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ABSTRACTS
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Table of Contents

Lonely and depressed? Not equally across countries
Antanas Kairys, Goda Gegieckaitė, Olga Zamalijeva.....4

Loneliness and Social Connectedness Among Older Adults: The Role of Age and Gender
Tėja Savelytė, Antanas Kairys.....5

Social networks in later life: Comparing Finland, Sweden, and Denmark
Elisa Tambellini, Noora Lehtonen, Mirkka Danielsbacka.....6

Given and Received Neighborly Aid in the Daily Lives of the Ageing Population: European Study Using SHARE Data
Antti Kouvo, Tomi Oinas.....7

Intergenerational Solidarity in Europe: Relational Configurations Across Ageing Societies
Nadežda Kuļigina, Olga Rajevska, Andrejs Ivanovs.....8

Re-partnering trends in the Baltic states
Liili Abuladze, Aušra Maslauskaitė.....9

Social Well-Being Factors Associated with Quality of Life Among Older Adults in Latvia
Laura Nesaule, Anda Ķīvīte-Urtāne, Aija Bukova-Žideļūna.....10

Towards a more comprehensive measure of healthy ageing: extending the HAI-5 to a six-domain index for European population studies
Madara Miķelsone, Nityanand Jain, Ieva Reine, Andrejs Ivanovs, Signe Tomsone, Halldór Sigurður Guðmundsson.....11

Job Quality and Retirement Intentions in Europe: Universal and Country-Specific Associations
Ieva Urbanavičiūtė, Antanas Kairys.....12

Changes in Retirement Intentions: Links with Psychological Well-Being and Depressive Symptoms – Longitudinal Evidence from SHARE
Raimonda Sadauskaitė, Antanas Kairys, Halldór S. Guðmundsson, Olga Zamalijeva, Ieva Reine.....13

Work, rehabilitation and retirement pathways of older workers: Findings based on SHARE and register data
Leena Forma, Samuli Koponen, Inna Lisko, Jessica Kaipainen, Tomi Oinas, Ismo Linnosmaa.....14

Effectiveness of rehabilitation: Evidence from linked register and survey data in Finland
Ismo Linnosmaa, Inna Lisko, Samuli Koponen, Sami Remes, Leena Forma.....15

Heterogeneity of care intensity trajectories among informal caregivers in Europe – evidence from the Survey of Health, Ageing and Retirement in Europe (SHARE) data
Hanna Viirret, Leena Forma, Tomi Oinas, Ismo Linnosmaa.....16

Informal Caregiving and Depressive Symptoms Across 28 Countries: Variation by Gender, Care Relationship, and National Context
Xingyue Su, Xu Zong, Honglin Chen.....17

Hearing Loss and Cognitive Decline in Older Adults: Psychosocial Mediators and Demographic Moderators Across 18 High-Income Countries
Xu Zong, Huaiyue Wang, Guoqi Xiao, Ye Zhang.....18

The association of multidomain determinants with moderate-to-vigorous physical activity among European adults aged 50+: a machine learning analysis of the SHARE cohort data
Rafael Ogaz-González, Andréia Abud da Silva Costa, Daniel Lyngø Dam, Didzis Rozenbergs, Paolo Caserotti, Erja Portegijs.....19

Lonely and depressed? Not equally across countries

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Background
Studies show that loneliness is a clear predictor of depressive symptoms (Lee et al., 2021). At the same time, both loneliness and well-being levels differ across countries (Fokkema et al., 2012; Melo et al., 2025) however it remains unclear whether the association between loneliness and depressive symptoms also varies between countries. Therefore, the aim of this study was to analyse the relationship between loneliness and depressive symptoms among adults aged 65+ and test whether its strength varies across SHARE countries. This study received funding from the Research Council of Lithuania (LMTLT), agreement No S-MIP-24-19.

Methods
Data from SHARE Wave 9 was analysed (N = 43,774, aged 65+, 28 countries). Depressive symptoms were measured with EURO-D; because of marked positive skew, scores were square-root transformed. Linear mixed-effects models included age, gender, multimorbidity, self-rated health, and loneliness as predictors. The initial model included random intercept for country, while a second model allowed the loneliness slope to vary across countries.

Results
Loneliness was positively associated with depressive symptoms ($\beta = 0.36$; $p < .001$) after adjustment for the covariates. Allowing the loneliness slope to vary across countries substantially improved model fit compared with a random-intercept-only model, $\chi^2(2) = 154.11$, $p < .001$ (AIC 96,902 vs. 97,052). Country-specific loneliness slopes ranged from 0.152 to 0.273 and were positive in all 28 countries, indicating a consistent direction but meaningful cross-national variation in magnitude.

Conclusions
Loneliness is a robust predictor of depressive symptoms in older age across European countries, however the strength of this association differs between countries. The findings support loneliness as an important target for healthy-ageing and mental-health initiatives while suggesting that national context may shape the its relationship with depression and country-specific interventions may be needed.

Loneliness and Social Connectedness Among Older Adults: The Role of Age and Gender

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Background

As the global population ages, loneliness among older adults has become public health concern. Social connectedness is considered a protective factor against loneliness, yet its role may vary across individuals. This study aims to determine whether age and gender moderate the relationship between social connectedness and loneliness in a sample of older adults, seeking to identify subgroups in which this relationship is strongest.

Methods

The study was conducted using data from the international SHARE survey (Wave 9). A total of 1,414 Lithuanian residents participated in the study, and 790 respondents aged 65 and older (262 men and 528 women) were selected for the final data analysis. Participants' ages ranged from 65 to 96 years (M = 76, SD = 7.58). Data analysis was performed using hierarchical regression, moderation, and simple slopes analyses.

Results

Aspects of social connectedness – the social connectedness index, social integration, and satisfaction with social relationships – are associated with lower levels of loneliness among older adults. The social connectedness index is associated with loneliness only among those aged 69 and older. Social integration is associated with lower loneliness throughout the aging process, but this association is strongest among people aged 84 and older. The relationship between satisfaction with social relationships and loneliness does not change with age. The associations between loneliness and aspects of social connectedness are not related to gender.

Conclusions

Social connectedness is associated with lower levels of loneliness among older adults, though the strength of this association varies with age rather than gender.

Social networks in later life: Comparing Finland, Sweden, and Denmark

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Finland, Sweden, and Denmark are commonly grouped together in comparative research because they share many institutional and social characteristics, including extensive welfare states, high living standards, and broadly similar family systems. Yet such similarities do not necessarily imply that older adults are socially connected in the same ways. European research has documented substantial cross-national variation in the size, composition, and quality of later-life personal networks, while recent SHARE studies have increasingly shown that the configuration of social ties—not simply the number of ties—matters for loneliness and well-being. At the same time, Nordic countries are frequently combined into a single regional category, leaving comparatively little known about variation within the Nordic context. Finland is particularly interesting in this respect: descriptive SHARE evidence suggests that older Finns have comparatively large confidant networks, although extensive networks do not necessarily translate into lower loneliness or better subjective well-being.

Using harmonized ego-network data from waves 8–9 of the Survey of Health, Ageing and Retirement in Europe (SHARE), we examine the confidant networks of respondents aged 50 and over in Finland, Sweden, and Denmark ($n \approx 8{,}000$). The study addresses three related questions. (1) Do the same types of confidant networks characterize later life in Finland, Sweden, and Denmark, or do the configurations themselves vary by national context? (2) Does the distribution of network types differ across the three countries? (3) Are network types similarly associated with loneliness and well-being in the three countries?

We combine descriptive comparisons with latent class analysis to identify recurring configurations of confidant ties and to examine whether comparable network types can be distinguished across the three national contexts. Multivariate analyses subsequently investigate associations between network configurations and loneliness and broader indicators of well-being.

By disaggregating countries that are often treated as a single Nordic welfare context, the study shifts attention from the overall quantity of social ties to the ways in which personal communities are structured and experienced. It thereby examines whether institutional similarity is accompanied by similarity in later-life social connectedness, and whether particular forms of social embeddedness carry similar implications for loneliness and well-being across closely related societies.

Given and Received Neighborly Aid in the Daily Lives of the Ageing Population: European Study Using SHARE Data

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Demographic ageing poses significant structural challenges to formal welfare and healthcare systems across Europe. While formal services and family care are primary pillars of support for older adults, the role of neighborly aid within the broader support matrix remains less clear. Drawing upon "community saved" perspective (e.g. Guest and Wierzbicki 1999), which posits that local neighborhood ties persist as vital sources of solidarity rather than declining in modern society, this study investigates the prevalence, longitudinal trends, and determinants of given and received neighborly aid among the ageing European population, explicitly analyzing its relationship to other informal and formal sources of help. By framing neighborly aid alongside family care, friendship networks, and institutional services, this research explores whether help from neighbors acts as a substitute, a complement, or a unique safety net when other support systems are unavailable or overburdened.

The empirical analysis utilizes longitudinal data from the Survey of Health, Ageing and Retirement in Europe (SHARE), specifically spanning Waves 1–2 and 4–9. The sample comprises individuals aged 50 and older across selected European countries. The core variables measure the giving and receiving of informal help outside the household (neighbors) in comparison to help exchanged with family members (e.g. children, relatives), friends, and formal care providers. Besides descriptives, advanced statistical methods, such as panel logistic regression, were employed to track how these overlapping support sources interact over time. The models control for key sociodemographic characteristics, functional health status, and several indicators of subjective well-being.

The findings demonstrate that neighborly aid remains highly prevalent and common among the ageing population, firmly supporting the "community saved" thesis across the analyzed waves. The results show that neighborly aid occupies a unique, distinct niche in the support networks of older Europeans. However, the analysis also reveals remarkable variation in these networks across different European countries, highlighting how institutional context shapes local solidarity. The theoretical and policy implications of the study are discussed at the end of paper.

Intergenerational Solidarity in Europe: Relational Configurations Across Ageing Societies

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Background
Population ageing increases the importance of understanding how families organise intergenerational support. This study examines whether solidarity across 27 European countries and Israel follows a single continuum or comprises distinct multidimensional configurations, focusing on geographical proximity, contact frequency, emotional closeness and support exchange.

Methods
Using SHARE Wave 9, we constructed weighted country-level indicators and analysed country profiles through hierarchical and k-means cluster analysis.

Results
The five-cluster solution produced the most differentiated typology. Its clearest contrast was between a northern profile with lower proximity, contact and emotional closeness but higher support transactions, and a southern profile showing the reverse combination. An Eastern European–Luxembourg profile combined proximity and frequent contact with lower closeness and support exchange, whereas a more heterogeneous Austrian–Czech–Dutch–Israeli profile showed the opposite. Latvia formed a singleton, marked by particularly low emotional closeness, negative scores on two additional dimensions and slightly positive contact frequency. The three-cluster solution removed singletons, grouping Latvia with Lithuania and Switzerland in a profile with negative scores across all dimensions. It retained a southern-eastern profile combining proximity and contact with limited transactions, and a northern-central profile combining greater relational autonomy with stronger closeness and support exchange. Sex-specific checks largely confirmed this structure; membership changed for three countries among men and two among women.

Conclusions
Intergenerational solidarity is multidimensional and organised through diverse, partly hybrid configurations that do not fully follow regional or welfare-state boundaries. Family support may be organised through dense everyday interaction or through greater geographical and relational autonomy combined with emotional and transactional ties. Comparative research should therefore examine solidarity dimensions separately and treat welfare-state classifications as context rather than a sufficient explanation of family support patterns.

Re-partnering trends in the Baltic states

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Background
Individual as well as macro-level characteristics may both affect re-partnering, but to a different extent, depending on the generation. In general, little is known about re-partnering trends and their factors for all the three Baltic states. This study analyses prevalence of and timing until re-partnering after first separation/ divorce for cohorts born 1930-1964 in Latvia, Lithuania and Estonia. The study integrates the micro- and macro-level perspectives of the life courses that may differ across these cohorts.

Methods
Retrospective life course data from SHARE Wave 7 (2017) is analysed, including 7,617 individuals born in 1930-1964. Descriptive statistics, Kaplan-Meier curves and piecewise constant hazard models are used to present the characteristics associated with re-partnering after first separation. Independent variables include gender, education, age at first and second partnership, duration of previous partnership, age of the partner, and having children from the previous partnership.

Results
The proportion of people that re-partnered after first separation/ divorce was highest in Latvia (30.3%) in these cohorts, followed by Estonia (28.7%) and Lithuania (21.8%). More women than men experienced re-partnering and those born in the 1950s had the highest prevalence of re-partnering in all three countries. Mean age at second partnership decreased with each cohort in Estonia and Lithuania, whereas it was highest for those born in the 1940s in Latvia. In general, mean age at second partnership was highest in Lithuania across all cohorts. The gradient of mean age at second partnership by education was not clear – it was highest for those with basic education and followed by those with tertiary education in Estonia while it was highest for those with tertiary education in Lithuania and Latvia. The duration of the second partnership was somewhat longer than that of the first partnership in Estonia (significantly for men) and Latvia. Also, it was significantly higher for those born in 1935-49.

Conclusions
Patterns of re-partnering after first separation/ divorce appear to differ somewhat, depending on the cohort, gender and country. Besides individual characteristics, differentially organised social lives across these dimensions may have affected re-partnering in the Baltic states in these generations.

Social Well-Being Factors Associated with Quality of Life Among Older Adults in Latvia

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Background

Population ageing is a major challenge of the 21st century and is associated with declining physical and mental abilities, increased disease burden, and higher mortality. Latvia has the lowest healthy life expectancy in the European Union (EU), at 54.3 years for women and 51.2 years for men, compared with EU averages of 63.3 and 62.8 years, respectively. Growing evidence highlights the importance of social well-being and its association with quality of life (QoL) in older age. This study aimed to assess the relationship between social well-being and QoL among older adults in Latvia.

Methods

Data from wave 9 (2022) of the Survey of Health, Ageing and Retirement in Europe (SHARE) were analysed using multivariable linear regression. QoL was assessed using the 12-item Control, Autonomy, Self-realization and Pleasure scale (CASP-12), ranging from 12 to 48 points, with higher scores indicating better QoL. Social well-being factors, assessed using self-reported questionnaires, included household composition, education, employment status, financial capacity, place of residence, social network (SN) characteristics, participation in social activities, and received help. Collinearity between factors was assessed before construction of the regression model. Statistical significance was set at $p < 0.05$.

Results

The study included 1,643 individuals aged 50 years and older from Latvia; 61.4% were women, and the mean age was 68.2 years (SD 9.8). The median QoL score was 34. Higher QoL was associated with younger age, higher educational level, employment, greater financial capacity, larger SN, greater satisfaction with SN, greater emotional closeness to the closest SN member, and participation in social activities. The strongest positive associations with QoL were observed for very high satisfaction with SN (vs. low/medium; adjusted β (βa) = 0.28), employment (vs. not employed; βa = 0.23), and higher educational level (vs. low; βa = 0.23). Received help during the past year was negatively associated with QoL (βa = −0.07) (all $p < 0.001$).

Conclusions

Social well-being factors were associated with QoL among adults aged 50 years and older in Latvia. Better financial capacity, employment, higher education, larger and more satisfying SN, meaningful social relationships, and participation in social activities were associated with better QoL. These findings highlight the relevance of social connections and participation for QoL in later life.

Towards a more comprehensive measure of healthy ageing: extending the HAI-5 to a six-domain index for European population studies

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Background

Rapid population ageing requires reliable, comparable measures of healthy ageing. The World Health Organization (WHO) conceptualizes healthy ageing as functional ability arising from intrinsic capacity and its interaction with the environment. Healthy Life Years capture activity limitation but not the broader multidimensional construct. We aimed to refine our five-domain Healthy Ageing Index (HAI-5) into a six-domain index (HAI-6) and assess its use for cross-country comparisons in SHARE.

Methods

We analyzed SHARE Wave 9 data from 28 countries. Among 69,447 participants, 49,552 adults aged ≥ 60 years remained after excluding missing data and refreshment samples. HAI-6 separated Positive Wellbeing from Mental Health, combined Physical Health with Functional Capacity, and distinguished Social Connectedness from Activity & Participation. Overall and country scores were calculated, concordance with HAI-5 was assessed by Pearson correlation, and domain contributions to between-country variation were quantified by decomposition analysis.

Results

HAI-6 showed strong concordance with HAI-5 at individual (r = 0.874) and country (r = 0.965) levels while improving distributions of score and reducing ceiling and floor effects. Scores ranged from 0 to 10, with higher values indicating healthier ageing. Age- and sex-standardized scores were highest in Denmark (7.58), the Netherlands and Switzerland (7.50), and Sweden (7.39), and lowest in Romania (6.17), Portugal (6.19), Lithuania (6.30), Malta (6.33), Poland (6.34), and Latvia (6.38). Activity & Participation contributed most to between-country variation (36.3%), followed by Positive Wellbeing (22.5%) and Social Connectedness (16.3%); together these accounted for 75.1%.

Conclusions

HAI-6 preserved continuity with HAI-5 while improving discrimination and broadening multidimensional assessment. Cross-country differences were driven mainly by activity and participation, wellbeing, and social connectedness, underscoring the importance of social and environmental context alongside health and cognition. HAI-6 may complement existing indicators for longitudinal monitoring of healthy ageing across Europe.

Job Quality and Retirement Intentions in Europe: Universal and Country-Specific Associations

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Background
In ageing European societies, it is crucial to understand the factors behind workers' early retirement versus continued employment intentions. Job quality is typically considered a good predictor of such intentions. However, it is not clear which specific job quality indicators are of prime importance for older workers and how their relevance for retirement decisions may depend on the national context. To address this question, we investigated how different job quality indicators are associated with intention to retire and tested whether these associations vary across countries.

Methods
SHARE Wave 9 data were used, encompassing responses from 8,376 employed individuals aged 50+ in 28 countries. Early retirement intention was modelled as a binary outcome. Nine job quality indicators were modelled as predictors (controlling for gender and age) and included aspects such as physical demands, workload, autonomy, skill development, support, recognition, salary adequacy, advancement prospects, and job security. In the initial step, we performed mixed-effects logistic regression with a random intercept for country. Subsequently, nine separate models were estimated, each allowing a random slope for one job quality indicator. These models were compared with the random-intercept model using likelihood-ratio tests and information criteria (AIC/BIC).

Results
Overall, job quality indicators were significantly associated with retirement intentions. The effects were generally in the expected direction: among job stressors, heavy workload emerged as a key predictor of intention to retire, whereas among favourable job characteristics, recognition showed the strongest opposite effect. Most but not all associations were found to be consistent across countries. Notably, workplace support showed clear heterogeneity, its association with intention to retire ranging broadly from negative to positive across countries. The predictive effect of heavy workload was also somewhat variable but had a narrower range.

Conclusions
The associations between most job quality indicators and early retirement intentions appear consistent across European countries, but workplace support is strongly context-dependent. Distinguishing universal from country-specific job-quality effects may help explain cross-national differences in later-life employment and improve the targeting of policies aimed at extending working lives.

Changes in Retirement Intentions: Links with Psychological Well-Being and Depressive Symptoms – Longitudinal Evidence from SHARE

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Background

Retirement intentions are an important part of the retirement decision-making process and have been linked to both work-related and individual factors (Sadauskaitė & Kairys, 2023). Previous research suggests that stronger retirement intentions are associated with lower psychological well-being and more depressive symptoms (Siegrist et al., 2007), but less is known about how changes in retirement intentions over time relate to these indicators, even though such knowledge is important for understanding the retirement process. We examined whether changes in retirement intentions over a two-year period were linked to psychological well-being and depressive symptoms. This study is part of the project "Sustainable working-life for ageing populations in the Nordic-Baltic region" (No.139986 financed by NordForsk and partly by the Research Council of Lithuania (LMTLT), agreement No. [S-NORDFORSK-23-1]).

Methods

The sample included 5,968 respondents aged 50+ from 27 SHARE countries participating in Waves 8 and 9. Participants were classified as not wanting to retire at either wave (43.7%), wanting to retire at both waves (31.2%), beginning to want to retire (13.0%), or no longer wanting to retire (12.1%). Linear mixed-effects models with country random intercepts predicted Wave 9 CASP and square-root-transformed EURO-D, adjusting for Wave 8 scores, age, gender, chronic conditions, and self-perceived health.

Results

Changes in retirement intentions were linked to psychological well-being and depressive symptoms (both $p<.001$). Compared with those who did not want to retire at either wave, those who began wanting to retire reported lower psychological well-being ($\beta = -.16$, $p<.001$) and more depressive symptoms ($\beta=.16$, $p<.001$). Those who wanted to retire at both waves showed the same pattern, but with weaker links (CASP: $\beta = -.10$, $p<.001$; EURO-D: $\beta=.08$, $p=.007$). Those who stopped wanting to retire did not differ from those who did not want to retire at either wave on either measure (CASP: $\beta=.02$, $p=.501$; EURO-D: $\beta=-.03$, $p=.470$).

Conclusions

Emerging and persistent retirement intentions were linked to a less favorable psychological pattern, with stronger links among those who began wanting to retire, while those who stopped wanting to retire did not differ from those who did not want to retire at either wave. These findings highlight the value of considering how retirement intentions change over time.

Work, rehabilitation and retirement pathways of older workers: Findings based on SHARE and register data

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Background

Pathways to old age retirement have changed in recent decades in Finland. A larger share of older workers retires directly from employment, while earlier many retired from unemployment or disability pension. Still, the pathways to retirement vary extensively between individuals. We aim to 1) describe work, rehabilitation and retirement pathways among older workers, 2) group similar pathways and 3) find out how work ability and care responsibility for a close one are associated with belonging to different pathway groups.

Methods

Survey of Health, Ageing and Retirement in Europe (SHARE) waves 7–9 for Finnish study population aged 50–70 years and linked register data for years 2012–2024 are used. The register data are collected from registers of Statistics Finland, Social Insurance Institution of Finland and Finnish Centre for Pensions. The dates of sick leaves, rehabilitation and different types of pensions enables forming individual pathways to old age retirement. Sequence analysis is applied to find similarities in the order and duration of different states between individual pathways. Hierarchical cluster analysis is performed to group similar pathways. The profiles of individuals in each pathway group are studied with multinomial logistic regression analysis. Self-reported Work Ability Score (WAS) is used to assess work ability. Care responsibility for a close one was measured both as giving care (yes/no) and care frequency. Age, sex, civil status, occupational class, self-rated health, functional ability and N of long-term diseases are adjusted for.

Results and conclusions

Altogether 1143 individuals had given consent to link their SHARE responses with register data. Of them, 46% were on permanent old age pension in the beginning of their pathway (2012 or when entering the data). Thus, analytical sample was 617 individuals. The most common pathway was from employment to old age pension (54%). Results on individual factors associated with different pathway groups will be presented at the SHARE Baltic Sea Conference. The results help finding out phases, where individuals need support to continue their work careers. Linking SHARE data and register data opens possibilities to study associations of factors that only one type of data cannot do.

Effectiveness of rehabilitation: Evidence from linked register and survey data in Finland

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Background
Longer working careers provide a way to improve economic sustainability of ageing societies. Empirical literature examining work careers has provided evidence on associations between work ability and the length of careers with individual- and work-related factors and socio-economic factors. Yet, we lack information about effective measures, supporting older workers to continue their working careers longer. Particularly, no consistent evidence on the effectiveness of rehabilitation on work ability and careers exists. This study aims to provide new evidence on the effectiveness of rehabilitation in work ability.

Methods
We utilized Survey of Health, Ageing and Retirement in Europe (SHARE) data from waves 7–9 in Finland linked with data from Finnish administrative registers. Data from Social Insurance Institution of Finland, the Finnish Centre for Pensions and Statistics Finland were linked with SHARE data (about 80% consented to merging). The register variables cover the years 2012-2024. We utilized register data about rehabilitation episodes among Finnish SHARE respondents (n = 155). In addition, we also linked information about the socio-economic and demographic characteristics of individuals. The effectiveness of rehabilitation was measured as changes in work ability score (range 0-10, Finnish drop-offs) between intervention (individuals receiving rehabilitation) and control groups (individuals not receiving rehabilitation) around the index date of rehabilitation receipt. To minimize confounding, we computed propensity score that a person will receive rehabilitation, based on background variables such as age, sex and work characteristics. Based on this score, individuals were divided into treatment and control groups, and the treatment effects were calculated by comparing the pre-post change of the outcome variables between treated and not treated.

Results and conclusions
Mean age of individuals receiving rehabilitation was 58 years (SD=8.6, Min=33, Max=92) and 103 (66%) of them were female. The average number of rehabilitation periods per individual was 4.8 (SD=7.1, Min=1, Max=231). Of individuals in our analytical sample, 73.5% received discretionary rehabilitation,15.5% occupational rehabilitation and 2.6% intensive medical rehabilitation. The rest of individuals in the sample received rehabilitative psychotherapy. Results about the effectiveness of rehabilitation will be presented in the Baltic Sea seminar.

Heterogeneity of care intensity trajectories among informal caregivers in Europe – evidence from the Survey of Health, Ageing and Retirement in Europe (SHARE) data

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Background

Population ageing increases care needs and reliance on informal care, often viewed as less costly than formal care. Yet effects on carers' health, wellbeing, and labour market participation suggest a redistribution of costs from the formal care system to caregivers and society more broadly. Caregiving situations are heterogeneous and dynamic, reflecting numerous factors, most of which vary over time. Care intensity and duration are central to this variation and may shape consequences for carers. Identifying meaningful caregiver subgroups is essential for evaluating informal care within LTC systems. We develop and apply a novel measure of total care across all recipients to identify intensity trajectories, characterize members of each trajectory, and examine membership predictors.

Methods

We used eight SHARE waves from nine European countries. The sample comprised 8,092 carers with identifiable care onset and at least one later observed care status. Care episodes were aligned at onset, with time in years since onset. Group-based trajectory modelling with joint dropout estimation was used to identify trajectories, followed by descriptive comparisons across demographic, family, socioeconomic, health, and care-context characteristics and multinomial logistic regression of membership predictors.

Results

Five trajectories were identified: incidental helpers (51%), high-intensity rapid exit (20%), increasing moderate involvement (13%), high-intensity moderate decline (10%), and intermediate-duration intensive episode (6%). Incidental helpers and increasing moderate carers were youngest, healthiest, most socioeconomically advantaged, and more often Northern European. Both high-intensity groups were older, more often female, less educated, financially strained, mainly co-residential, and associated with Central and especially Southern Europe. The intensive-episode group showed a less distinctive profile.

Conclusions

Informal-care intensity trajectories differ in caregiver profiles and care contexts, with the most intensive care concentrated among carers with less favourable socioeconomic and health profiles. This points to an unequal distribution of care responsibility across caregiver subgroups. These differences may have implications for carer outcomes and the sustainability of informal care. Recognizing them is therefore essential for evaluating the role of informal care in LTC systems, assessing the costs of alternative care arrangements beyond formal care expenditure, and targeting support to differing caregiver needs.

Informal Caregiving and Depressive Symptoms Across 28 Countries: Variation by Gender, Care Relationship, and National Context

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Background
This study examined variation in the association between informal caregiving and depressive symptoms by gender and care-recipient relationship, and moderation by national long-term care resources, demographic conditions, and female employment.

Methods
Data comprised 184,656 person-wave observations from 104,171 adults aged 50 years and older across 28 countries in Waves 6, 8, and 9 of the Survey of Health, Ageing and Retirement in Europe. Depressive symptoms were measured using the EURO-D scale. Linear mixed-effects models with individual random intercepts adjusted for sociodemographic characteristics, health, activity limitations, and social participation. Interactions assessed moderation by gender and national indicators.

Results
Caregiving was associated with higher depressive symptom scores (b = 0.44, 95% CI [0.41, 0.47], p < .001). Associations were stronger among women than men (0.47 vs. 0.39 points; interaction p = .006). Point estimates were largest for spousal care (b = 0.58), followed by care for parents (b = 0.39) and others (b = 0.31; all p < .001). Greater long-term care bed capacity and higher female employment rates were associated with weaker caregiving–depressive symptom associations; higher old-age dependency ratios and longer life expectancy were associated with stronger associations. The interaction with long-term care expenditure was negative but not statistically significant.

Conclusions
Associations between caregiving and depressive symptoms differed by gender, care relationship, and national context. Caregiver support policies should consider formal care availability and demographic conditions alongside the circumstances of women and spousal caregivers.

Hearing Loss and Cognitive Decline in Older Adults: Psychosocial Mediators and Demographic Moderators Across 18 High-Income Countries

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Background
Hearing loss is a major, potentially modifiable risk factor for cognitive impairment, but its moderating and mediating factors remain underexplored in cross-national settings.

Methods
We used the data from a cross-national survey, the Survey of Health, Ageing and Retirement in Europe (SHARE). 38,506 participants aged 65 and above across 17 European countries and Israel from SHARE wave 6 were included. The study applied the Double Machine Learning (DML) approach to evaluate the association of hearing aid use with cognitive function in older adults, and to test demographic moderators and psychosocial mediators.

Results
Hearing loss was significantly associated with poorer cognitive performance in temporal orientation (coefficient = −0.061; 95% CI: [−0.076, −0.045]), memory (−0.448; 95% CI: −0.520, −0.375]), numeracy (−0.061; 95% CI: [−0.092, −0.030]), and verbal fluency (−0.379; 95% CI: [−0.529, −0.229]). The associations varied by gender, education and age group, such as stronger associations with verbal fluency of women, and memory of higher educated individuals. Mediation analyses indicated that the negative associations of hearing loss with cognitive function may be partially explained by increased feelings of isolation, loneliness and depression.

Conclusions
This study highlights the cognitive burden of hearing loss in later life and underscores the importance of early detection and intervention. Addressing psychosocial consequences of hearing impairment may help mitigate its impact on cognitive health. Further longitudinal research is needed to validate these findings and clarify causal pathways.

The association of multidomain determinants with moderate-to-vigorous physical activity among European adults aged 50+: a machine learning analysis of the SHARE cohort data

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Background

Healthy ageing is a lifelong process. Engagement in physical activity (PA) is associated with better functional health in later life, underscoring the importance of maintaining PA before older age. Engagement in PA, particularly moderate-to-vigorous physical activity (MVPA), is strongly associated with healthy ageing. A wide range of physiological, sociodemographic, individual and environmental factors may contribute to MVPA engagement across the life course. The World Health Organization recommends 150–300 minutes of moderate-intensity or 75–150 minutes of vigorous-intensity aerobic PA weekly, or an equivalent combination. Understanding MVPA engagement requires considering multiple interacting factors. Computational and statistical advances enable joint exploration of these factors, nonlinear relationships, interactions and predictive contributions, complementing conventional epidemiological analyses. Objective: to identify factors across multiple domains that best predict MVPA among adults aged 50 years and older in European countries participating in the SHARE cohort.

Methods

This cross-sectional study uses SHARE wave 8 data. Candidate factors cover sociodemographic characteristics, anthropometry, physical performance, functional limitations, health status, lifestyles and social participation. MVPA is defined dichotomously as “yes” for participants reporting moderate or vigorous PA, or both, more than once a week, and “no” for those reporting lower frequencies for both. A Light Gradient Boosting Machine (LightGBM) model is used to identify the individual factors most informative for MVPA. Model development includes nested cross-validation and hyperparameter tuning, with preprocessing and tuning restricted to the training data within each outer fold to limit information leakage. Discrimination, calibration and classification performance are assessed using held-out outer test folds. SHapley Additive exPlanations (SHAP) quantify each factor’s contribution to model predictions and describe nonlinear patterns.

Expected contribution

Results are not yet available. Findings could help improve understanding of the heterogeneity underlying PA behaviour, identify the factors most informative for predicting MVPA, and inform future longitudinal research and the development of more tailored PA interventions.

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