

predisposes mothers to an increased risk of preeclampsia, recurrent miscarriage and placental abruption. This may lead to preterm labor. Mutations in the gene encoding methyltetrahydrofolate reductase causes elevated levels of homocystine in mothers.

Interventions:

Wang et al.²⁵² have proposed a study of 500 preterm infants, their parents and 500 control maternal age-matched term infants. The plan is to examine candidate genes responsible for decidual chorioamniotic inflammation, maternal and fetal stress, uteroplacental vascular lesions and susceptibility to environmental toxins.

Conclusion:

Genetic factors may be playing a role in preterm/LBW births. Further research is needed.

H. Multiple births:

Biological plausibility:

The biological mechanism of multiple births causing preterm labor is probably due to stretching of the myometrium leading to initiation of labor.

Epidemiological association:

A rise in the frequency of multiple birth and preterm births was noticed in Canada in the years 1992 - 94 compared to 1981 - 83.²⁰

Since the birth of the first baby via invitro fertilization in 1978²⁵³ there has been a steady increase in the number of infants born through assisted reproductive technologies. The success rate with these techniques has increased in the last decade.²⁵⁴ A similar increase in the rates of multiple births has been observed in the US.^{255;256}

Schieve et al²⁵⁷ studied 42,463 infants born in the US between 1996 and 1997 by assisted reproductive technology compared to the remaining 3,389,098 infants born during that period. Among the singletons born after 37 weeks gestation there was an increased risk of LBW (risk ratio 2.6, 95% CI 2.4, 2.7). There was an increased risk of multiple gestation following the use of artificial reproductive technology but its use was not associated with further increase in the risk of LBW in multiple births. The total percentage of infants born with assisted reproductive technologies was 0.6%. This constituted 3.5% of LBW infants born to mothers > 20 years old in 1997.

Tough et al²⁵⁴ reported on the in vitro fertilization (IVF) component of the rise in preterm births and LBW in Alberta, Canada. IVF accounted for 17.8% of the rise in LBW and 10.5% of the rise in preterm birth rates during the period 1994 - 96. There was an increased risk of LBW (RR 4.89, 95% CI 4.16, 5.74) and preterm birth (RR 5.36, 95% CI 4.64, 6.18) for IVF births compared to non-IVF births.

National perspectives:

Millar et al²⁵⁸ reported on Canadian trends and patterns in multiple births from 1974 to 1990. A steady increase was observed in the number of twin births (from 904.5 to 1037.2 per 100,000 confinements in 1995) and triplet births and higher order births (from 8.3 to 21.7 per 100,000 confinements between 1974 and 1990). The increase was more pronounced in women over 30 years of age. The rate of preterm birth among multiple births has increased from 32.8% in 1974 to 45.8% in 1990.

The rising trend has continued and the latest figures indicate that the rate of multiple births in Canada was 2.5% in 1997 (excluding Newfoundland).²¹ Among multiple births the rates of preterm births are higher. In Canada (excluding Ontario) there were 4,953 twin births (2,556 preterm births: preterm birth rate 51.6/100 live births among twins) and 218 triplet or higher order multiple births (209 preterm births: preterm birth rate 95.9/100 live births among triplets) in 1997. The rise has been secondary to an increased use of fertility treatments.²¹

Conclusion:

The incidence of multiple births is increasing in Canada. In-vitro fertilization is contributing to this increase. Multiple birth puts a social and economic strain on families and society. The children are at increased risk of disabilities and birth defects.²⁵⁹ Controlling the use of fertility drugs and reducing the number of implanted embryos can prevent the rise in multiple births. The Society of Obstetricians and Gynecologists, Canada²⁶⁰ has urged for national regulations regarding the maximum number of embryos that may be transferred in artificial reproductive treatment programs in Canada as well as the prescribing practices of the clinics and physicians in relation to ovulation inducing agents.

I. Miscellaneous factors**1. Electromagnetic beds:**

Bracken et al²⁶¹ performed a prospective study to assess the effects of electromagnetic field exposure particularly from electrically heated beds and waterbeds on fetal growth. Exposure to electromagnetic fields during pregnancy or before conception had no effect on LBW/IUGR births.

2. Licorice ingestion:

Glucocorticoids are thought to play a role in the initiation of labor. Licorice contains glycyrrhizin, which is an inhibitor of cortisol metabolism. Strandberg et al²⁶² studied 1049 women in Finland to assess the impact of licorice ingestion on preterm/LBW births. The glycyrrhizin content in licorice is approximately 0.2% in Finland. Common sweet sizes are 100 grams to 200 grams, so they contain 200 mg and 400 mg of glycyrrhizin acid, respectively. The risk of delivery before 38 weeks was increased in women consuming a high intake (≥ 500 mg/week) of glycyrrhizin (OR 2.5, 95% CI 1.1, 5.5) compared to women with a low intake (< 250 mg/week).