we think that the involvement of a reference person to communicate household information might increase the reliability of the data. However, this representation could decrease the willingness to report private information. The high follow-up rate of the MAVIE cohort suggests that participants are motivated to response.

Regarding other limitations, the study design does not allow us to disentangle the effects of health conditions and their treatments. Moreover, information about disease severity, individual risk-taking and risk awareness was not available. Finally, we measured health conditions at a single time point; health changes were not assessed over time.

CONCLUSION

Despite these limitations, the MAVIE cohort is the injury observatory with the most detailed sociodemographic, contextual and exposure information to study risk factors of HLIs in France. This information enabled us to control for potential confounders and account for exposure time, the latter being a rare opportunity.

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Contributors All authors contributed to the study conception and design. Methodology: MYRC, MA and EL. Formal analysis: MYRC. Investigation: MYRC, MA, LO and EL. Writing original draft: MYRC. Writing review and editing: MA, BC, MD, CS-K, LO and EL. Supervision: EL and MA. Project administration: EL, CS-K and MD. Funding acquisition: EL, CS-K and MD.

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Competing interests None declared.

Patient consent for publication Not required.

Ethics approval The French Data Protection Authority approved the protocol of this study. The study is declared to the Commission Nationale de l'Informatique et des Libertés (CNIL) under file number 912292. Identifying data were stored

What is already known on the subject

- There is evidence that a large number of health conditions increase home injury (HI) risk in older adults.
- Musculoskeletal system diseases increase the risk of falls at home in older adults through weakness, loss of posture and balance.
- There is a lack of evidence on how health conditions affect the risk of HI in younger adults.

What this study adds?

- Our results suggest a moderate to high effect of musculoskeletal system diseases and vertigo or dizziness symptoms over HI risk regardless of age.
- Back pain or sciatica is the group of conditions with the highest attributable fraction of HI risk among all adults and adults under 50 years old.

on servers located in a different location from those hosting the main database. Electronic informed consent was collected from all adult participants. Participation of children was done under the responsibility and with the consent of a legal guardian.

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ORCID iD
Emmanuel Lagarde http://orcid.org/0000-0001-8031-7400

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