

Sex and gender sensitive medicine across the life span/Expert

Childhood and youth

Fundamental differences exist between girls and boys in areas such as physiology, hormones, development and the use of the health care system. Although enormously relevant, these differences have often been ignored in both theory and practice. In recent years, the focus on health-related differences between boys and girls has grown and new knowledge is becoming increasingly available.^[1]

Biological development

By the end of the sixth week of pregnancy, the gonads and genitalia of both sexes are morphologically identical. Only then do the SRY genes (sex-determining region on the Y chromosome) and the SOX9 genes on chromosome 17 become active. Together they then ensure the development of a male embryo. In the absence of the SRY protein, ovaries develop instead of testes (see also: Chromosomal basis: XX and XY). Under the influence of testosterone, sex specific brain development already begins in the foetus. For example, the right hemisphere of the brain in boys develops better than the left. On average, boys develop more slowly than girls. The male brain is fully developed at the age of 25, whereas this occurs about two years earlier in women. The male immune system is somewhat weaker, which means that boys on average fall ill more often than girls, especially in the first two years of life. Physical growth is slower and more irregular in boys than in girls. Boys often have growth spurts, while girls grow more steadily. Similarly, emotional and cognitive development is slower and more irregular in boys than in girls. In terms of language development, boys are 12 to 18 months behind girls. In addition, the more highly developed frontal cortex in girls allows for better impulse control. Girls enter puberty between the ages of nine and 14, while boys enter puberty between the ages of ten and 17. Sexual development not only leads to reproductive development and fertility, but above all to radical physical changes, which have profound physical and psychosocial effects.

Research has indicated that brain development of boys and girls already differs prenatally and that biological sex-related factors therefore have an enormous influence. Nevertheless, brain development is significantly influenced and shaped by learning processes during upbringing. Thus, the possibility cannot be excluded that gender stereotypical treatment of children influences brain development to such an extent that differences in brain development in a sex-dependent manner can arise.^[2]

Physical complaints

Physical symptoms are the main reason for consulting a female physician, especially in girls. Health problems include tension headaches, migraines, stomach problems, constipation and exhaustion. The perception of their children's health worsens as children grow older: In 96 percent of those under 12 years of age, parents or caregivers rate the child's health as good, 92 percent of those aged 12 to 18 (adolescents) and 90 percent of those aged 18 to 25 (young adults) report good health. Girls rate their health slightly less positively than boys, although this difference increases with age.^[3]

Psychosocial problems

According to a Dutch study, young people are generally happy^[4], although primary school pupils are on average happier than secondary school pupils. During adolescence more girls than boys are unhappy.^[5] Behavioral problems manifest themselves differently in boys than in girls. Boys are more likely to behave in a destructive way towards their environment: they are more impulsive and more vocal. Girls tend to direct their problems primarily against themselves. They become more frequently depressed, develop eating disorders or show self-harming behavior. Girls with mental health problems are more likely to seek professional help (usually from their family physician) than boys with mental health problems.^[6]

30 percent of boys over 16 years old drink more than ten alcoholic beverages one day per week, but only nine percent of girls show such drinking behavior. Alcohol consumption among girls is currently on the rise, although they are less able to cope with the effects of consumption. The number of girls aged 15 to 19 admitted inpatient for alcohol poisoning has increased by 101 percent between 2000 and 2010. For boys, this increase was 66 percent.^[7] Problematic gambling behavior occurs mainly among boys (seven percent compared to 0.9 percent among girls). Problematic use of social media, on the other hand, is more common among girls (8.6 percent compared to 3.7 percent among boys).^[8] Problematic media use correlates with poor school performance, reduced social interaction (not including interaction via the Internet) and depressive mood.^[9]

The prevalence of ADHD and autism is higher in boys than in girls and because of this, these disorders are more often overlooked in girls. Autism spectrum disorder manifests itself differently between the sexes. Girls often use compensatory mechanisms for social interaction and communication. Behavioral observation then only provides insufficient insight into the underlying problem. As a result, parents, teachers and often psychologists and psychiatrists are less likely to detect mild symptoms of autism spectrum disorder in girls. Boys with ADHD show impulsive and "difficult" behavior. Girls are considered overactive and over talkative, but not necessarily "difficult", so professional help will not necessarily be sought.^[10]

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Growing up with only one biological parent increases the risk of sexual abuse in boys and girls. Girls are generally more often affected than boys (especially if they live with a stepfather). In addition, sexual abuse occurs more frequently in families where the mother is physically or emotionally absent (e.g. due to mental or physical illness).^[11]

Adulthood and social contribution

Our adult years are characterized by social contribution. Besides starting a family (in all possible variations), most people are involved in paid and/or voluntary work. There is a connection between social integration and health. Work (including voluntary work) generally has a positive effect on health. Nevertheless, work-related illnesses can arise or existing illnesses can become worse due to poor working conditions. Conversely, individual health has an influence on participation in the labor market (and on other forms of social interaction). ^[12]

Profession and sex

Certain professions are significantly more often occupied by men, while others are typically occupied by women. Men are more likely to work in sectors that involve heavy physical labor (e.g. construction). But women also work in occupations that involve heavy physical labor (e.g. health care or cleaning). ^[13]

Overall, it can be observed that men tend to work in physically demanding jobs and women in emotionally demanding jobs. In addition, women are more likely to work in occupations in which they have little say (in terms of both content and time). ^[14] More women than men work in low-paid areas and are also often paid less than men for the same work. Significantly more women become victims of sexual harassment or sexual abuse during working hours. Women are more often involved in voluntary work and providing care informally. They care more than men for their children, relatives, friends or neighbors. ^[15]

Job and health

The fact that women are more likely to suffer from health restrictions and have lower subjective health values negatively influences their participation in the workforce and other social areas. Research on health and employment has found that the negative influence of poor health is particularly high among women of Turkish and Moroccan origin. Poor health can have a negative influence on employment in different ways: A person may be completely excluded from employment (incapacity to work), often be on sick leave or receive early retirement. Many women work part-time, with poor health being the main cause, especially among older women. Research has shown that older, well-educated women (in all areas of work) are particularly likely to report fatigue and exhaustion with regard to their work. Women who work less than 25 hours a week report these problems less frequently than women who work more than 25 hours or full-time. It can be concluded that women work part-time in order to limit the overall burden (in terms of work, childcare, household and caring for others) to protect their health. Ongoing changes in the care system may lead to an increased need for informal caregivers and thus increase the pressure on women in particular, who are much more likely to take on this role. Although part-time work is often explained by maternity leave, this work profile currently appears to be the norm among all women. ^[16]

In general, women should be better represented in the workplace (especially in management positions). Presently women are still more affected than men by the double burden of family and work. In addition, they are absent from the workforce more often and for longer periods of time due to childcare than fathers. Women are more often on sick leave than men, with the difference being greatest between the ages of 25 and 35. This is mainly due to absence related to pregnancy or

complications during childbirth. The higher rate of sick days among women (regardless of age) is also explained by the fact that a relatively high proportion of women work in the educational and health sector. The average number of sick days is relatively high here due to occupational factors.^[16] The prevalence of mental illnesses such as anxiety disorders and depression is higher among women than among men and is often a reason for sick leave.^[17] Since women were able to integrate into the workforce relatively late (in the 1980s), the current average age of working women is lower than that of men.^[13] It can be assumed that the number of sick days among women will continue to rise in the coming years as the average age increases.^[17]

Geriatric Medicine

One important challenge for the health care system is "healthy ageing". Although women live longer on average, they spend as many years in good health as men (see also: life expectancy). This means that during the years that women live longer, they often suffer from chronic diseases and report a low disease-related quality of life with significant functional limitations. An enormous proportion of the health budget is spent on chronic diseases in older women. In later adulthood, men and women differ not only in the type of their diseases but also in the number of health restrictions. Women are significantly more likely to suffer from co-morbidity (simultaneous occurrence of several diseases).^[18] However, even if women and men suffer from the same number of health restrictions, the complaints that women describe appear to be more severe. There may indeed be an underlying cause for this, and/or other factors (for example, gender) may influence perceptions of health and disease.^[19] There is little research evidence on this to date.

There is evidence of a higher proportion of women with somatic illnesses in the over-75 age group. Among other things, this can be explained by higher life expectancy among women. If we look at the prevalence figures for chronic diseases in this age group (≥ 75 years), 41 percent of men and 53 percent of women are chronically ill. The older a person is, the more likely he or she is to report one or more chronic conditions. Disorders resulting in the death of women on average more frequently than men are psychiatric and behavioral disorders (especially dementia), diseases of the skin and subcutaneous tissue (e.g. decubitus) and diseases of the muscles and joints (osteoporosis, osteoarthritis and arthritis).^[16] The post-menopausal estrogen deficit is the most common cause of health problems in women, such as loss of bone density, cardiovascular disease (including hemorrhages of the brain), cognitive disorders, Alzheimer's dementia, depression and incontinence.^[20] Since the entire female body system is fundamentally different from that of men, women- and male-specific ageing processes should be presumed. For instance, female ovarian function is not limited to reproductive capacity, but plays a key role in the overall state of health and well-being throughout life, from embryonic development to death.^[21]

While some 50 years ago the focus of medical studies was primarily on infectious diseases, the focus of research in recent decades has shifted away from acute diseases and towards diseases of a chronic nature. Due to considerable progress in basic medical care, the importance of infectious diseases in terms of their high mortality rate has decreased enormously. Simultaneously with this development, the prevalence of chronic diseases is increasingly rising due to changes in global age demographics and thus the demand for long-term treatment methods with multifactorial therapy approaches.^[22] Dementia in particular is a growing problem of the older generation. Various study results show a similar prevalence rate for men and women in this regard. Nevertheless, hereditary factors seem to play a major role, especially in dementia in men, whereas in women the estrogen level is an important factor. Men with dementia have a shorter life span and a higher mortality rate than women. Poverty is a key risk factor for health problems, especially among older women. Women receive lower pensions. In particular, women with a migration background often do not receive a company pension and are not fully entitled to a state pension. They are then dependent on social welfare. This often overlooked financial problem is exacerbated by the fact that more and more

migrants suffer from dementia and are dependent on continuous support.^[23]

Life expectancy

Worldwide, men and women differ in terms of life expectancy. In 186 of 191 countries, men die earlier than women. Although average life expectancy is increasing every year, women still live longer than men. Undoubtedly, the causes of this sexual dimorphism are multifactorial and have already been studied from both a sociological and biological perspective. The difference in life expectancy varies considerably. In most industrialized countries, women have six to eight years longer life expectancy than men. In Sweden, however, this average difference is only four years. By contrast, men in Russia live on average 13 years shorter than women. A decisive role is attributed to cultural differences, which have a significant influence on gender roles and can increase or decrease life expectancy (in Russia, excessive alcohol consumption is part of the stereotypically male role).^[24] However, biological factors (genes and sex hormones) also prevent male and female life expectancy from matching.^[25]

Concrete causes for the higher average life expectancy of women are being explored in numerous studies. Many of these explanations relate to health behavior (e.g. nicotine and alcohol consumption), a riskier lifestyle, more physically hazardous work, the level of stress and violence on the part of men. In the course of female empowerment, women's lifestyles have changed (e.g. smoking habits and more hazardous and stressful work) and thus differences in life expectancy should at least partially disappear. In addition to external social factors, however, sex differences play an important role too: both, genetic factors and sex hormones seem to be involved. A key genetic factor is the inactivation of one of the two X chromosomes in the female cells. As a positive outcome, dysfunctional genes may lead to repression and favorable genes to expression. With regard to the sex hormones, the estrogen level seems to keep the female body in a better condition and, among other things, lead to a longer functioning of the immune system. Sex hormones can influence this in two ways: Through structural effects that occur during critical periods in the development of the human body (such as fetal development, early childhood and puberty). There are also temporal effects, which occur due to an increase in hormonal levels and decrease as hormone levels decrease. These hormonal differences ultimately lead to a more favorable outcome for women in areas such as immune function, oxidative stress response and antioxidant status, lipoprotein metabolism, fat storage and stress response via the HPA (hypothalamic-pituitary-adrenal cortex) axis. A combination of these factors can then form a determinant for the higher life expectancy of women. An alignment of life expectancy between men and women cannot be presumed.^[26] Rather, an increasing feminization of the ageing population can be expected, which will have far-reaching consequences for society.^[27]

Literature

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