

8. Summary

The proportion of babies, which are born preterm, is highest in Ida-Viru County among all the Estonian counties. There the prevalence reached an average of 5.9% in the period between 2004 and 2018. In the same period, an average total of 4.9% of all births in Estonia were preterm, with the percentage of preterm births being at its lowest in Lääne County (which had a figure of 4.2%). Health inequality levels also reflected in the form of lower birth weights, being 125g lower in Ida-Viru County in comparison to the average figures for the other Estonian regions. The same region also exhibited a statistically significant percentage of babies which had a low birth weight, defined as birth weight less than 2500g.

The air quality in Ida-Viru County has improved across the years, with limit values which have been established for air pollution being exceeded less frequently. And yet, despite these encouraging figures, a quarter of the population still see air pollution within their place of residence being rated as posing a high or very high risk to their children's health. As scientific research indicates health effect of particulate matter (PM₁₀) and fine particulate matter (PM_{2.5}) at concentrations below limit established by the European Union and which have been adopted into Estonian legislation, the task of reducing pollution levels remains a very important issue. Of the aforementioned pollutants, the impact which can be caused by the oil shale industry is characterised best in Ida-Viru County by exposure to PM_{2.5}.

Of the socio-demographic indicators which have been studied, birth effects suffered the greatest level of impact due to the age of the mother: the older the mother at the time of childbirth, the higher is the risk of a preterm birth. Birth weight and time also appear to depend upon the mother's level of education (the risk of a premature birth is higher in the case of the mother having attained a lower level of education), the mother's nationality (the risk is again higher in the case of non-Estonians), and the mother's profession (the risk is lower in working mothers). Risk factors and complications during pregnancy also appear to have had a negative effect on birth indicators. Those risk factors and complications are discussed below.

The analysis showed that exposure PM_{2.5} during the first trimester increased the risk of a preterm birth, while exposure in the third trimester increased the risk of a low birth weight. In terms of the latter indicator, though, the impact on birth weight was only evident in Ida-Viru County. Other pollutants, which were also studied, had no significant effect (such as PM₁₀ or NO₂), or had a less significant effect (such as B(a)P), or provided controversial results (such as for benzene). The risk of a preterm birth – as well as of a low birth weight – were also increased by living within a ten-kilometre radius of the oil shale industry. Moreover, the study showed indicate that the closer the mother's residence to the oil shale industry (equal to or less than 3km, 5km, or 10km), the poorer are the birth indicators.

As preterm born babies and/or babies with a low birth weight are at a higher level of risk in terms of developing various chronic cardiovascular or respiratory diseases, diabetes, or developmental or other disorders, it is extremely important to reduce the number of such babies from the perspective of public health indicators. As significant drivers for such births include air pollution, as well as various socio-demographic factors. Thus it is equally important to limit pollutant emissions and to improve the living environment in Ida-Viru County as a whole. In order to reduce pollutant emissions, the oil shale companies should use the best available technology (BAT) to achieve their goals, as the risk of preterm births and low birth weights has been shown to be higher within the vicinity of an operational oil shale industry site. Furthermore, levels of awareness in local people need to be raised within the region which is suffering most from such levels of impact by air pollution on birth

indicators, as it also does in gynaecologists and midwives. We believe that improving the health of the people of Ida-Viru County should be an essential part of fair transition with-in the European Green Deal, as health inequality levels here are significant in the area and begin already before birth.