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SHARE, the Survey of Health, Ageing and Retirement in Europe, is a research infrastructure for studying the effects of health, social, economic and environmental policies over the life-course of European citizens and beyond. From 2004 until today, 616,000 in-depth interviews with 160,000 people aged 50 or older from 28 European countries and Israel have been conducted. Thus, SHARE is the largest pan-European social science panel study providing internationally comparable longitudinal micro data, which allows insights in the fields of public health and socio-economic living conditions of European individuals, both for scientists and policy makers. SHARE has global impact since it not only covers all EU member countries in a strictly harmonized way but additionally is embedded in a network of sister studies all over the world, from the Americas to Eastern Asia. Considering its focus on people aged 50 and older, international orientation, and thematic coverage, SHARE is perfectly suited to provide data on respondents' health, economic, and living situation all across Europe and Israel before and during the ongoing COVID-19 crisis.

Therefore, the aim of this project is to analyse and evaluate the non-intended consequences of the epidemic control decisions to contain the COVID-19 pandemic in 27 European countries using data from SHARE, and to devise improved health, economic and social policies with a transdisciplinary and international team of SHARE researchers from different European research institutions. To reach these aims, several objectives will be pursued: identify healthcare inequalities before, during and after the pandemic; understand the lockdown effects on health and health behaviours; analyse labour market implications of the lockdown; assess the impacts of pandemic and lockdown on income and wealth inequality; mitigate the effects of epidemic control decisions on social relationships; optimise future epidemic control measures by taking the geographical patterns of the disease and their relationship with social patterns into account; better manage housing and living arrangements choices between independence, co-residence or institutionalisation.

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WP3: Policy recommendations

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Policy Recommendations on Health and Health Behaviours

1. Mental Health

Policy recommendations

- **Tailored Mental Health Support:** Develop targeted interventions for specific vulnerabilities such as loneliness, focusing on high-risk groups including older adults with chronic health conditions and those without live-in partners.
- **Community Engagement and Support Networks:** Enhance community programs and virtual platforms to increase safe social interactions, particularly for older adults in high-restriction environments, and strengthen support systems to foster mental and cognitive resilience during health crises.
- **Flexible and Educative Public Health Measures:** Refine public health guidelines to balance health safety and mental well-being, with flexibility to adapt to the needs of vulnerable populations. Increase initiatives to raise awareness about the mental health impacts of loneliness and encourage active social engagement and utilization of mental health services.
- **Continuous Monitoring and Adjustment:** Regularly assess the impact of public health policies on mental health and adjust strategies to effectively address and mitigate issues of social isolation and loneliness.

Rationale:

Overall, the findings emphasize the need to balance public health measures aimed at controlling the virus with the need to maintain the mental and social well-being of the elderly population, highlighting the complex trade-offs involved in pandemic response strategies.

Mental Health Improvements: Contrary to initial expectations, older individuals generally experienced improvements in specific aspects of mental health during the pandemic compared to before. Notably, there was a significant decrease in feelings of sadness or depression and fewer complaints about sleeping problems, but these improvements were temporary. Post-pandemic wave 9 results showed levels of negative mental health symptoms similar to pre-pandemic wave 8. However, despite these temporary improvements, the risk of feeling lonely slightly increased during the pandemic. This increase in loneliness was more pronounced in countries with stricter COVID-19 restrictions.

Predictors of Loneliness: At the individual level chronic diseases, depressive symptoms, and absence of a cohabitant partner were identified as common predictors for both situational (short-term) and persistent (long-term) loneliness. Unique to persistent loneliness were low satisfaction with social networks, functional limitations, and longer country-level isolation periods.

Impact of Isolation: Persistent loneliness, i.e., equally lonely pre-pandemic (wave 8) and during the first pandemic period, was notably influenced by prolonged isolation measures, suggesting that extended social restrictions has a lasting impact on those already experiencing loneliness.

Social and Health Vulnerabilities: Older adults without partners, those with existing chronic diseases, and those experiencing depressive symptoms are at higher risk of both developing and maintaining loneliness.

Depressive symptoms and Cognitive Decline: Approximately 13.1% of the studied individuals experienced unexpected cognitive decline post-pandemic, identified through a predictive analysis comparing their actual cognitive scores with predicted values based on previous SHARE waves. Individuals who were categorized as unexpected decliners exhibited higher levels of depressive symptoms in wave 9. This relationship persisted regardless of their depression levels before the pandemic, suggesting a significant impact of pandemic conditions on cognitive health.

Cognitive Resilience and Loneliness: The study found that cognitive resilience, defined as consistent and high cognitive performance before the pandemic, did not protect against the mental health impacts of pandemic-related restrictions. Instead, the severity of restrictions and demographic factors were more significant predictors of loneliness and its adverse effects.

Influence of Macro-Indicators: Country-level variables such as the number of COVID-19 deaths per 100,000 and the duration of stringent lockdown measures were influential. These macro-indicators had a notable impact on feelings of sadness and depression, but their influence on loneliness was less pronounced.

Social and Electronic Contacts: Personal contacts at least once a week generally decreased feelings of loneliness and sadness, suggesting the importance of maintaining social connections even during restrictions. However, electronic contacts did not significantly alleviate feelings of loneliness or depression.

2. Behavioural risk factors and adherence to preventive measures

Policy recommendations:

- **Targeted Health Education:** Develop programs specifically for older adults with behavioral risk factors, emphasizing preventive measures and the health risks of non-adherence.
- **Support Systems for Healthy Behaviors:** Implement community-based programs offering safe physical activity classes, smoking cessation, and nutritional counseling to encourage healthy lifestyle choices.
- **Risk Awareness and Public Messaging:** Enhance public health messaging to highlight the compounded risks of COVID-19 for individuals with behavioral risk factors, using insights from behavioral science to tailor messages.
- **Policy and Support:** Strengthen effective policies like mask mandates and stay-at-home orders to ensure compliance, particularly among vulnerable populations. Provide necessary support services, including mental health and healthcare access.
- **Enhanced Public Health Education:** Improve education efforts to increase visibility and understanding of protective behaviors and their role in preventing disease spread.

Rationale:

Behavioral risk factors and adherence to preventive measures: SHARE respondents who engaged in behavioral risk factors such as smoking, excessive alcohol consumption, and physical inactivity showed

significantly less adherence to preventive hygiene measures like hand sanitizing and hand washing. However, the same risk factors did not significantly affect adherence to social distancing and mask-wearing guidelines.

Influence of multiple behavioral risk factors: The presence of multiple behavioral risk factors compounded the likelihood of non-adherence to hygiene measures. Those engaging in three or more risk behaviors had lower compliance compared to those with fewer or no risk behaviors.

Impact of Socio-Demographic Factors: Higher levels of education and living with a spouse or partner were associated with better adherence to preventive measures. Additionally, individuals who perceived themselves at higher risk due to pre-existing health conditions or older age showed more compliance with preventive behaviors.

Protective Behaviors and National Policies: Stricter national policies significantly influenced protective behaviors among older adults across Europe. Particularly, policies related to staying at home and face-covering mandates led to increased adherence to those specific measures.

Impact of Individual Vulnerability: Individual vulnerability, particularly among older adults and those in worse health, also played a crucial role in the adoption of protective behaviors. Those more vulnerable were more likely to engage in protective behaviors independently of national policies.

Reduction of Social Inequalities in Protective Behaviors: Stricter policies helped reduce social inequalities in protective behaviors. Vulnerable groups were more likely to use protective measures, and stricter policies tended to distribute the burden of these behaviors more equally across different social groups.

Visibility and Limitation of Behaviors: Protective behaviors that are more visible and less limiting (like mask-wearing) are more responsive to policy changes, whereas more private and limiting behaviors (like never leaving home) are more dependent on individual circumstances and perceptions.

3. Covid-19 vaccine hesitancy

Policy recommendations

- ➔ **Promote Digital Literacy and Technological Engagement:** Enhance digital literacy among older populations through educational programs and workshops designed to improve internet navigation skills, particularly for accessing health information. Provide support such as subsidies for internet access or devices to ensure online health resources are accessible.
- ➔ **Trust and Transparency in Health Communication:** Strengthen trust in health information through transparent, consistent, and factual public health messaging. Actively manage and curb the spread of misinformation on social media platforms.
- ➔ **Leverage Social Networks and Community Engagement:** Utilize social networks to spread positive health messages, including vaccination efforts. Engage community leaders and religious communities to improve communication and build trust, using targeted strategies that address specific concerns and beliefs, including multilingual and culturally sensitive campaigns.
- ➔ **Continuous Monitoring:** Continuously monitor vaccination rates and adapt strategies to effectively address barriers, particularly in rural areas and among high-hesitancy groups.

Rationale:

Impact of Online Health Information: Seeking health information online significantly reduces COVID-19 vaccine hesitancy among Europeans aged 50 and older. Individuals who frequently searched for health-related information online showed a 10% lower vaccine hesitancy rate compared to those who did not.

Role of Social Networks: Experiencing COVID-19 within one's social network (hospitalizations or deaths) significantly decreased vaccine hesitancy. Those with closer exposure to the effects of the virus through their social circle were less likely to hesitate about vaccination.

Trust and Compliance: Higher levels of trust were correlated with lower vaccine hesitancy, suggesting that individuals who trust public health messages and institutions are more likely to accept vaccination.

Technological Skills: There was a strong association between computer skills acquired through work and the likelihood of seeking online health information, which in turn reduced vaccine hesitancy.

High Vaccination Rates Among Older Adults: Approximately 82% of SHARE respondents had been vaccinated against COVID-19 by mid-2021. However, there was significant variation between countries, with Malta, Denmark, and Spain showing the highest rates and Romania and Bulgaria the lowest.

Socio-Demographic Factors Influencing Vaccination Rates: Key socio-demographic factors associated with vaccination hesitancy included age, educational level, and living situation. Older age groups showed less hesitancy, while those with lower educational levels displayed more reluctance towards vaccination.

Economic and Living Conditions: Economic stability and living conditions significantly influenced vaccination attitudes. Individuals struggling economically or living in rural areas exhibited higher rates of vaccination hesitancy.

Health Status and Vaccination: Physical health status influenced vaccination decisions, with those having pre-existing health conditions being more likely to get vaccinated. Mental health issues and loneliness, however, did not significantly impact vaccination attitudes.

Association of Prayer Frequency with Vaccine Hesitancy: With SHARE data we demonstrate a significant association between frequent prayer and COVID-19 vaccine hesitancy among older adults in Europe. Individuals who pray daily are more likely to be vaccine-hesitant compared to those who pray less frequently or not at all.

Regional Variations: The association between prayer frequency and vaccine hesitancy varies across European regions. Notably, daily prayer is associated with increased vaccine hesitancy in all regions. Weekly prayer is associated with vaccine hesitancy in Central, Eastern and Southern Europe but not in Western or Northern Europe.

Influence of Socio-Demographic Factors: Socio-demographic variables such as age, education, and household wealth also play a role in vaccine hesitancy, with lower educational levels and wealth correlating with higher hesitancy.

4. Risk factors of post COVID-19 (Long COVID) condition

Policy recommendations:

- ➔ **Targeted Health Interventions:** Develop interventions for older adults and individuals with lower educational levels to address prevention and management of post-COVID-19 conditions.
- ➔ **Enhance Health Literacy:** Improve health literacy through community-based programs that teach health information comprehension and system navigation, focusing on populations with lower educational attainment.

Rationale:

Age and Post-COVID-19 Conditions: Older adults (aged 70 and above) are at an increased risk of developing post-COVID-19 conditions. This indicates that aging significantly contributes to prolonged recovery or persistent symptoms after COVID-19.

Impact of Education on Health Outcomes: Individuals with medium and lower educational levels exhibit a higher risk of experiencing post-COVID-19 conditions. This suggests that lower educational attainment might be linked to poorer health outcomes post-COVID-19.

Hospitalization as a Major Risk Factor: Those who were hospitalized due to COVID-19 show a substantially higher risk (OR 25.9) of developing post-COVID-19 conditions, highlighting the severity of their initial infection.

Association with Other Factors: The study also explored other potential risk factors, such as comorbidities, smoking status, and body mass index (BMI), but found no significant associations with post-COVID-19 conditions in the adjusted models.

5. Gender differences

Policy recommendations

➔ **Tailored Support for Women:** Implement support measures specifically for women, focusing on mental health and social reintegration to address the disproportionate impact. This includes programs that facilitate safe social interaction for those who have faced significant isolation.

➔ **Regional Targeting of Resources:** Direct resources and interventions to regions with the most significant declines in activities and health, like Southern Europe, enhancing mental health services and community programs that promote social cohesion and well-being.

Rationale:

Sex differences in impact of COVID-19 on social activities and health: Significant sex differences were found in the impact of COVID-19 across Europe, with women experiencing larger negative changes in social activities and health outcomes. Women reported greater declines in activities such as shopping, and higher increases in mental health issues such as feeling nervous, depressed, having sleep problems, and feeling lonely.

Regional variations: While the negative impact was widespread, there were variations among different European regions. Southern European men and women reported the largest reductions in activities and health measures, indicating regional disparities in the pandemic's impact.

6. The effect of stringency levels on health and daily activities in two neighbouring Nordic countries with similar welfare systems.

Policy recommendations

➔ **Flexible Pandemic Response Strategies:** Ensure that both strict and lenient pandemic responses are well communicated and adaptable, focusing on maintaining public trust and ensuring compliance to achieve similar mental health outcomes.

→ **Monitoring Health Service Accessibility:** Address the high rates of postponed medical appointments, particularly for non-COVID-related health issues, by ensuring healthcare accessibility during pandemics.

→ **Community Engagement Programs:** Support community programs that can operate safely during pandemics, especially to engage older adults and mitigate the impacts of reduced social activities and increased isolation.

Rationale: The two Nordic SHARE countries, Sweden and Denmark, have similar health care provision but reacted differently with respect to lockdown strategies. While Denmark swiftly imposed strict governmental restrictions, Sweden favoured a more voluntary approach but encouraged self-isolation in individuals aged 70 and above.

Differential pandemic Responses and Mental Health: Despite differing strategies in handling the pandemic, both countries exhibited similar trends in mental health improvements during the initial phases of the pandemic.

Impact on Depressive Symptoms: Both countries saw declines in depressive symptoms from pre-pandemic levels to mid-2020, with Denmark showing a more substantial decrease initially. By the summer of 2021, levels of depressive symptoms had equalized between the two countries.

Loneliness and Social Isolation: Although loneliness increased slightly in both countries during the pandemic, this did not correlate with an increase in depressive symptoms or sleep problems, suggesting complex interactions between these mental health facets.

Changes in Daily Activities and Health Care: Swedish respondents reported a greater reduction in shopping and visiting family compared to Danes. Danes experienced more postponed medical appointments early in the pandemic, indicating an impact of stricter health measures on healthcare access.

Long-term Trends: Over time, the initial differences in depressive symptoms between the two countries diminished, suggesting that the long-term mental health impacts of the pandemic may be similar regardless of the initial pandemic response strategy.

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