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Social determinants of health resilience among the elderly: Evidence from the German Socio-economic Panel

In most developed countries, the demographic change of the age structure results in an increasing share of old and very old people. The topic of health inequalities in later life therefore became an increasingly important issue for socio-epidemiological research in the recent years. However, a large amount of research evidence points to the fact, that health equity in old age remains a utopia in European societies until this day.

Most investigations from single European countries as well as comparative studies show deteriorating health effects of low levels of education, income and occupational class or prestige during professional life in the age groups of 65 years and over [2, 4, 6, 7]. With regard to health inequalities of the elderly in Germany, most studies were conducted as recently as the 1990s, but provide similar evidence [3].

Despite the growing amount of descriptive evidence on health inequalities, comparatively small efforts have been made with regard to explain those phenomena and to find practical pathways to provide a greater equality of health chances. The present paper addresses the question how socioeconomic disparities in health among the elderly could be reduced. It adds to the hierarchical perspective of the “deficit model”, which focuses on health disparities between social strata, a “horizontal” perspective that addresses the social determinants of health differentials within socioeconomic status groups. The main concept involved in this approach is that of health resilience. Health resilience applies to those individuals within low socioeconomic status groups, who manage to sustain an above-average health in the course of ageing, despite harmful material, behavioural or psychosocial influences.

It is assumed, that positive adaptation to socioeconomic health risk in old age is feasible through the amount of protective resources that a person accesses. Collective, health-conscious lifestyles [1] as well as the amount of individual and collective social capital [5] are two forms of protective resources, which seem especially promising in advancing health resilience among the elderly. Thus, the objective of the study is to examine whether distinct forms of health lifestyles as well as individual and collective social capital predict the probability of health resilience among a cohort of men and women aged 65 and older from lower social strata.

Data and methods

The data are from a cohort of 65 years and older men and women, who participated in the German Socio-economic Panel Study (SOEP). The SOEP started in 1984 and is designed as a representative longitudinal study of private households in Germany. The analysis included data from waves 2002, 2004, 2006 and 2008. A total number of 2,075 people aged 65 and older participated in all of the waves and were included in the analysis. The study cohort was drawn from the samples A (Western Germany), C (Eastern Germany) and the two supplement samples E and F. The cohort was representative of the populations of which

it was drawn, using comparison data from the year 2002 from the yearbook of the Federal Statistical Office.

Health-related quality of life and health resilience

A main outcome measure was the health-related quality of life of older people. This was measured by a modified form of the SF12v2. The SF12v2 is part of the personal-questionnaire of the SOEP and is surveyed every 2 years since the year 2002. This multidimensional measure addresses subjective as well as functional, mental and physical aspects of health-related well-being. The basic items of the questionnaire are merged by factor analysis into eight subscales, containing information on general health, physical, social and role functioning, bodily pain, vitality and mental health. These eight subdomains are condensed into two scales: the Physical Component Score (PCS) and the Mental Component Score (MCS). Both scores range from a minimum of 0 up to a value of 100, indicating the maximum score for health-related quality of life.

Health resilience was measured by a dichotomised variable based on the scores of the SF12v2. In lower social strata, health resilience was defined as maintaining an above-average score of the SF12v2 in relation to all participants of the study cohort of the same sex and age over the whole period of analysis. Thus, a study participant from a lower social stratum who reported a PCS or MCS score below average at least in one of the waves observed was labelled as vulnerable.

Social strata

The social stratum of a participants' household was constructed as an index based on three dimensions of the individual socioeconomic status: highest level of education, current equivalised household income, and last or current occupational position. The data of these subdimensions were converted into ordinal scales with scores ranging from 1 to 7. These scores were added to the individual socioeconomic status of each participant. Missing values were imputed by the mean values of the two other scales. Finally, the scores of the individual socioeconomic status were aggregated on the household level in which the highest individual score measured the social stratum of the household. According to this household-level ordinal scale, five social strata were differentiated by drawing cutpoints of similar width: lower social stratum, lower middle stratum, middle stratum, upscale middle stratum and upper middle stratum.

Protective factors: Health lifestyles and social capital

The measure of health lifestyle was based on information on health-related behaviour and health-related attitudes. Data on tobacco and alcohol consumption as well as sleeping habits, nutrition and sporting activities were included to ascertain different beneficial and detrimental aspects of health-related behaviours. Regarding health-related attitudes, the willingness to take health risks and worries concerning one's own health were considered.

The perceived amount of social capital available to elderly people was assessed on the individual as well as the neighbourhood level. Both structural and cultural aspects of social capital were considered. The structural dimension comprised the self-reported amount of social support available, the number of close friends and relatives and the degree of contacts with the neighbours as well as the quality of relationships of the people in the neighbourhood. The level of general trust in other people and expectations of reciprocity were addressed in the cultural dimension.

Statistical analysis

To examine the effect of the socioeconomic position of the household on the health-related quality of life of the elderly, multiple hierarchical-linear models (growth curve models) were calculated. These models adjusted for age, age square and the year of each wave of the SOEP included. Analysis was stratified for sex. Additionally, the models adjusted for several interaction effects. K-means cluster analysis was conducted to identify distinct groups of health lifestyles. In a preliminary step, the items on health-related behaviours and attitudes were transformed to z-scores. Finally, multiple logistics regression models were used to estimate the odds ratios of protective factors for health resilience.

Results

Health inequalities

A health gradient was observed for the physical dimension of health-related quality of life of elderly men in the study cohort. In contrast, the socioeconomic status of the household did not affect the level of the Mental Component Score (MCS) of the SF12v2 among men. Health inequalities among elderly women were more inconsistent and weaker. A gradual decrease of health-related quality of life in lower social strata was observed only for the MCS but not for the Physical Component Score (PCS). Furthermore, the health decline was statistically significant on the level of $\alpha < 5\%$ only for women from the lower middle stratum and the lowest social stratum. For both men and women, the observed health inequalities did not widen or lessen in the course of ageing. Thus, the results of the multiple models pointed towards a continuity of health inequalities in the SOEP study cohort. The two lowest social strata seem to impose socioeconomic health risks on elderly men and women in the study cohort. The following analyses on health resilience will therefore focus on these two socioeconomic groups.

Health resilience

In the observed period of time from 2002 to 2008 around 20% of the men from the lowest social stratum and some 22% from households of the lower middle stratum were classified as being health resilient regarding the PCS of the SF12v2. Among elderly women, the share of health resilient persons with respect to the MCS was smaller. It reached about 10% in the lowest social stratum and roughly 17% in the lower middle stratum. Hence, socioeconomic position plays an important role in the resilience process for elderly women but not for men.

Protective factors

Regarding all protective factors included in one multiple regression model, only some health lifestyles and the degree of satisfaction with the current material welfare could be identified as protective factors for physical resilience among elderly men. The highest odds of physical resilience compared to the group that practiced a health-risk lifestyle were observed for participants, who reported a moderate health-conscious lifestyle (OR=9.5, 95%-CI: 5.9-15.4). The group that had a moderate health-risk lifestyle showed a remarkably high odd of being physically resilient (OR=4.7, 95%-CI: 3.1-7.1). This effect was even stronger among elderly men from the lowest social stratum. Neither individual nor neighbourhood social capital elevated the odds of physical resilience among men.

Mental resilience of elderly women was associated with a health-conscious lifestyle (OR=4.2, 95%-CI: 3.0-5.9) as well as a moderate health-risk lifestyle (OR=4.1, 95%-CI: 2.9-6.0). Quantitative aspects of social capital, like an above-average number of friends and close relatives, were positively associated with mental resilience of elderly women (OR=1.9, 95%-CI: 1.5-2.5 and OR=1.3, 95%-CI: 1.0-1.7, respectively). Satisfaction with the current material

welfare also significantly elevated the odds for older women of being mentally resilient (OR=3.1, 95%-CI: 2.4-3.9).

Conclusion

The results of the study provides evidence that health-conscious as well as moderate health-risk lifestyles and quantitative aspects of individual social capital serve as protective factors in the process of health resilience among older men and women with low socioeconomic status who face significant and relatively stable health risks in the course of ageing. For men living in households of the lower stratum and the lower middle stratum, some forms of health lifestyles seem to be the strongest predictors of physical resilience. The findings suggest a qualitative distinction between health-conscious and moderate health-risk lifestyles that seem to promote physical resilience, compared to a health-risk lifestyle that was clearly associated with vulnerability. Thus, physical resilience among elderly men could be most adequately promoted not only by fostering health-conscious lifestyles, but preventing a decided health-risk lifestyle.

For the process of mental resilience among elderly women, the protective factors identified were more numerous compared to men. Especially satisfaction with the current material welfare and the number of friends and close relatives increased the odds of mental resilience. One reason for this might be that the social capital provided by those intimate social relations serves as a beneficial health support for the higher share of old women living in widowhood and thus elevates the likelihood of mental resilience. Regarding health lifestyles, a health-conscious lifestyle and a moderate health-risk lifestyle were the best predictors of mental resilience.

The social determinants of health resilience identified in this study provide a basis for further investigations and first practical approaches to reduce health inequalities among the aged. The aim of future studies on this topic is to fully disentangle the determinants of resilience processes among elderly people. This clearly requires a multidisciplinary approach because protective factors not only operate on the societal level, but also on interdependent biological, psychological and further ecological levels.

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