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Women's health in times of COVID-19 pandemic. Do sex and gender matter?

Abstract

The COVID-19 epidemic has negatively affected all spheres of life, leading to the deterioration of health and quality of life. Although it has affected both men and women, it has had an extraordinary impact on the latter, exposing and exacerbating the existing health inequalities among those groups.

There is increasing evidence that both sex and gender-related factors make women more prone to the harmful effects of SARS-CoV-2. Therefore, it is expected that the crisis caused by coronavirus will have long-term severe medical, social, and economic consequences in this population. This paper aimed to investigate the key factors contributing to the different outcomes of COVID-19 in men and women and present multi-dimensional effects of coronavirus pandemic from the perspective of women.

Sex and gender differences must not be ignored in analyzing the impact of COVID-19. Sex/gender-oriented approach should be implemented in all public health actions: from collecting sex-disaggregated data to designing tailored repair post-COVID policies.

Keywords: COVID-19, women, sex, gender, health inequalities.

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INTRODUCTION

The outbreak of the COVID-19 pandemic [Coronavirus Disease 2019], a contagious disease caused by SARS-CoV-2, has deeply disturbed the existing modus operandi of the world. COVID-19 has become a global threat to public health all over the world. Its medical, social and economic implications have led to a global crisis on an unprecedented scale in the modern world. As the literature review shows, although the Coronavirus pandemic has had a negative impact on health and many aspects of everyday life of the whole population, it has hit women particularly hard [1-4]. SARS-CoV-2 has clearly exposed and deepened the existing social inequalities (also those related to general health) between men and women. These findings are gaining more and more weight in the reports and guidelines of the leading health organisations, among others the World Health Organization (WHO), the United Nations (UN) and the European Commission. Both the disease itself and its consequences – medical, social, economic ones – are closely related to sex and gender [3,5-8].

There are many reasons for this, but in order to better understand the complexity of the problem, it would be first worth understanding the key terminology pertaining to the concepts of sex and gender.

Gender vs. sex

Sex and gender tend to be some of the key terms that we use in our everyday life; we perceive the reality through the sex/gender lenses – consciously or subconsciously – almost from the earliest days of our lives [9]. The concepts also typically determine our ability to categorize and perceive ourselves as male or female [10]. Sex is closely related to the anatomical and physiological differences between female and male bodies, and denotes features determined by biology. Factors influencing sex differentiation include, among others, genetic (chromosomal) sex

– related to the 46th pair of chromosomes determining sex at the time of fertilization (XX for women and XY for men), gonadal (related to the existence of different sex glands and hormones produced by them), phenotypic sex (determined on the basis of secondary and tertiary sexual characteristics), as well as brain sex (related to, among others, different distribution of emotional, linguistic and spatial brain centres in women and men) [11].

Gender, on the other hand, refers to certain patterns of behaviour, attitudes and roles (femininity vs. masculinity) imposed by a given society. It relates to elements that are variable and dependent on the socio-cultural and historical context in which a person lives [12]. It is "a set of attributes and behaviours useful for a woman or a man", shaped by the broadly understood culture (which also takes into account political institutions and legal norms in a given society) [13]. Gender is also influenced by individual's education and their socio-economic status [12].

In the context of COVID-19, both sex and gender play an important role [3]. The research on this subject over the last year has confirmed the existence of a relationship between these variables. However, despite evidence-based observations,

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this knowledge has not yet found wider application in practice, whether in designing or carrying out preventive or therapeutic activities.

COVID-19 vs. sex

The male sex is associated with a two times higher risk of a severe course of the infection caused by SARS-CoV-2 [14]. Men are slightly more likely than women to contract COVID-19, and they are at a much higher risk of death (in Western Europe approx. 70% of all the deaths involved male patients) [15,16]. Men are almost three times more frequently hospitalized in intensive care units [17]. They are also more likely to experience complications after the infection. Polish epidemiological data also confirm this trend [18,19]. This phenomenon is partly related to the different health profile of men: more frequent occurrence of comorbidities in this group (including hypertension, obesity and diabetes, which are the three main medical conditions associated with the severe course of COVID-19), as well as a higher proportion of risky behaviours in this population (alcohol abuse or smoking) [16,20-23].

Biological sex is also associated with varied susceptibility to infection, higher among men [5,22]. Research has shown that sex-related factors can determine the body's response to the infection or its course. For example, in case of the SARS-CoV-2 infection in men, the level of the ACE2 protein – angiotensin-converting enzyme (ACE2), which is the main receptor, the so-called "entry point" for the new coronavirus – is higher than in women [24]. The female body, on the other hand, reacts to the inflammation and viral infections faster, stronger and more effectively. It also develops a humoral immune response faster, and produces more antibodies (as a result of infection or vaccination) [6,25]. These observations come from the first experiences with SARS-CoV-2 [3,26]. The reasons for the different male and female body reactions can be seen, among others, in hormonal (the protective effect of oestrogen and progesterone) and genetic (chromosomal) differences [3,27].

On the other hand, biological differences may be detrimental to women in the context of the treatment used: according to the research, side effects of drugs are more frequently observed in women, and this might also be the case for the COVID-19 treatment [3, 28]. Preliminary data also indicate that women are more likely to experience the long-term effects of a past coronavirus infection, the so-called "Long-COVID" [6,29]. However, information on this subject is still limited – most countries do not break down epidemiological data by sex (in terms of, for example, recipients of diagnostic tests, the severity of the clinical course of the SARS-CoV-2 infection, hospitalization rate, hospital discharge rate, number of convalescents, etc). Also, the majority of research on new drugs in COVID-19 therapy does not take into account the sex factor as a significant variable in the inclusion criteria of conducted analyses [3,6]. Scientists, clinicians and health policy makers are calling for an urgent global change in this regard – adopting a sex- based approach seems to be crucial in developing an effective COVID-19 management strategy and post-COVID remedial action [1,3,5,6].

COVID-19 vs. gender

The most frequently mentioned gender-related factors that may affect the epidemiology of COVID-19 in a given population include: exposure to infection (associated with socio-behavioural factors), access to tests and personal protective equipment, compliance with sanitary and epidemic recommendations and principles of prevention, as well as participation of representatives of male/female population in the clinical trials of SARS-CoV-2 treatments [3,6,30]. Among the gender-related effects of the coronavirus, health, social and economic impacts are cited. It is predicted that in the long term, the effects of the COVID-19 epidemic will be particularly hard for women [3-8,16,31].

As previously mentioned, men are more likely to die from the SARS-CoV-2 infection [15,16]. However, the risk of death is not determined solely by sex-related factors. The first studies on the potential link between gender and COVID-19 infection found significant differences in the situation of men and women. They were visible both in the perception of the risk associated with SARS-CoV-2 (women significantly more often perceived COVID-19 as a serious health threat), the degree of exposure to the risk, and in the approach to sanitary and epidemic recommendations [30,32]. The results of the research conducted by Galasso in 8 OECD countries during the COVID epidemic demonstrated that women used protective masks more often, and were more likely to practise hand washing and disinfection. These observations concerned both women in the general population and female healthcare workers [30]. In addition, it was also noticed that women were significantly better at following other public health recommendations, including observing social distance, staying at home or avoiding crowded places [30,32].

Moreover, gender-related differences were noticeable in the effects of public health interventions implemented to contain the COVID-19 epidemic. Although the implemented

recommendations and restrictions were more readily accepted and observed by women, their negative medical and social implications became particularly visible in this group [8,33,34]. As early as 2020 the United Nations Population Fund [UNPFA] described the global consequences of COVID-19 for girls and women as "catastrophic" [35].

Access to healthcare

In March 2020, the World Health Organization called in its guidelines on all countries to continue providing necessary healthcare services in the time of the pandemic [35]. The document also contained recommendations on reproductive health and care for pregnant women and children. However, the dramatic epidemic situation has forced many countries to focus their attention and resources (human, infrastructure and financial) on the fight against COVID-19. A number of obstetrics and gynaecology centres in the world have been transformed into the so- called Covid centres [36]. In several countries, due to the difficult epidemic situation and overstretched healthcare systems, some of the sexual or reproductive health services were deemed redundant, not falling under the definition of the essential services adopted by the WHO. Hence, they were suspended or considerably limited [37].

UNPFA predicted in 2020, that the global pandemic crisis could contribute to over 7 million unwanted pregnancies, thousands of deaths due to poorly performed abortions, and thousands of peri- and postpartum complications related to the lack of proper healthcare [37]. Millions of women in need around the world: pregnant, miscarrying, giving birth, sexually harassed and raped were deprived of any help and medical care. According to the forecasts of the Marie Stopes International Foundation, which focuses on women's health in 37 countries,

the limited access to healthcare caused by the concentration of resources on the fight against COVID- 19, will contribute to over 11,000 pregnancy-related deaths [37].

An additional factor influencing the access of many women to healthcare has been a sudden deterioration of living standards associated with the pandemic. Although the change in the professional situation and earning potential has affected representatives of both genders, it has had a particularly strong impact on the situation of women, affecting several aspects of their daily functioning – including the approach to their own health. For example, in Southern Africa, a worsening financial situation has contributed directly to a significant decrease of interest of women in preventive and general health check services [38]. Also, many women, due to the new, additional duties, like round-the-clock care for their families, have lost the opportunity to take care of their own health in the same way as they did before the pandemic [37]. The consequences of this negligence caused by the current circumstances, may turn out to be long-term.

The impact of COVID-19 on the financial position and general situation of women in the labour market

According to the data published by the United Nations Women (UN Women), every crisis is closely linked to gender inequality – and COVID-19 is no different [2,34]. The SARS-CoV-2 epidemic has exposed and markedly deepened the existing gender inequalities in the labour market. Women all over the world tend to earn less than men; therefore, they are also less able to accumulate savings and gain financial security. According to the findings of UN Women, approx. 750 million women (58%) work in the informal sector (over 30% in the EU) and over 510 million (40% of women in employment) are employed in the industries most affected by the pandemic (hospitality, gastronomy and trade) [39]. According to the data of the European Parliament, 84% of working women aged 15-64 are employed in the service sector [40]. Sanitary and epidemic restrictions introduced in most countries did not take into account the potential effects of these actions in the context of sex/gender. Traditionally, in most cultures around the world, women bear the burden of caring for children or elderly/ill family members. According to the data published by UN Women, even before the pandemic women were three times more likely to do unpaid work (performing household chores or caring for family members) [78]. School- and kindergarten- closures, as well as the restrictions introduced to protect the elderly population, imposed additional caregiving obligations on women. A number of women were forced to reduce working hours or resign from their employment, either short- or long-term [8, 34]. In many instances these decisions resulted in the loss or considerable reduction of income and hence, worsening of the general financial situation. In effect, many women may also expect lower retirement benefits in the future. As many as 54% employees who lost their jobs due to COVID-19 were women [42].

It is also worth mentioning that according to the global data, approx. 70% of the healthcare professionals worldwide (and 76% of the 49 million healthcare workers in the EU) who are often on the front lines of the Covid-19 pandemic are women [5,34,43,44]. According to the data collected by the Polish Supreme Medical Chamber, in Poland in 2021 female doctors constituted 58.5% of their professional group (among practicing doctors), while female dentists – 75.1% [45]. Nursing and midwifery occupations in Poland are also strongly dominated by women. In 2020 female nurses accounted for 97.5% of registered employees in this sector, and midwives – 99.8% [46]. Women working in the healthcare sector are particularly at risk of contracting SARS-CoV-2. In Spain and Italy, for example, 72% and 66% of female healthcare workforce, respectively, have been infected with the coronavirus (in comparison with 28% of Spanish and 34% of Italian male healthcare professionals) [5,34]. We should not forget that many of these women are also mothers or caregivers to their older parents, and therefore have had to reconcile new challenges at work, often under extremely hard conditions and high levels of stress, with new, extra family responsibilities brought about by the epidemic [6].

Violence against women

Violence against women has become another major sex/gender-related challenge caused by the pandemic, considerably affecting health and quality of life of women. Numerous international and national organisations – among others, the World Health Organization and the United Nations, point to a dramatic increase in domestic violence during the pandemic [4]. History shows that each crisis, whether related to an epidemic, natural catastrophe or war, leads to an increase in pathological behaviours at home [5,6,16,34,47]. It has not been different during the COVID-19 pandemic. Lockdowns and the requirement to stay at home, long-term stress related to the epidemic situation, and – not infrequently – a sudden deterioration of the financial means, have all contributed to the growing frustration, stress and anxiety, as well as greater consumption of psychoactive substances, which, in effect, have led to increased levels of aggression. Women and children have become a particularly vulnerable group exposed to its various manifestations such as physical, mental, sexual (also cyber-sexual) or economic violence [6].

At the same time, due to the epidemic restrictions, access to psychological, medical, social and legal support, as well as the possibility to obtain shelter, have been severely limited. In Hubei Province, in China, domestic violence interventions increased threefold in February 2020 alone. In the United Kingdom within 2 weeks at the end of March/at the beginning of April 2020, domestic female homicides doubled, compared to the annual average in the last 10 years [48]. According to the data published in the medical journal Lancet, domestic violence increased by 30% during the first week of the official lockdown in France [4]. In 2020, during the lockdown in Colombia, the violent incidents increased by 175%, compared to the previous year [37].

Violence usually has long-term consequences: the survivors have an increased risk of many health disorders, both somatic and mental: depression, anxiety or post-traumatic stress disorder [48].

Considering the scale of violence against women during the epidemic, in the coming months we can expect a dramatic increase in women suffering from various types of mental disorders and in need of professional help and support.

The impact of the COVID-19 outbreak on women's mental health

Both sex and gender play an important role in the perception of the threat posed by the COVID-19 infection. They also impact the way in which individuals cope with the new reality,

restricted by the sanitary and epidemic requirements. It is well known that men and women react differently to difficult experiences. These universal observations have been confirmed by several studies conducted during the SARS-CoV-2 epidemic. Results indicate that women are more prone to anxiety, fear, depression and acute stress disorder and that their experience of trauma more often turns into distress [49,50].

The first study on gender-dependent emotional responses to the SARS-CoV-2 epidemic was conducted by Fernandez-Garcia et al. The research took place during the peak of the first wave in Spain (one of the countries most affected by COVID-19 in Europe). The study revealed that levels of anxiety, depression and perceived acute stress disorder were significantly higher among women [49]. These findings are confirmed by similar studies conducted in China and other European countries [47,51]. The deterioration of mental health was related to the disease itself (fear of the coronavirus, the consequences of the disease) and the epidemic (sanitary and epidemic restrictions, isolation, the need to reorganise everyday life, worsening of the financial situation, etc.).

Moreover, according to the literature review, during the pandemic women have been more likely to report a deterioration in sleep quality and insomnia [52]. These symptoms were also the most important predictors of anxiety, depression and trauma. Researchers have also observed the link between worsening of symptoms and the duration of social isolation [52].

It is worth mentioning that among people who tested positive for the SARS-CoV-2 infection, women were more likely to report symptoms of uncontrolled stress and depression [8].

CONCLUSION

In the light of the above facts, the need to adopt a sex/gender-specific perspective when assessing the effects of the COVID-19 pandemic seems undisputable. The complexity of the sex/gender-related factors that may determine the risk of contracting SARS-CoV-2, the clinical course of the disease, prognosis or the effectiveness of treatment requires a knowledge-based approach – possible only if the data is disaggregated by sex/gender and if this variable is taken into account in studies and research.

The COVID-19 epidemic has affected almost everyone, regardless of sex/gender, but it has had a particularly severe impact on women. Its health, social and economic consequences in this population may be – and most probably will be – long-term. In the time of healthcare resources spread thin by the pandemic, we have to take into account the specificity of the female population, its problems and needs, while planning any remedial actions. The development of such sex/gender-oriented recovery policies may turn out to be not only the most optimal in terms of merit, but also the most cost-effective.

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