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ARTYKUŁY
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Health implications of living in society emphasizing sociodemographic impact

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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-

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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 nierozerwalnie 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 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.

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