



ARTYKUŁY [Articles]

Health implications of living in society emphasizing sociodemographic impact

Marta Kłos¹, Agata Poręba-Chabros²

Summary. A combination of social and demographic factors can significantly define the health of individuals in a particular group or population. The influence of the connection between subjective social status and objective social status on individual health is extremely difficult to grasp. In addition to perceived social status, many environmental and individual factors, which determine and affect human health in society, should also be taken into account. In spite of that, there is no doubt that social status and social comparisons are inextricably related to an individual's health. The aim of this review is to show the importance of this relationship and also to demonstrate the association between the sense of low social status that includes cultural capital, income, education, occupation, and the development of many diseases, both on a biological and mental basis.

Keywords: sociodemographics; subjective social status; socioeconomic status; mental factors; health implications

Konsekwencje zdrowotne życia w społeczeństwie ze szczególnym uwzględnieniem wpływu czynników socjodemograficznych

Streszczenie. Połączenie czynników społecznych i demograficznych może w znacznym stopniu definiować zdrowie jednostek w określonej grupie lub populacji. Wpływ związku między subiektywnym a obiektywnym statusem społecznym na zdrowie jednostki ludzkiej jest niezwykle trudny do uchwycenia. Oprócz postrzeganego statusu społecznego należy również wziąć pod uwagę wiele czyn-

¹ Marta Kłos, Faculty of Medicine, The John Paul II Catholic University of Lublin, Poland, ORCID: 0000-0002-2482-2944, e-mail: klosmartha@gmail.com

² Agata Poręba-Chabros, Department of Psychology, The John Paul II Catholic University of Lublin, Poland, ORCID: 0000-0001-9322-4019, e-mail: agata.poreba-chabros@kul.pl

ników środowiskowych i indywidualnych, które determinują i wpływają na zdrowie ludzi w społeczeństwie. Mimo to nie ma wątpliwości, że status społeczny i porównania społeczne są nierozzerwalnie związane ze zdrowiem jednostki. Celem niniejszego przeglądu jest pokazanie znaczenia tych związków, a także uwidocznienie wpływu korelacji między poczuciem niskiego statusu społecznego, który obejmuje kapitał kulturowy, dochody, wykształcenie, zawód, a rozwojem wielu chorób, zarówno na podłożu biologicznym, jak i psychologicznym.

Słowa kluczowe: socjodemografia; subiektywny status społeczny; status społeczno-ekonomiczny; czynniki mentalne/psychiczne; konsekwencje zdrowotne

Introduction

Subjective social status (SSS) is assessed by means of the MacArthur scale, introduced by Adler et al., to capture the perceived social position of individuals (Adler, 2000). This scale refers to the individuals' sense of their place on the social ladder. The version of this scale that is used most frequently captures the perceived social status of individuals with respect to their national population. SSS is usually seen as a result or a product of social comparison processes (McLeod, 2013). Präg et al. argue that SSS inherently involves social comparisons, as one has to size up other people to gain an impression of one's own standing in the social hierarchy (Präg, 2014). Social comparison processes are key issues with health implications. Individual social comparisons rate their social status with respect to money, education, and occupation.

Sociodemographic factors like age, race, ethnicity, and socioeconomic status (SES), such as income and education, can influence health outcomes. Objective SES factors (education, occupation, and income) assign people to positions in social hierarchy. It should be noted that favourable socioeconomic conditions directly influence a good assessment of health status, especially in the rural context (Alvarez-Galvez, 2013). Some studies indicate that a higher socioeconomic level is associated with better self-rated health (Petarli, 2015, Peres, 2010, Hamplová, 2022). SSS factors, in contrast, describe how people perceive themselves and their socioeconomic situation in relation to others and the status group to which they feel they belong (Hoebel, 2018). Among the different SSS measures, the perception of financial constraints was most strongly associated with health outcomes (Euteneuer, 2014). The results of experimental studies underline that SSS has a causal effect on various risk factors and health parameters (Cardel, 2016, Jackson, 2015, Muscatell, 2016, Schubert, 2016). Many studies have been published that indicate that SSS has effects on health beyond the effects of objective SES (Adler, 2000, Hoebel, 2018, Cundiff, 2017, Miyakawa, 2012, Tang, 2016).

The World Health Report 2002 highlights, from the cultural perspective, the type and kind of risks, as well as a person's ability to cope with them, will vary according to the individual's wider context (WHO, 2002). Risk perceptions and their importance can vary between developing and developed countries, as well as with

such variables as sex, age, household income, faith and cultural groups, urban and rural areas, and geographical location and climate (WHO, 2002).

The purpose of the review is to designate how selected sociodemographic factors affect health considering individuals living in society. The selected factors included sociodemographic factors (among others age, ethnicity), socioeconomic status (among others income, education), subjective feelings (social comparisons in the social hierarchy, self rated-health).

Subjective social status (SSS) and socioeconomic status (SES)

Social status is an important predictor for a wide range of health outcomes (Euteneuer, 2014). The impact of environmental threats and individual responses may be modified by the same health behaviours that are also shaped by socioeconomic forces (Adler, 1999). Adler and Ostrove indicate two alternative explanations for the association of SES and health (Adler, 1999). One is that SES influences health status (social causation). The other is that health status contributes to socioeconomic status (social drift or selection). The effects of childhood education on health problems that emerge many years later may suggest that educational attainment is determining later health. Some childhood diseases are so debilitating that childhood health may determine educational attainment and later socioeconomic status.

According to some researchers, SSS is a more valid and simplified indicator than objective social status because SSS represents a summation of a range of factors, including education and income; past and future life chances; family of origin and current family; race/ethnicity; wealth; and, importantly, relative sense of social status (Singh-Manoux, 2005, Singh-Manoux, 2003). An aspect of social status and health research should be to understand how objective medical factors play a role in social status and influence health. The potential causal chain between objective SSS, SES and health is probably complementary approaches, which point to different and, in some cases, interconnected mechanisms. A person's subjective social status should be more strongly linked to health, as shown in the Adler et al. study (Adler, 2000). The results provide evidence that SSS is strongly related to health indicators and that a higher SSS may promote better health (Adler, 2000, Euteneuer, 2014, Ghaed, 2007, Operario, 2004, Demakakos, 2008, Singh-Manoux, 2005). Inhabitants in rural area in developing countries, as well as risks from diseases (like HIV/AIDS, tuberculosis or malaria), live constantly with risks from drought, food insecurity, endemic poverty, and lack educational facilities and health services (Nyblade, 2001, Sommerfeld, 2002). The World Health Report 2002 presents a study in 40 villages in developing countries examined risk perceptions in relation to health, health care, economics, agriculture and climate (WHO, 2002). After malaria, the next perceptions of vulnerability were i.e., a lack of funds for medicines or smoking (Okrah, 2002) World Health Organization (WHO) points out that given the complexity of living conditions in rural area in developing countries, health

risks cannot be seen in isolation from other domains such as climate, the economy and society (WHO, 2002). The example is shown in a study presented by Krummel et al. where researchers show an unawareness of cardiovascular disease risks in rural residents caused in part by educational deficiencies (Krummel, 2002). Despite the study groups knew that dietary choices were important for cardiovascular health, however they lacked of support for adoption of a heart-healthy diet, and the skills for food selection and preparation (Krummel, 2002).

Data from many countries also show that social status is associated with life expectancy (Stringhini, 2017). Low socioeconomic status was associated with an up to 2 years reduction in life expectancy between ages 40 and 85 years in study groups; in years-of-life-lost depending on selected factors: high alcohol intake (up to 5 years), obesity (up to 7 years), diabetes (up to 9 years), hypertension (up to 6 years), physical inactivity (up to 4 years), and current smoking (up to 8 years) (Stringhini, 2017). Studies indicate that low SSS is related to several health indicators and biological risk factors for disease, including lower self-rated health, depressive symptoms, increased substance use, poor sleep quality, functional decline, poor health, food insecurity, poor oral health, higher resting heart rate, increased waist-hip ratio, higher BMI, altered cortisol responses, respiratory illness, reduced immune defence, increased serum triglycerides, lower high-density lipoprotein (HDL) cholesterol, reduced cardiovascular health, and diabetes (Adler, 2000, Hoebel, 2018, Euteneuer, 2014, Singh-Manoux, 2003, Chen, 2012, Cooper, 2010, Wright, 2005). Goodman et al. drafted pathways describing the possibility that SSS mediates between objective SES and obesity (Goodman, 2003). As a country develops and more people buy processed food, an increasing proportion of calories tends to be drawn from sugars added to manufactured food and from relatively cheap oils (WHO, 2002). Changes in food production and the technology of work and leisure lead to decreases in physical exercise. Diet-related diseases (obesity, diabetes, hypertension and cardiovascular disease) are increasing and becoming the epidemic. Independent studies by Fernald and Leroy et al. confirmed the positive associations between SES and BMI in low-income, rural populations (defined as towns with <2,500 inhabitants) (Fernald, 2007, Leroy, 2013). During 23 months tests, Leroy et al. indicated the susceptibility to obesity in socially disadvantaged populations (Leroy, 2013). In Fernald study, measures of subjective SES (SSS was averaged) and measures of objective SES (education, income, occupation) were taken into account (Fernald, 2007). Fernald proved that BMI was positively associated with SES, regardless of how it was measured – as education, occupation, household income, housing, assets or SSS – in a low-income population of adults in rural area of Mexico (Fernald, 2007). In India and China, a shift in diet towards higher fat and lower carbohydrate is resulting in rapid increases in overweight – among all adults in China and mainly among urban residents and high income rural residents in India (WHO, 2002).

In the lower class, a higher mortality rate was observed before the age of 85

(Stringhini, 2017); as well as more negative emotions, stress and depressive symptoms (Hu, 2021). In proposed pathways, the objective SES influences the SSS, which in turn impacts physiological stress processes and can cause psychological sequelae, such as social isolation and depression. Existing evidence consistently indicates that low SSS is associated with various physical and mental health problems, even after controlling for objective SES (Hegar, 2010). SES is associated with the risk of disease and premature death (Adler, 2000, Adler, 1999). Demakakos et al. study indicate that SSS even turned out to be a strong and independent predictor of mortality (Demakakos, 2018).

Self-rated health (SRH) is a strong predictor of illness and mortality and may be one of the most evaluated health indicators in conjunction with socioeconomic characteristics, lifestyle, clinical condition, and work characteristics (Euteneuer, 2014, Burström, 2001, Martins, 2023). SRH is a construct that involves physical, mental and social aspects of life through the individual's general perception of personal health (Doornenbal, 2021). The level of SRH is significantly affected by both the physical and mental health of the individuals (Levinson, 2014). Saha et al. research show the rural–urban gap in socioeconomic and morbidity status among older adults (Saha, 2022). The prevalence of poor SRH was found 7% higher in rural areas compared to urban counterparts (Saha, 2022). Lower education level, poverty, and poor standard of living are common social diseases among the elderly population in rural areas, which are negatively associated with SRH (Saha, 2022, Tobiasz-Adamczyk, 2017). Some studies confirm a high rate of rural workers whose self-rated health were determined as fair or poor, which was mainly associated with socioeconomic class, BMI and multimorbidity conditions (Martins, 2023). SRH status is an easily applicable indicator that considers biological, psychological, social, demographic and cultural factors, along with factors related to the living and working environment (Martins, 2023, Petarli, 2015). It is significant to indicate the distinctions between the rural work and other activities, and among these differences the exhaustive working day, exposure to different weather conditions, contact with potentially harmful animals, plants, and pesticides, poor hygiene conditions, difficult access to health and education services, and low remuneration should be highlighted (Brew, 2016, Chengane, 2021).

Li et al. note that there may be confounding between these two subjective measures, SSS, and self-rated health (Li, 2017). Lower SSS was associated with poor SRH and references used for social comparison (society, community, or work) did not substantially change these associations. Among US adolescents, SSS was the only one of several social status indicators with a significantly positive association with alcohol and drug abuse (McLaughlin, 2012). Euteneuer highlights the influence of immigration generation among immigrant adolescents (Euteneuer, 2014). According to the study by Fischer et al., low family SSS was related to higher rates of non-medical prescription opioid use (NMPOU) in women but not in men (Fischer, 2013). However, as indicated by Fischer et al., the associations between

SSS and NMPOU are more complex and can be moderated by other factors (i.e., drug use, rural residence, suicidal ideation, age, sex, immigrant status, ethnicity) (Fischer, 2013).

Psychoneurobiological and mental factors

It was observed that greater income inequality is associated with higher prevalence of mental illness in rich societies, SSS has frequently been related to mental disorders, psychopathological symptoms, and psychological distress (Miyakawa, 2012, Demakakos, 2008, Singh-Manoux, 2005, Pickett, 2010). However, rural children research by Costello et al. showed that in this sample, poverty was weakly associated with child psychiatric disorders (Costello, 2001). It should be noted that in the rural children group, the prevalence of psychiatric disorder increased with the number of risk factors in all groups (Costello, 2001). Risk factors regardless of ethnic groups were family mental illness, multiple moves, lack of parental warmth, lax supervision, and harsh punishment (Costello, 2007). The combination of environmental and individual factors determines the extent to which the individual experiences repeated stress responses (Adler, 1999). Therefore, an increased risk of disease at lower levels of SES is due to increased exposure to stress and reduced resources to buffer its impact. Although the prevalence of mental illness is similar between rural and urban residents, the available services can be very different. Mental healthcare needs are often not met in many rural communities across the country because there are no adequate services (Rural Health Information, 2013).

Because the limbic system of the brain is interrelated with stress and emotions, the results' studies of McEwen and Gianaros show that reduced volume of limbic structures is a stress-related correlate of low SSS associated with neuroendocrine and immunological dysregulation, which in turn can increase the risk of negative health outcomes (McEwen, 2010). Low SSS is likely to cause negative emotional reactions that are processed in the limbic system, influencing neuroendocrine processes and functions of the autonomic nervous system and the immune system (McEwen, 2010).

Biochemical processes are particularly relevant for stress-related disorders such as cardiovascular disease or depression. The hypothalamic-pituitary-adrenal axis (HPA) is an essential part of the neuroendocrine system, which helps regulate stress and is responsible for the release of stress hormones such as cortisol. Negative emotions and chronic stress can lead to an ongoing activation of the HPA axis and increased release of stress hormones. The sympathetic-adrenal-medulla (SAM) axis activates the sympathetic nervous system by releasing adrenaline and noradrenaline hormones. This activation of the sympathetic nervous system can also represent a reaction to emotional distress. If the HPA and SAM axes are exposed to repeated or chronic stimuli, this can lead to dysregulation and harmful health effects (Steptoe, 2008). In many studies, empirical evidence has been found

of the associations between SSS and neuroendocrine and immunological biomarkers. Research by Adler et al. indicates that low SSS is associated with overexposure to cortisol, suggesting stress-induced hyperactivity of the HPA axis in low-SSS individuals (Adler, 2000). Both increased HPA activity and overactivity of the sympathetic nervous system, in the case of low SSS revealed in the Adler et al. study, show a relatively strong association between low SSS and sleep latency (Adler, 2000). Wright and Steptoe found that the cortisol response in low-SSS individuals was less favourable health-wise than among those with higher SSS (Wright, 2005). Weiss and Weiss notice a dysregulation of the HPA system in persons with low SSS in western societies (Weiss, 2016). However, in Taiwan, these associations were not found to the same extent in a biomarker study, suggesting that cultural factors could play a role in these relations (Gersten, 2015). Furthermore, negative emotions and permanent stress affect immune functioning by stimulating the production of pro-inflammatory cytokines, which are associated with various diseases such as cardiovascular disease, rheumatoid arthritis, type 2 diabetes, and certain types of cancer (Kiecolt-Glaser, 2002, Kiecolt-Glaser 2002). Derry et al. showed that people with low SSS have higher values of pro-inflammatory interleukin 6 (IL-6) after exposure to stress (Derry, 2013). IL-6 is considered a risk factor for coronary heart disease and is associated with metabolic diseases such as type 2 diabetes (Steptoe, 2012).

Ongoing or recurring negative emotions and stress reactions resulting from low SSS can lead to dysregulation of the neuroendocrine, immunological, and sympathetic (nervous) systems. Repeated exposure to stress can have long-term effects on the immune and cardiovascular systems, leading to an increased risk of disease or more rapid progression of diseases once established. In the experimental study by Cohen et al., people with low SSS were significantly more likely to develop clinically manifest cold as a result of exposure to the virus than those with higher SSS (Cohen, 2008). The results of Cohen et al. indicate that low SSS is related to an increased susceptibility to acute infections, which indicates a reduced functionality of the immune system in individuals with low SSS (Cohen, 2008). Exercise may reduce some of the adverse biological effects of stress exposure (McEwen, 1998). At lower positions on the SES hierarchy, one may not only be more subject to chronic stressors that can lead to allostatic load, but also have fewer opportunities to exercise that could help buffer the adverse effects of stress responses (Adler, 1999).

According to Lazarus, considered the world's most frequently cited researcher dealing with psychological stress, emphasizes the importance of the role of the situational context and the relationship that the individual has with the environment (Wenninger, 2013). He introduced the term transaction to emphasize that in a stressful situation, the individual and the environment are understood as the current situational context and are characterized by inseparability. He defined stress as the individual's relationship with the environment, which is considered a burden on resources and dangerous to well-being (Wenninger, 2013). According

to his concept, the level of psychological stress and the ways of coping depend on the context of the environment, also understood in terms of the place of residence. Researchers try to explain the relationship between health and stress in two approaches. Using the first, we can answer the question of what negative impact stressors have on the human body and health, while the second explains what predispositions an individual has in maintaining health (Walker, 2006). The impact stress will have on health depends on many individual resources. The resources that influence the modification of the cognitive assessment of stress and its experience include social resources (Thornton, 2012). It should be emphasized that the use of these resources by an individual depends on the relationship between the stability and repeatability of response patterns to various stress-causing factors and the individual's activity. It is reasonable to recognize the place of residence as a factor that has a significant relationship with the level of stress experienced. The place of residence and self-assessment of lifestyle among the students surveyed from selected universities in Lublin were correlated with the level of stress experienced (Dąbska, 2017). Students living in student dormitories and people who were unable to assess their lifestyle had a significantly higher level of knowledge about constructive ways of acting in difficult situations. In other studies on stress management, the authors showed that both students living in the countryside and in the city prefer a task-orientated approach to the problem and are less likely to use alcohol as a way to solve difficult situations. However, the test of the significance of differences shows that students living in rural areas are characterized by a significantly greater style and strategy for coping with difficult situations that involve turning to religion. In turn, students living permanently in the city use methods to cope with difficulties with significantly greater intensity, such as treating them humorously and using alcohol or other intoxicants (Parchomiuk, 2015). The results are not less important in studies of parents of children diagnosed with autism spectrum disorder. The socioeconomic situation of the family, parents' education, place of residence, and access to specialist institutions dealing with early diagnosis and therapy, as well as professional organization of care and support for their autistic child, determine the strategies used to cope with stress (Pisula, 2011). In the above study, stress can increase due to the lack of availability of certain forms of institutional support, different for cities and towns located in rural areas.

Health implications of social comparisons

According to Festinger, people have a basic need for an accurate self-view, which is a major reason why people compare themselves with others (Festinger, 1954). If a social comparison is made, the result and the associated effects will essentially depend on which reference group one compares himself with. If people compare themselves to a high standard ('upward comparison'), they generally rate themselves worse than when they compare themselves to a low standard ('downward

comparison') (Schubert, 2016). Corcoran and Mussweiler concluded that comparisons with a low standard can raise people's self-esteem. Comparisons with a high standard, on the one hand, have a motivating impact; on the other hand, 'doing poorly' compared to others can also lead to feelings of dissatisfaction and threaten the person's self-esteem (Corcoran, 2011). There is no doubt that there is an impact of the rural-to-urban migration on SES. Research by Huang et al. shows that SES increases in rural-to-urban migrants (Huang, 2017). Huang et al. study suggest that rural-to-urban migrants gained in subjective well-being owing to i.e. direct financial achievement and their perceptions and beliefs about their relative social status (Huang, 2017).

The findings of the investigation by Habersaat et al. indicate that a low self-perceived position within a strongly hierarchical social structure can chronically increase the activity of the autonomic nervous system and thus potentially increase the risk of several diseases (Habersaat, 2018). Wilkinson asserts that health problems in today's societies develop not so much because of absolute deprivation, but rather as a result of relative deprivation and the resulting psychological sequelae (Wilkinson, 1996). This term, relative deprivation, generally means perceiving a lack or experiencing disadvantage in relation to others, for example, to specific reference groups or to the (perceived) social average (Hoebel, 2018, Wilkinson, 1996). The existence of deprivation is defined not as a lack of a minimum amount of resources for an existentially necessary standard of living – which would correspond to the concept of absolute deprivation – but as a perceived lack of opportunities for participation in education, wealth, prosperity, or social prestige relative to other members of society, with whom one compares oneself. Wilkinson assumes that the psychological sequelae of relative deprivation (e.g., a sense of inferiority, shame, and incompetence) exert a comparatively larger effect on health in today's societies (Wilkinson, 1996). Relative social position is related to health unless those concerned have some perception of their relative position, and SSS reflects precisely this perception (Wilkinson, 2000).

Studies have already provided evidence suggesting that the association between low SSS and poor health is to some extent mediated by negative emotions (Operario, 2004, Kraus, 2013). Independent research by Schubert et al. and Jackson et al. found that a lower SSS can causally lead to depressive thinking (Schubert, 2016, Jackson, 2011). Different comparison standards could also explain why, among persons with the same objective SES, some rate themselves higher and others lower. This, in turn, can be crucial for the health effects that result from the social comparison.

Conclusions

The impact of SSS and SES on health is indisputable, as many researchers have shown. Social comparison theory, SES, and SSS should be taken into account as

explanatory factors influencing physical and mental health. For health research, subjective perceptions of social status are an important link in the causal chain between SES and health and therefore can contribute to the explanation of health inequalities. The idea of SSS opens up a number of new perspectives for advances in research on health inequality and social disproportion in health.

References

- Adler, N.E., Epel, E.S., Castellazzo, G., Ickovics, J.R. (2000). Relationship of Subjective and Objective Social Status With Psychological and Physiological Functioning: Preliminary Data in Healthy White Women. *Health Psychol*, 19(6), 586–92.
- Adler, N.E., Ostrove, J.M. (1999). Socioeconomic status and health: What We Know and What we Don't. Socioeconomic status and health in industrial nations: Social, psychological, and biological pathways. *Ann NY Acad Sci*, 896(1), 3–15.
- Alvarez-Galvez, J., Rodero-Cosano, M.L., Motrico, E., Salinas-Perez, J.A., Garcia-Alonso, C., Salvador-Carulla, L. (2013). The impact of socio-economic status on self-rated health: study of 29 countries using European social surveys (2002–2008). *Int J Environ Res Public Health*, 10(3), 747–61.
- Burström, B., Fredlundm P. (2001). Self-rated health: is it as good a predictor of subsequent mortality among adults in lower as well as in higher social classes? *Journal of Epidemiology and Community Health*, 55(11), 836–840.
- Brew, B., Inder, K., Allen, J., Thomas, M., Kelly, B. (2016). The health and wellbeing of Australian farmers: a longitudinal cohort study. *BMC Public Health*, 16, 988.
- Cardel, M.I., Johnson, S.L., Beck, J., Dhurandhar, E., Keita, A.D., Tomczik, A.C., et al. (2016). The effects of experimentally manipulated social status on acute eating behavior: A randomized, crossover pilot study. *Physiol Behav*, 162, 93–101.
- Chen, B., Covinsky, K.E., Stijacic Cenzer, I., Adler, N., Williams, B.A. (2012). Subjective social status and functional decline in older adults. *J Gen Intern Med*, 27(6), 693–699.
- Chengane, S., Beseler, C.L., Duysen, E.G, Rautiainen, R.H. (2021). Occupational stress among farm and ranch operators in the midwestern United States. *BMC Public Health*, 21(1): 2076.
- Cohen, S., Alper, C.M, Doyle, W.J., Adler, N., Treanor, J.J., Turner, R.B. (2008). Objective and subjective socioeconomic status and susceptibility to the common cold. *Health Psychol*, 27(2), 268–74.
- Cooper, D.C., Milic, M.S., Mills, P.J., Bardwell, W.A., Ziegler, M.G., Dimsdale, J.E. (2010). Endothelial function: the impact of objective and subjective socioeconomic status on flow-mediated dilation. *Ann Behav Med*, 39(3), 222–31.
- Costello, E.J., Keeler, G.P., Angold, A. (2001). Poverty, Race/Ethnicity, and Psychiatric Disorder: A Study of Rural Children. *Am J Public Health*, 91(9), 1494–1498.
- Cundiff, J.M., Matthews, K.A. (2017). Is subjective social status a unique correlate of physical health? A meta-analysis. *Health Psychol*, 36(12), 1109–1125.

- Dąbska, O., Wołoszynek, E., Kowalczyk, A., et al. (2017). Sposoby radzenia sobie ze stresem – badanie ankietowe studentów wybranych szkół wyższych z Lublina. *Piel Zdr Pub*, 7, 27–34.
- Demakakos, P., Nazroo, J., Breeze, E., Marmot, M. (2008). Socioeconomic status and health: the role of subjective social status. *Soc Sci Med*, 67(2), 330–40.
- Demakakos, P., Biddulph, J.P., de Oliveira, C., Tsakos, G., Marmot, M.G. (2018). Subjective social status and mortality: The English Longitudinal Study of Ageing. *Eur J Epidemiol*, 33(8), 729–739.
- Doornenbal, B.M., Bakx, R. (2021). Self-rated health trajectories: A dynamic time warp analysis. *Prev Med Rep*, 24, 101510.
- Derry, H.M., Fagundes, C.P., Andridge, R., Glaser, R., Malarkey, W.B., Kiecolt-Glaser, J.K. (2013). Lower subjective social status exaggerates interleukin-6 responses to a laboratory stressor. *Psychoneuroendocrinology*, 38(11), 2676–2685.
- Euteneuer, F. (2014). Subjective social status and health. *Curr Opin Psychiatry*, 27(5), 337–43.
- Fernald, L. (2007). Socio-economic status and body mass index in low-income Mexican adults. *Soc Sci Med*, 64(10), 2030–2042.
- Festinger, L. (1954). A theory of social comparison processes. *Hum Relat*, 7, 117–40.
- Fischer, B., Ialomiteanu, A., Boak, A., Adlaf, E., Rehm, J., Mann, R.E. (2013). Prevalence and key covariates of nonmedical prescription opioid use among the general secondary student and adult populations in Ontario, Canada. *Drug Alcohol Rev*, 32(3), 276–287.
- Gersten, O., Timiras, P.S., Boyce, W.T. (2015). Does lower subjective social status yield riskier biomarker profiles? *J Biosoc Sci*, 47(6), 746–761.
- Ghaed, S.G., Gallo, L.C. (2007). Subjective social status, objective socioeconomic status, and cardiovascular risk in women. *Health Psychol*, 26(6), 668–674.
- Goodman, E., Adler, N.E., Daniels, S.R., Morrison, J.A., Slap, G.B., Dolan, L.M. (2003). Impact of objective and subjective social status on obesity in a biracial cohort of adolescents. *Obes*, 11(8), 1018–1026.
- Habersaat, S., Abdellaoui, S., Geiger, A.M., Urben, S., Wolf, J.M. (2018). Low subjective social status in the police is linked to health-relevant changes in diurnal salivary alpha-amylase activity in Swiss police officers. *Stress*, 21(1), 11–18.
- Hamplová, D., Klusáček, J., Mráček, T. (2022). Assessment of self-rated health: The relative importance of physiological, mental, and socioeconomic factors. *PLoS One*, 17(4), e0267115.
- Hegar, R., Mielec, A. (2010). “Subjective social status”: Importance for research and practice concerning the reduction of health inequalities. *Prävention und Gesundheitsförderung*, 5(4), 389–400.
- Hoebel, J., Lampert, T. (2018). Subjective social status and health: Multidisciplinary explanations and methodological challenges. *J Health Psychol*, 25(2), 1–13.
- Hu, X., Wang, T., Huang, D., Wang, Y., Li, Q. (2021). Impact of social class on health: The mediating role of health self-management. *PLoS One*, 16(7), e0254692.

- Huang, S., Hou, J., Sun, L., Dou, D., Liu, X., Zhang, H. (2017). The effects of objective and subjective socioeconomic status on subjective well-being among rural-to-urban migrants in China: The moderating role of subjective social mobility. *Front Psychol*, 8(819).
- Jackson, B., Richman, L.S., LaBelle, O., LaBelle, O., Lampeter, M.S., Twenge, J.M. (2015). Experimental evidence that low social status is most toxic to well-being when internalized. *Self Identity*, 14(2), 157–72.
- Jackson, B., Twenge, J.M., Souza, C., Chiang, J., Goodman, E. (2011). Low subjective social status promotes ruminative coping. *J Appl Soc Psychol*, 41(10), 2434–456.
- Kiecolt-Glaser, J.K., McGuire, L., Robles, T.F., Glaser, R. (2002). Emotions, morbidity, and mortality: New perspectives from psychoneuroimmunology. *Annu Rev Psychol*, 53, 83–107.
- Kiecolt-Glaser, J.K., McGuire, L., Robles, T.F., Glaser, R. (2002). Psychoneuroimmunology: Psychological influences on immune function and health. *J Consult Clin Psychol*, 70(3), 537–547.
- Kraus, M.W., Adler, N., Chen, T.W. (2013). Is the association of subjective SES and self-rated health confounded by negative mood? An experimental approach. *Health Psychol*, 32(2), 138–45.
- Krummel, D.A., Humphries, D., Tessaro, I. (2002). Focus Groups on Cardiovascular Health in Rural Women: Implications for Practice. *J Nutr Educ Behav*, 34(1), P38–46.
- Leroy, J.L., Gadsden, P., Gonzalez de Cossio, T., Gertler, P. (2013). Cash and in-kind transfers lead to excess weight gain in a population of women with a high prevalence of overweight in rural Mexico. *J Nutr*, 143, 378–83.
- Levinson, D., Kaplan, G. (2014). What does self rated mental health represent. *J Public Health Res*, 3(3): jphr.2014.287.
- Li, S., Zhang, Q., Muennig, P. (2017). Subjective assessments of income and social class on health and survival: An enigma. *SSM – Popul Health*, 6, 295–300.
- Nyblade, L.C., Menken, J., Wawer, M.J., Sewankambo, N.K., Serwadda, D., Makumbi, F., et al. (2001). Population-based HIV testing and counseling in rural Uganda: participation and risk characteristics. *Journal of Acquired Immune Deficiency Syndromes*, 28(5), 463–70.
- Martins, C.A., do Prado, C.B., Ferreira, J.R., Zandonade, E., de Paula Alves Bezerra, O.M., Salaroli, L.B. (2023). Self-rated health status and associated factors in rural workers. *BMC Public Health*, 23(680).
- McEwen, B.S. (1998). Protective and damaging effects of stress mediators. *N Engl J Med*, 338, 171–79.
- McEwen, B.S., Gianaros, P.J. (2010). Central role of the brain in stress and adaptation: Links to socioeconomic status, health, and disease. *Ann NY Acad Sci*, 1186, 190–222.

- McLaughlin, K.A., Costello, E.J., Leblanc, W., Sampson, N.A., Kessler, R.C. (2012). Socioeconomic status and adolescent mental disorders. *Am J Public Health*, 102(9), 1742–1750.
- McLeod, J.D. (2013). Social stratification and inequality. In: *Aneshensel CS, Phelan JC and Bierman A (eds) Handbook of the Sociology of Mental Health*. Dordrecht: Springer, 229–53.
- Miyakawa, M., Magnusson, Hanson, L.L., Theorell, T., Westerlund, H. (2012). Subjective social status: its determinants and association with health in the Swedish working population (the SLOSH study). *Eur J Public Health*, 22(4), 593–7.
- Muscattell, K.A., Dedovic, K., Slavich, G.M., Jarcho, M.R., Breen, E.C., Bower, J.E., et al. (2016). Neural mechanisms linking social status and inflammatory responses to social stress. *Soc Cogn Affect Neurosci*, 11(6), 915–22.
- Mussweiler, T. (2011). Der wichtige andere: Soziale Vergleichsprozesse und relative Deprivation. In: *Frey D and Bierhoff H-W (eds) Sozialpsychologie: Interaktion und Gruppe*. Göttingen: Hogrefe, 19–39.
- Okrah, J., Traore, C., Pale, A., Sommerfeld, J., Muller, O. (2002). Community factors associated with malaria prevention by mosquito nets: an exploratory study in rural Burkina Faso. *Tropical Medicine and International Health*, 7(3), 240–8.
- Operario, D., Adle, N., E., Williams, D.R. (2004). Subjective social status: reliability and predictive utility for global health. *Psychol Health*, 19(2), 237–46.
- Parchomiuk, M., Byra, S. (2015). Dyspozycyjne i sytuacyjne predyspozycje zaradcze studentów. *Edukacja zdrowotna*, 2(73), 107–122.
- Peres, M.A., Masiero, A.V., Longo, G.Z., Rocha, G.C., Matos, I.B., Najnie, K., et al. (2010). Auto-avaliação da saúde em adultos no Sul do Brasil. *Rev Saúde Pública*, 44(5), 901–11.
- Petarli, G.B., Salaroli, L.B., Bissoli, N.S., Zandonade, E. (2015). Autoavaliação do estado de saúde e fatores associados: um estudo em trabalhadores bancários. *Cad Saude Publica*, 31, 787–99.
- Pickett, K.E., Wilkinson, R.G. (2010). Inequality: an underacknowledged source of mental illness and distress. *Br J Psychiatry*, 197(6), 426–8.
- Pisula, E., Noińska, D. (2011). Stres rodzicielski i percepcja doświadczeń związanych z opieką nad dzieckiem u rodziców dzieci z autyzmem uczestniczących w różnych formach terapii. *Psychologia Rozwojowa*, 3(16), 75–88.
- Präg, P., Mills, M., Wittek, R. (2014). Income and income inequality as social determinants of health: Do social comparisons play a role? *Eur Sociol Rev*, 30(2), 218–29.
- Rural Health Information Hub. <https://www.ruralhealthinfo.org/topics/mental-health>. (access: 2024.09.01).
- Saha, A., Rahaman, M., Mandal, B., Biswas, S., Govil, D. (2022). Rural urban differences in self-rated health among older adults: examining the role of marital status and living arrangements. *BMC Public Health*, 22(2175).

- Singh-Manoux, A., Marmot, M.G., Adler, N.E. (2005). Does subjective social status predict health and change in health status better than objective status? *Psychosom Med*, 67(6), 855–61.
- Singh-Manoux, A., Adler, N.E., Marmot, M.G. (2003). Subjective social status: its determinants and its association with measures of ill-health in the Whitehall II study. *Soc Sci Med*, 56(6), 1321–33.
- Schubert, T., Süßenbach, P., Schäfer, S.J., Euteneuer, F. (2016). The effect of subjective social status on depressive thinking: An experimental examination. *Psychiatry Res*, 241, 22–5.
- Sommerfeld, J., Sanon, M., Kouyate, B.A., Sauerborn, R. (2002). Perceptions of risk, vulnerability and disease prevention in rural Burkina Faso: implications for community-based health care and insurance. *Hum Organ*, 61(2), 139–146.
- Stephens, A. (2008). Psychobiological processes linking socio-economic position with health. In: Siegrist J and Marmot M (eds) *Social Inequalities in Health: New Evidence and Policy Implications*. Oxford University Press, 101–26.
- Stephens, A. (2012). Socioeconomic status, inflammation, and immune function. In: Segerstrom SC (ed.) *The Oxford Handbook of Psychoneuroimmunology*. Oxford University Press, 234–53.
- Stringhini, S., Carmeli, C., Jokela, M., Avendaño, M., Muennig, P., Guida, F., et al. (2017). Socioeconomic status and the 25 × 25 risk factors as determinants of premature mortality: a multicohort study and meta-analysis of 1.7 million men and women. *Lancet*, 389(10075), 1229–1237.
- Tang, K.L., Rashid, R., Godley, J., Ghali, W.A. (2016). Association between subjective social status and cardiovascular disease and cardiovascular risk factors: A systematic review and metaanalysis. *BMJ Open*, 6(3), e010137.
- Thornton, A.A., Owen, J.E., Kernstine, K., et al. (2012). Predictors of finding benefit after lung cancer diagnosis. *Psycho-Oncology*, 21(4), 365–373.
- Tobiasz-Adamczyk, B., Zawisza, K. (2017). Urban-rural differences in social capital in relation to self-rated health and subjective well-being in older residents of six regions in Poland. *Ann Agric Environ Med*, 24(2), 162–70.
- Walker, M.S., Zona, D.M., Fisher, E.B. (2006). Depressive symptoms after lung cancer surgery: Their relation to coping style and social support. *Psycho-Oncology*, 15(8), 684–693.
- Weiss, D., Weiss, M. (2016). The interplay of subjective social status and essentialist beliefs about cognitive aging on cortisol reactivity to challenge in older adults. *Psychophysiology*, 53(8), 1256–62.
- Weninger, K., Helmes, A., Bengel, J., et al. (2013). Coping in long-term survivors of childhood cancer: Relations to psychological distress. *Psycho-Oncology*, 22(4), 854–861.
- WHO. (2002). *The world health report 2002: reducing risks, promoting health life*. Geneva, Switzerland: World Health Organization; 2002. https://iris.who.int/bitstream/handle/10665/42510/WHR_2002.pdf?sequence=1 (access: 2024.09.01).

- Wilkinson, R.G. (1996). *Unhealthy Societies: The Afflictions of Inequality*. Routledge, 272.
- Wilkinson, R.G. (2000). *Mind the Gap: Hierarchies, Health, and Human Evolution*. Weidenfeld and Nicolson, 70.
- Wright, C.E., Steptoe, A. (2005). Subjective socioeconomic position, gender and cortisol responses to waking in an elderly population. *Psychoneuroendocrinology*, 30(6), 582–90.

Receipt Date: October 2, 2024

Receipt Date after correction: January 15, 2025

Print Acceptance Date: January 23, 2025