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Gender Gap in Life Expectancy and Its Socio-Economic Implications

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Gender Gap in Life Expectancy in Poland

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Abstract

Gender Gap in Life Expectancy and Its Socio-Economic Implications

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Today women live longer than men virtually in every country of the world. Although scientists still struggle to fully explain this disparity, the most prominent sources of this gender inequality are biological and behavioral. From an evolutionary point of view, female longevity was more advantageous for offspring survival. This resulted in a higher frequency of non-fatal diseases among women and in a later onset of fatal conditions. The observed high variation in the longevity gap across countries, however, points towards an important role of social and behavioral arguments. These include higher consumption of alcohol, tobacco, and fats among men as well as a generally riskier behavior. The gender gap in life expectancy often reaches 6-12 percent of the average human lifespan and has remained stubbornly stable in many countries. Lower life expectancy among men is an important social concern on its own and has significant consequences for the well-being of their surviving partners and the economy as a whole. It is an important, yet underdiscussed type of gender inequality.

Gender Gap in Life Expectancy in Poland

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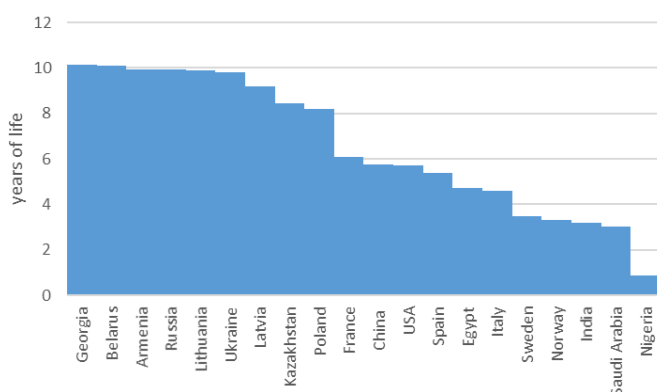
The gender gap in life expectancy in Poland is much wider compared to most of the other members of the European Union, including members with a common socialist past. This wide gap has not changed substantially over the past 34 years, despite the success of the economic transition in Poland and steady growth in the overall life expectancy from 71 years in 1990 to 76 years in 2021. The disparities between men and women in Poland are particularly dramatic when examining the propensity to engage in risk-taking and hazardous activities or taking up addictions. The most serious consequence of these behaviours are excessive numbers of deaths, particularly among men, that could have been prevented. It seems clear that preventive health campaigns need to be improved and extended in Poland and that more needs to be done with a specific focus on gender disparities.



Gender Gap in Life Expectancy and Its Socio-Economic Implications

Today, women on average live longer than men across the globe. Despite the universality of this basic qualitative fact, the gender gap in life expectancy (GGLE) varies a lot across countries (as well as over time) and scientists have only a limited understanding of the causes of this variation (Rochelle et al., 2015). Regardless of the reasons for this discrepancy, it has sizable economic and financial implications. Abnormal male mortality makes a dent in the labour force in nations where GGLE happens to be the highest, while at the same time, large GGLE might contribute to a divergence in male and female discount factors with implications for employment and pension savings. Large discrepancies in life expectancy translate into a higher incidence of widowhood and a longer time in which women live as widows. The gender gap in life expectancy is one of the less frequently discussed dimensions of gender inequality, and while it clearly has negative implications for men, lower male longevity has also substantial negative consequences for women and society as a whole.

Figure A. Gender gap in life expectancy across selected countries

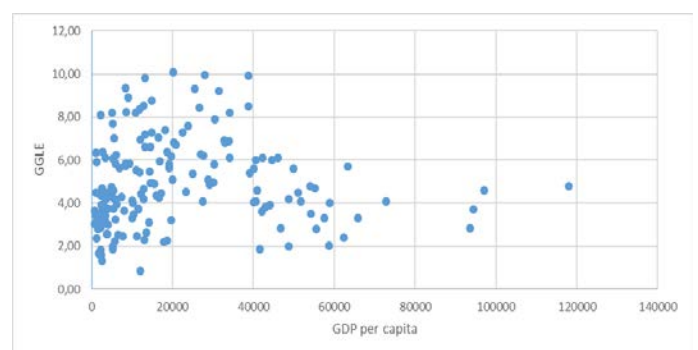


Source: World Bank

The earliest available reliable data on the relative longevity of men and women shows that the gender gap in life expectancy is not a new

phenomenon. In the middle of the 19th century, women in Scandinavian countries outlived men by 3-5 years (Rochelle et al., 2015), and Bavarian nuns enjoyed an additional 1.1 years of life, relative to the monks (Luy, 2003). At the beginning of the 20th century, relative higher female longevity became universal as women started to live longer than men in almost every country (Barford et al., 2006). GGLE appears to be a complex phenomenon with no single factor able to fully explain it. Scientists from various fields such as anthropology, evolutionary biology, genetics, medical science, and economics have made numerous attempts to study the mechanisms behind this gender disparity. Their discoveries typically fall into one of two groups: biological and behavioural. Noteworthy, GGLE seems to be fairly unrelated to the basic economic fundamentals such as GDP per capita which in turn has a strong association with the level of healthcare, overall life expectancy, and human development index (Rochelle et al., 2015). Figure B presents the (lack of) association between GDP per capita and GGLE in a cross-section of countries. The data shows large heterogeneity, especially at low-income levels, and virtually no association from middle-level GDP per capita onwards.

Figure B. Association between gender gap in life expectancy and GDP per capita



Source: World Bank

Biological Factors

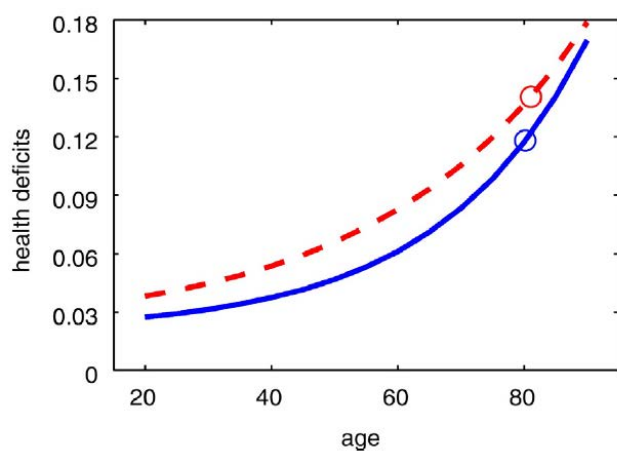
The main intuition behind female superior longevity provided by evolutionary biologists is based on the idea that the offspring's survival rates disproportionately benefited from the presence of



their mothers and grandmothers. The female hormone estrogen is known to lower the risks of cardiovascular disease. Women also have a better immune system which helps them avoid a number of life-threatening diseases, while also making them more likely to suffer from (non-fatal) autoimmune diseases (Schünemann et al., 2017). The basic genetic advantage of females comes from the mere fact of them having two X chromosomes and thus avoiding a number of diseases stemming from Y chromosome defects (Holden, 1987; Austad, 2006; Oksuzyan et al., 2008).

Despite a number of biological factors contributing to female longevity, it is well known that, on average, women have poorer health than men at the same age. This counterintuitive phenomenon is called the morbidity-mortality paradox (Kulminski et al., 2008). Figure C shows the estimated cumulative health deficits for both genders and their average life expectancies in the Canadian population, based on a study by Schünemann et al. (2017). It shows that at any age, women tend to have poorer health yet lower mortality rates than men. This paradox can be explained by two factors: women tend to suffer more from non-fatal diseases, and the onset of fatal diseases occurs later in life for women compared to men.

Figure C. Health deficits and life expectancy for Canadian men and women



Source: Schünemann et al. (2017). Note: Men: solid line; Women: dashed line; Circles: life expectancy at age 20.

Behavioural Factors

Given the large variation in GGLE, biological factors clearly cannot be the only driving force. Worldwide, men are three times more likely to die from road traffic injuries and two times more likely to drown than women (WHO, 2002). According to the World Health Organization (WHO), the average ratio of male-to-female completed suicides among the 183 surveyed countries is 3.78 (WHO, 2024). Schünemann et al. (2017) find that differences in behaviour can explain 3.2 out of 4.6 years of GGLE observed on average in developed countries. Statistics clearly show that men engage in unhealthy behaviours such as smoking and alcohol consumption much more often than women (Rochelle et al., 2015). Men are also more likely to be obese. Alcohol consumption plays a special role among behavioural contributors to the GGLE. A study based on data from 30 European countries found that alcohol consumption accounted for 10 to 20 percent of GGLE in Western Europe and for 20 to 30 percent in Eastern Europe (McCartney et al., 2011). Another group of authors has focused their research on Central and Eastern European countries between 1965 and 2012. They have estimated that throughout that time period between 15 and 19 percent of the GGLE can be attributed to alcohol (Trias-Llimós & Janssen, 2018). On the other hand, tobacco is estimated to be responsible for up to 30 percent and 20 percent of the gender gap in mortality in Eastern Europe and the rest of Europe, respectively (McCartney et al., 2011).

Another factor potentially decreasing male longevity is participation in risk-taking activities stemming from extreme events such as wars and military activities, high-risk jobs, and seemingly unnecessary health-hazardous actions. However, to the best of our knowledge, there is no rigorous research quantifying the contribution of these factors to the reduced male longevity. It is also plausible that the relative importance of these factors varies substantially by country and historical period.



Gender inequality and social gender norms also negatively affect men. Although women suffer from depression more frequently than men (Albert, 2015; Kuehner, 2017), it is men who commit most suicides. One study finds that men with lower masculinity (measured with a range of questions on social norms and gender role orientation) are less likely to suffer from coronary heart disease (Hunt et al., 2007). Finally, evidence shows that men are less likely to utilize medical care when facing the same health conditions as women and that they are also less likely to conduct regular medical check-ups (Trias-Llimós & Janssen, 2018).

It is possible to hypothesize that behavioural factors of premature male deaths may also be seen as biological ones with, for example, risky behaviour being somehow coded in male DNA. But this hypothesis may have only very limited truth to it as we observe how male longevity and GGLE vary between countries and even within countries over relatively short periods of time.

Economic Implications

Premature male mortality decreases the total labour force of one of the world leaders in GGLE, Belarus, by at least 4 percent (author's own calculation, based on WHO data). Similar numbers for other developed nations range from 1 to 3 percent. Premature mortality, on average, costs European countries 1.2 percent of GDP, with 70 percent of these losses attributable to male excess mortality. If male premature mortality could be avoided, Sweden would gain 0.3 percent of GDP, Poland would gain 1.7 percent of GDP, while Latvia and Lithuania – countries with the highest GGLE in the EU – would each gain around 2.3 percent of GDP (Łyszczarz, 2019). Large disparities in the expected longevity also mean that women should anticipate longer post-retirement lives. Combined with the gender employment and pay gap, this implies that either women need to devote a larger percentage of their earnings to retirement savings or retirement systems need to include provisions to secure

material support for surviving spouses. Since in most of the retirement systems the value of pensions is calculated using average, not gender-specific, life expectancy, the ensuing differences may result in a perception that men are not getting their fair share from accumulated contributions.

Policy Recommendations

To successfully limit the extent of the GGLE and to effectively address its consequences, more research is needed in the area of differential gender mortality. In the medical research dimension, it is noteworthy that, historically, women have been under-represented in recruitment into clinical trials, reporting of gender-disaggregated data in research has been low, and a larger amount of research funding has been allocated to “male diseases” (Holdcroft, 2007; Mirin, 2021). At the same time, the missing link research-wise is the peculiar discrepancy between a likely better understanding of male body and health and the poorer utilization of this knowledge.

The existing literature suggests several possible interventions that may substantially reduce premature male mortality. Among the top preventable behavioural factors are smoking and excessive alcohol consumption. Many studies point out substantial country differences in the contribution of these two factors to GGLE (McCartney, 2011), which might indicate that gender differences in alcohol and nicotine abuse may be amplified by the prevailing gender roles in a given society (Wilsnack et al., 2000). Since the other key factors impairing male longevity are stress and risky behaviour, it seems that a broader societal change away from the traditional gender norms is needed. As country differences in GGLE suggest, higher male mortality is mainly driven by behaviours often influenced by societies and policies. This gives hope that higher male mortality could be reduced as we move towards greater gender equality, and give more support to risk-reducing policies.



While the fundamental biological differences contributing to the GGLE cannot be changed, special attention should be devoted to improving healthcare utilization among men and to increasingly including the effects of sex and gender in medical research on health and disease (Holdcoft, 2007; Mirin, 2021; McGregor et al., 2016, Regitz-Zagrosek & Seeland, 2012).

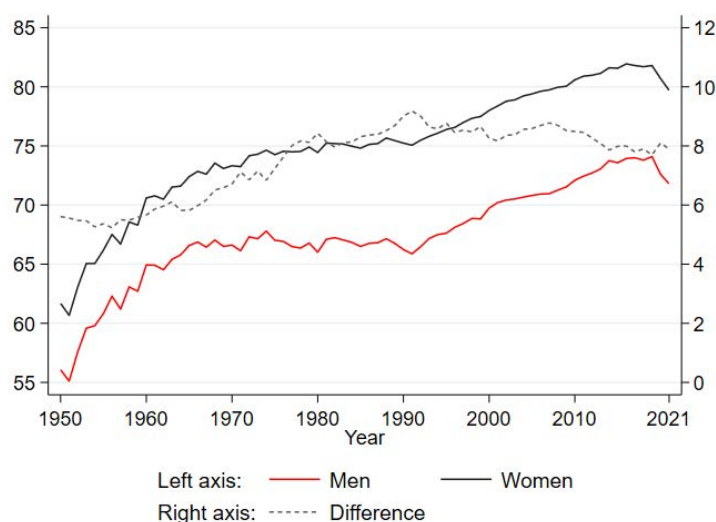
Gender Gap in Life Expectancy in Poland

The long-term time trend in longevity in Poland (Figure 1) is heavily related to historical developments in the country and more broadly in Europe. As all the other European countries, since the early 1950s both men and women in Poland experienced important and similar in magnitude improvements in life expectancy, which at the time equaled 55 and 61 years, respectively. The dynamic of increases in life expectancy however flattened in the middle of the 1960s, when the gap between women and men amounted to 6 years. For men life expectancy stayed essentially flat until the very end of the communist era. Women on the other hand observed a slow extension in life expectancy until the end of the 1970s, which levelled out later on. This meant however that women's advantage over men grew to over 8 years. On top of that, the years of transformation from a centrally planned to a market economy in late 1980s and early 1990s contributed to further growth of the gap, which exceeded 9 years for a short period of time. From mid-1990s life expectancy grew for both men and women with slightly steeper increases among men, up until before the Covid-19 pandemic in 2020. Before the pandemic-related dramatic drop, life expectancy among women amounted to 82 years, for men to 74 years, with the difference between the two persistent at 8 years since 2011. While not the highest among EU members (the highest gap of 10 years was observed in Latvia), the gap in Poland was not only much wider than the EU average (5.5 years), but also in comparison with countries

sharing a similar communist past, like the Czech Republic (where the gap amounted to 6 years).

In this section we examine the main factors responsible for the substantial gender difference in longevity – biological and behavioural ones. Specifically, we examine the potential relevance of factors typically considered in the literature as contributors to the gender gap in longevity, without however claiming causality, given the lack of rigorous empirical analysis. The extent of the gap in Poland in comparison to other countries with similar background calls for a more detailed investigation of risk-taking behaviour and addictions in the Polish context, and we point to this investigation as a promising avenue of future research.

Figure 1. Female and male life expectancy at birth and the gender gap in Poland, 1950-2021



Source: Statistics Poland.

Women Live Longer Though More Often Suffer From Poor Health

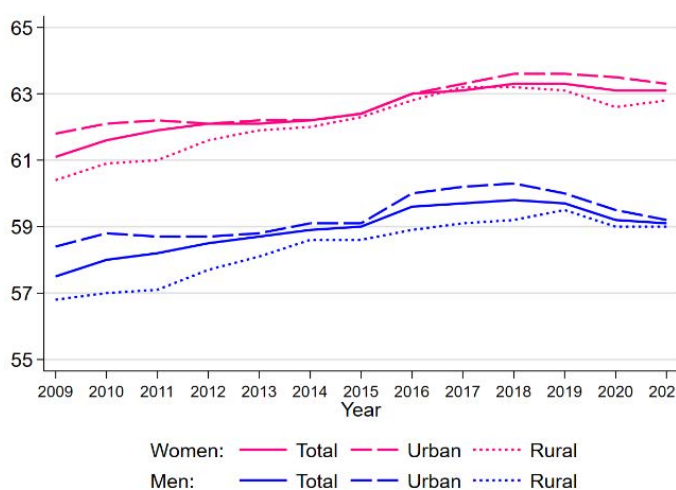
While, for a variety of reasons, women live on average substantially longer than men, they suffer from poor health and disability for a bigger portion of their lives (Case & Paxson 2005; di Lego et al. 2020; Lee et al. 2020; Szukalski 2014; Wójta-Kempa & Wolska-Zogata 2022). In the 2010s in Poland, at the time when the gender gap in life expectancy stood at approximately 8 years, the



gender gap in healthy life years (disability-free life expectancy) was more than 50 percent smaller (compare Figure 1 and Figure 2 – in both cases the solid lines). In 2019, out of the average 82 years of life, women enjoyed 63 years of good health, while men benefitted from 60 healthy years out of 74 in total (on average). Between 2009 and 2019 the trend in healthy life years resembled the one observed in life expectancy, with an increase of 2 more healthy life years for both genders over the decade. A substantial drop in life expectancy caused by the Covid-19 pandemic affected essentially only men, who faced a one year decrease in the average healthy life years. Thus, the gender gap widened in 2021 to 4 years.

The analysis of the time trend shown in Figure 2 also reveals another relevant improvement – an important convergence in the average healthy life years calculated separately for the population living in urban and rural areas in Poland. The one to one-and-a-half-year disparity between the two groups observed in 2009 for both genders had almost vanished by 2019.

Figure 2. Healthy life years among women and men in urban and rural areas in Poland, 2009-2021



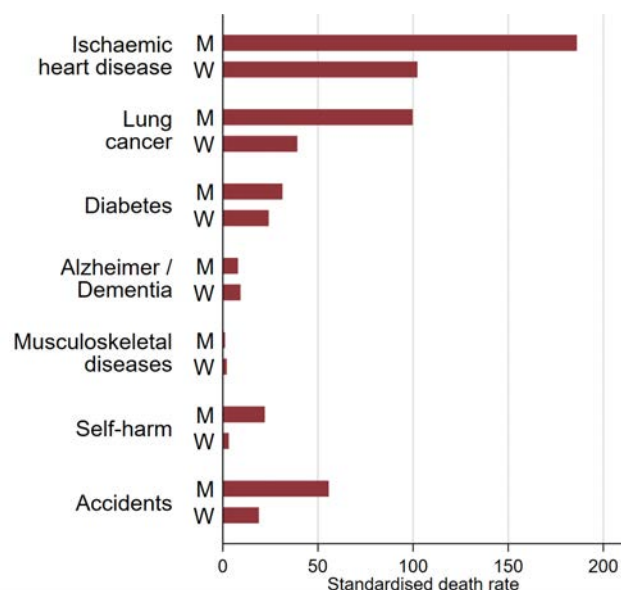
Source: Statistics Poland.

Besides the higher likelihood of disability, women are also more likely to suffer from chronic and long-lasting, but non-mortal diseases. Women on average are more likely to be affected by dementia

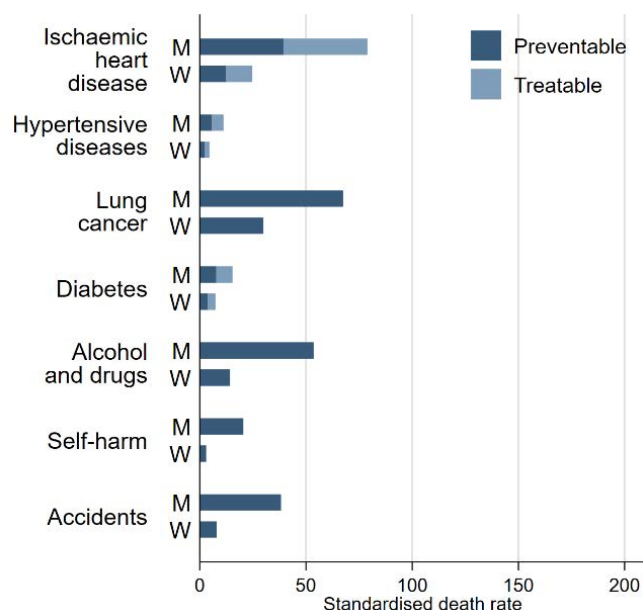
and Alzheimer disease or rheumatoid arthritis and osteoporosis, while malignant neoplasms, strokes, heart attacks and other diseases with fatal consequences are more prevalent among men (Patwardhan et al., 2024). Gender disparities in disease incidence and subsequent mortality are very sharp in Poland. In 2019 the number of deaths caused by heart diseases or lung cancer was significantly higher among men as compared to women, by 82 and 155 percent, respectively (Figure 3a). At the same time, deaths from brain diseases (Alzheimer and other forms of dementia) or musculoskeletal conditions (e.g. rheumatoid arthritis, osteoporosis) were significantly more often reported among women than men. For example, 18 percent more women than men died due to Alzheimer disease or other forms of dementia and 80 percent more women than men died due to musculoskeletal disorders. Overall however, such diseases were accountable only for a small portion of the total mortality in the population: for instance, Alzheimer disease with other forms of dementia caused in total 17.2 deaths per 100 thousand persons, while ischaemic heart disease caused 288.4 deaths.

Figure 3. Gender differences in mortality due to selected death causes in Poland, 2019 (age-standardized death rates per 100 thousand population)

a) Actual mortality



b) Preventable and treatable mortality



Source: Eurostat. Note: ‘M’ – Men; ‘W’ – Women; ‘Lung cancer’ - malignant neoplasm of trachea, bronchus and lung; ‘Alcohol and drugs’ – alcohol or drugs-related disorders and poisonings. Panel b): According to the methodology by Eurostat and OECD only certain causes of death may be avoidable (Eurostat 2024). Based on earlier studies these are allocated to either preventable or treatable category. Some death causes can be successfully avoided by either earlier prevention to reduce underlying risk factors or by application of timely treatment – these are assigned as preventable on the account that treatment would not be required. In case of no strong research evidence as to which category is prevalent, the 50-50 percent allocation is done.

Relevance of Behavioural Determinants of the Gender Gap in Longevity

The biological differences between genders in disease burden only partially explain the gender gap in longevity. Eurostat provides evidence that confirms the contribution of behavioural factors to excess male mortality through a measure of deaths that “could have been avoided”. This covers both “preventable mortality” – i.e. deaths that could have been avoided with adequate public prevention interventions or raising awareness campaigns – and “treatable mortality” – i.e. deaths avoidable with optimal quality healthcare and

timely application of treatment (Eurostat, 2024). In Figure 3b both these types of deaths are presented for Poland in 2019 separately for men and women and for some selected death causes. While for women there was also a non-negligible number of avoidable deaths, this clearly is a much more significant issue among men, regardless of the death cause. We observe as many as 220 percent more avoidable deaths among men compared to women due to heart diseases and 110 percent more such deaths in case of diabetes.

The preventable portion of the Eurostat calculations of avoidable deaths may be attributed to behavioural and lifestyle choices made by individuals over the lifecourse. Men on average have a much higher probability of engaging in risky behaviour or taking up addictions than women (Byrnes et al., 1999), which is clearly reflected in mortality due to accidents or self-harm in Poland. In 2019 almost 3 times more men than women died in accidents and as many as 7 times more men died in intentional self-harm incidents (Figure 3a). Men are also more likely to lead an unhealthy or even harmful lifestyle, which is apparent in much higher numbers of preventable male deaths due to certain causes. For example, excessive alcohol or drug abuse caused over 4 times more deaths, regarded as preventable, among men than among women (Figure 3b). Preventable mortality due to lung cancer, the main cause of which is smoking, was 125 percent higher among men than among women. Looking at statistics related to addictive behaviours, in 2016 in Poland 31 percent of men aged 15+ smoked daily and 54 percent engaged in heavy episodic drinking, while for women these shares were significantly lower – 18 and 18 percent, respectively (WHO, 2018; GIS, 2019). The likelihood of dying due to hypertensive diseases increases greatly with e.g. lifelong stress, and again the number of preventable deaths due to these diseases was 150 percent higher among men. In the case of mortality due to hypertensive disorders, a significant part of avoidable deaths is regarded also as treatable, which points to yet



another important gender difference – men are significantly less likely to use healthcare both for prevention and regular check-ups but also for treatment. According to data from the European Health Interview Survey (EHIS) collected in 2019 in Poland, while 68 percent of women regularly checked blood pressure, 57 percent checked blood sugar and 53 percent checked cholesterol levels, these rates for all three types of check-ups were below 50 percent for men (Statistics Poland, 2023a). Moreover, the latest statistics from 2022 show that on average adult women aged between 18 and 65 years were more likely to seek medical help in the form of both GP and specialist consultations (57 percent of primary care consultations and 61 percent of specialist consultations among adult women, Statistics Poland 2023b).

Conclusions

In this brief we highlight the substantial differences in life expectancy between Polish men and women, investigating the main factors behind these disparities. Given the persistent gap of over 8 years, and the clear differences in the causes of death between men and women in Poland, it seems that there is significant potential to reduce the frequency of premature male mortality due to behavioural factors related to lifestyle and healthcare use.

The most obvious type of policy interventions aimed at extending male life expectancy are large-scale awareness campaigns targeted at the gap in healthcare utilization and at consequences of risk-taking activities or addictions. Crucially, such campaigns should be aimed at reaching certain groups of population (differentiating target audience not only by gender but also by, e.g., age or other sociodemographic characteristics). The efficiency of such policy strategy is not easily quantifiable, though numerous studies and reports highlight the efficacy of well-targeted and carefully implemented past information campaigns, also related to health risks more frequently affecting

men (see Snyder, 2007 or Snyder et al., 2004 for a meta-analyses that collected evidence from a large number of past campaigns). Recent studies highlight the growing trend of shifting social interactions to online spaces, which has created new opportunities for inexpensive, more cost-efficient and better-designed intervention programs (Yom-Tov et al., 2018).

Preventive healthcare interventions has proved very effective by substantially decreasing mortality and incidence rates from certain diseases (e.g. the Global Polio Eradication Initiative, Aylward & Tangermann, 2011). Screening programs has helped reduce the prevalence of breast cancer or newborn conditions (European Commission, 2000; Kanji et al., 2018; Marmot et al., 2013). However, a WHO guide on successful screening programs emphasizes that the lack of evidence-based implementation and evaluation leads to a lack of quality assurance, when the cost and burden of a program for the healthcare system becomes disproportionate as compared to the perceived benefits (World Health Organization, 2020). One of the most obvious areas for improvement in Poland would be changes made to compulsory regular occupational health screenings for employees. While these screenings are required by national employment regulations, the stringency with which they are executed, and, thus, their effectiveness, may certainly be called into question. The check-ups in the case of many occupations are regarded dismissively, and the efficiency or quality of these screenings has not been systematically evaluated. Requiring more extensive medical tests, and following these up with required visits with specialists could be an effective way to at least fill in the awareness gap in terms of health issues between men and women.

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