Will the COVID-19 pandemic and infection control measures increase health inequalities?

An overview of scientific evidence on a possible increase of health inequalities in the frame of the COVID-19 pandemic and infection control measures

Key messages

This paper provides an overview of scientific evidence to the following questions: Are people in a more disadvantaged socioeconomic position (SEP) more frequently and severely affected by the COVID-19 pandemic? Are they more likely to suffer from the negative health-consequences of infection control measures?

- It is likely that the COVID-19 pandemic will increase existing health inequalities.
- Based on current knowledge, socioeconomically disadvantaged population groups are more frequently exposed to the virus (SARS-CoV-2) and they are also more likely to experience severe health outcomes (incl. COVID-19 mortality).
- Socioeconomically disadvantaged population groups are more likely to suffer from infection control measures, with comparatively greater health-consequences.
- From a public health perspective, socioeconomic factors are important to identify high-risk groups (together with age and underlying health conditions) and should be considered when developing infection control measures.

This paper focuses on socioeconomic differences (especially differences in income, education and occupational position). Other papers of the competence network deal with the impact of precarious employment during the COVID-19 pandemic, the role of mental health problems and gender differences.

The paper is addressed to policy makers, the public, representatives of the press and experts in public health services.

Background

It has been shown that a disadvantaged socioeconomic position (usually measured by income, education and occupational position) is associated with increased risks of disease and shorter life expectancy. For Germany, for example, the difference in life expectancy between men with a high income and those with low income is estimated to be 8.6 years, and 4.4 years for women (1). Socioeconomic differences are found for most diseases (e.g. diabetes, respiratory diseases, coronary heart disease or depression) (2). Studies also confirm socioeconomic differences in the case of the H1N1 pandemic in 2009/2010 and seasonal influenza (including confirmed infections, hospitalization, severity of disease and mortality) (3-10).

Question

The paper addresses the following questions: Are there socioeconomic differences in the COVID-19 pandemic and are socioeconomically disadvantaged population groups currently more affected by possible indirect health consequences of infection control measures (11, 12)? Based on national and international initiatives, the background paper also outlines existing approaches to mitigate increasing social health inequalities during the COVID-10 pandemic.

Methods

The evidence presented is based on a summary of currently available documents (e.g. publications from statistical offices or scientific centres) and a review of the literature ("rapid reviews", as of 13 May 2020). This both includes non-reviewed papers on COVID-19 from preprint servers (medRvix and SocArXiv) and peer-reviewed papers listed in established databases (pubmed and Web of Science).

Results

Social inequality in the COVID-19 pandemic

There are still no reliable data on socioeconomic differences in the COVID-19 pandemic for Germany. However, recent findings from the US and England suggest that differences exist (13-15). Data from New York, for example, show that the probability of SARS-CoV-2 infections (16) are comparatively high in neighborhoods with high poverty rates and low income levels (same for COVID-19-related hospitalization and mortality) (17). The same pattern is apparent in an analysis for England by the Office for National Statistics (see Figure 1) (18). In the more deprived areas (measured by a deprivation index that incudes average income level and average education) deaths rates are comparatively higher. The age-standardized mortality rate of men from the least deprived areas was 35.9 deaths per 100,000 in the population, while in most deprived areas it was 76.7 deaths (17.0 vs. 39.6 deaths for women).

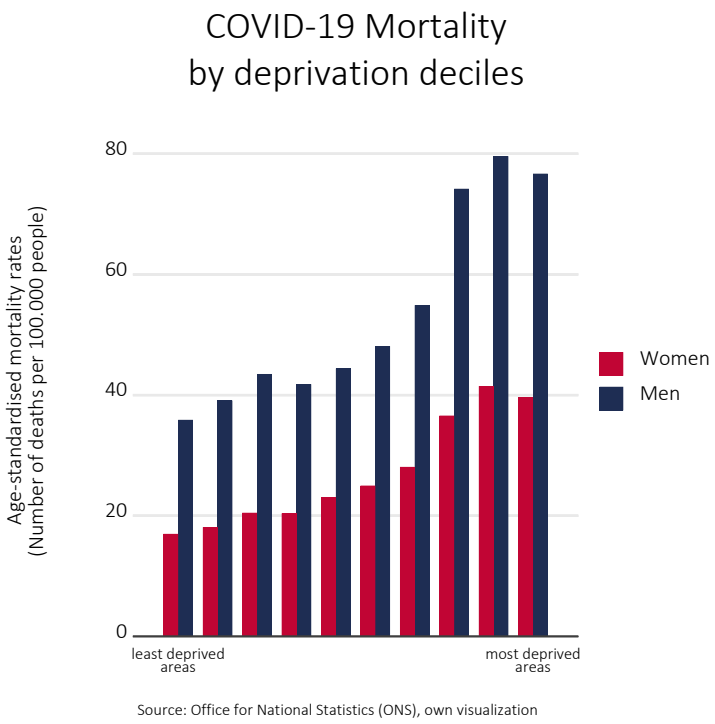

Figure 1. COVID-19 Mortality by area level of deprivation, values taken from (18)

Additional analyses confirm this finding from England (19, 20). Analyses of individual data from the UK biobank show associations between low income and the probability of hospitalization (21) and between occupational position and mortality (22). Persons with no educational qualifications were almost twice as likely to have a confirmed SARS-CoV-2 infection compared with persons with higher educational levels (relative risk of 1.91 (95%CI 1.53-2.38)) (23).

Three explanations are usually given as possible reasons for these differences (24, 25):

- *Inequalities in exposure:* These include different living and working conditions with unequal risks of exposure to the virus (24). This is also confirmed by ongoing studies in Germany on the social effects of the COVID-19 pandemic (26, 27). With the exception of people in so called “essential” occupations (including health care), people with higher incomes and a high level of education have comparatively more opportunities for protective home office work and work less frequently in occupations with a high exposure risk. The same applies to the living environment (including crowded housing conditions) or possible exposure in public transport.
- *Inequalities in vulnerability:* Due to already existing health inequalities, underlying health conditions are more frequent among socioeconomically disadvantaged groups in Germany. This significantly increases the risk of infections and severe health outcomes (28, 29). Likewise, disadvantaged population groups are more likely to live in areas with high levels of environmental pollution (e.g. air pollution) which increase the likelihood of poor pre-existing health conditions as well (30).
- *Inequalities in care:* These include comparatively limited access to medical care (e.g. difficult access to medical facilities (31) or - as shown in a US-American study - less frequent opportunities for testing in disadvantaged areas (32)), but also differences in utilization (e.g. delayed symptom awareness and later help seeking behavior (33)).

There is currently no reason why the risk of infection and vulnerability should not be higher among socioeconomically disadvantaged groups in Germany as well. In sum, it can be assumed that the findings also apply to Germany. However The situation differs with regard to health care, which varies greatly between countries and may be comparatively good in Germany (34).

Social inequality in the impact of infection control measures

Scientific research on whether socially disadvantaged groups and their health are more affected by current infection control measures is still lacking. However, current findings provide important information. Table 1 summarizes possible effects and refers to respective studies.

Table 1: Unequal consequences of infection control measures and possible health effects

Unequal consequences through…	*Possible effects / current findings*
Employment and working conditions	- Loss of income, unemployment and job insecurity are more likely to affect people already in poverty and workers in precarious employments, including people from smaller companies (especially food industry and manufacturing) (27, 35, 36).
Psychosocial stress in the family	- Higher levels of stress in disadvantaged neighborhoods, including an increase in domestic violence (37) - Stress due to boredom (38)
Health care	- Socioeconomically disadvantaged groups suffer more frequently from diseases and are more likely to be affected by postponement of medical procedures and operations (39, 40), with corresponding health consequences (41, 42)
Mobility	- Greater restrictions on mobility through restrictions on public transport for socio-economically disadvantaged groups, with implications for accessibility and access to medical facilities (43)
Environmental conditions	- Socioeconomically disadvantaged groups are more likely to be affected by postponements and setbacks of environment-related health protection and the associated increase in environmental pollution (30, 44)
Health behaviour	- Limited opportunities for physical activity (45), especially for families in disadvantaged areas. - Restricted access to healthy food, especially for homeless people and people in poverty (e.g. closing of food banks)
Education	- Socioeconomically disadvantaged children experience additional difficulties due to school closure/limited digital resources and parental support (46)
Housing conditions	- Homeless people have increased risks and burdens due to closure of facilities providing sleeping opportunities (47) - Overcrowded housing conditions increase psychosocial stress for families in poverty (48)

The table shows how the health-related consequences of infection control measures can vary by socioeconomic position. Each aspect probably does not act independently, but additionally increases the probability of further disadvantages (risk accumulation).

In addition to the socioeconomic position, other aspects remain important, including ethnicity and gender. The question hereby is how and why these aspects are related to socioeconomic disadvantages (intersectionality) (49). For example, findings from the USA and England (50-53) indicate that ethnic minorities die more frequently from COVID-19 and that this is partly explained by socioeconomic characteristics (e.g. African Americans in the USA (52)). In regard to gender, both the biological and social dimensions are important (54). Studies indicate higher COVID-19 mortality for men compared

with women (55). Women are more likely to work in occupations with a high risk of exposure and are more likely to provide childcare or outpatient care for relatives as part of protective measures (56).

Implementation

Various national and international initiatives exist that aim at reducing health inequalities during the COVID-19 pandemic. The WHO Regional Office for Europe, for example, is currently adapting the Health Equity Status Report (57) initiative to the COVID-19 pandemic and developing indicators to monitor COVID-related health inequalities. At the federal level in Germany there is the so called "Corona Cabinet" that could address cross-sectoral causes of health inequalities. In the context of the German cooperation network „Equity in Health“ (58), there are interventions at the local level and coordinated initiatives of health promotion and prevention in communities that could be strengthened to reach particularly disadvantaged population groups.

Conclusions and recommendations

- Socioeconomic factors – together with age and underlying health conditions – should be considered when developing infection control measures, for example to reduce infection with SARS-CoV-2 (targeted communication) or to mitigate the negative health consequences of infection control measures (social and financial support for disadvantaged groups).
- To improve the availability of data, socioeconomic factors need to be recorded to identify high-risk groups from an intersectional perspective (i.e. including their interrelations with other important social factors such as gender and ethnicity).
- Equity in health should be established as an objective across different policies and an independent monitoring and advisory unit should be set up within the Federal Ministry of Health.
- Despite the temporary suspension of *§20 a* and *b* of *SGB V* (German law) the continuity of preventive and health promotion measures to reduce health inequalities must be maintained. Thereby measures should be implemented according to the quality criteria defined in the cooperation network „Equity in Health“ (59).
- The indicators currently being developed by the WHO Regional Office for Europe should be used in the future to monitor COVID-related health inequalities and to promote equity in health.

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