Children and a Civilized Scottish Society

The best way to assess the degree of civilization of any society is to examine the quality of care which that society provides for the health, welfare and education of its children. In order to achieve optimal child health, it is imperative that the mothers are healthy, understand the needs of their unborn and newborn children and have the appropriate environment for the safe delivery and rearing of their children within a supportive family and community. In Scotland increasing abuse of alcohol and other drugs has placed a large number of children at risk of poor health and born to fail. In this essay I shall concentrate on the risks to the unborn child and the infant after birth.

Alcohol damage before birth

Probably the first relevant scientific observations were made by Sullivan in 1899. He examined the results of 600 pregnancies of 120 alcoholic women in a Liverpool prison population and found that the infant mortality and stillbirth rate was two and a half times that of their non-alcoholic female relatives. He also showed that the forced abstinence of imprisonment improved the pregnancy outcome. There was parliamentary comment in the UK at that time but little further scientific evidence until the report from Lemoine et al in 1969 which described 127 children with characteristic facial abnormalities and poor growth. The same features were recognised in North America and Canada in the early 1970’s. Since then many other countries including Scotland have identified the problems now known as the fetal alcohol spectrum disorder (FASD) in the infants of mothers drinking alcohol during pregnancy.

When women binge drink or drink alcohol throughout the first eight weeks of pregnancy there is a high risk that the developing organs of the embryo will be malformed and grow poorly. At birth the most severely affected will be small, have small heads and brains, typical abnormal facial features and a variety of congenital malformations of the heart, kidneys, spine, limbs, palate and skin. These infants are said to have the fetal alcohol syndrome (FAS). They will remain small, often requiring major surgery for their heart and other defects, will have poor coordination, learning and behavioural difficulties, attention deficit/hyperactive disorder (ADHD) and a range of life-long social and other problems.

Later in pregnancy the fetus continues to grow by a process of cell division. This process is particularly important in the human infant brain. Neurones and other brain cells are not only growing and dividing throughout pregnancy, there are also carefully organised migrations of cells within the brain and a complex system of inter-neuronal connections being developed. Alcohol can disrupt all of these processes and lead to a diminished brain size with cells in
the wrong position and with abnormal function. Although mothers who only drink alcohol after the first eight weeks of pregnancy will not have infants with the obvious facial and major organ malformations seen with FAS, the damage to the developing nervous system may be severe.

Some women may drink during early pregnancy yet avoid causing overt malformations warranting a diagnosis of FAS but still damage the developing brain of the child. Others may drink throughout pregnancy, produce no overt malformations, yet have a child with severe behaviour and educational problems. Fetal alcohol spectrum disorder (FASD) includes all categories of infants damaged by maternal alcohol ingestion during pregnancy. Whereas it is relatively easy to diagnose FAS, it is much more difficult to diagnose infants in the rest of the FASD group.

**Alcohol and other drug damage after birth**

Human infant attributes such as motor coordination of finger movements, self awareness, memory, thought processes, speech, language and socialisation are vulnerable to nutritional disorders and the quality of maternal care. During the first year after birth infant brain weight increases from about 350g to 1000g with most of this growth taking place in the first six months; adult human brain weight is about 1300 to 1400g. Optimal nutrition for this rapid brain growth can best be provided by milk from a well nourished breast feeding mother. The developing infant brain requires tactile, visual, aural and emotional stimuli, as well as good nutrition to properly develop the brain and endocrine pathways which subserve and integrate normal brain function. For example, failure to stimulate the eye results in a failure of development of the nerve cells and pathways that subserve the functions of that eye. Sensory input to the normal term infant is largely dependent on the mother’s physical, intellectual and emotional state and on the family and social support she receives. Interactions between mother or other primary caregivers and the infant, particularly in response to stressful situations during the first two years, can determine the final adaptive brain structures of the infant which, in turn, determine self regulation of emotional states and behaviour.

Just as abuse of alcohol can adversely affect the structures and function of the brain before birth, chaotic care in the first two years after birth, in an environment “controlled” by drug and alcohol abusing carers, can prove equally damaging. A combination of pre and postnatal damage is devastating.

**How common are these problems?**

Assessments of the prevalence of FAS and FASD is not easy, partly because they are not recognised by paediatricians, psychiatrists, nurses, teachers and others and partly because women frequently underestimate or fail to recall or disclose their alcohol use in pregnancy. There are no such data for Scotland or the UK. Studies in the USA suggest a minimum prevalence of full-blown FAS of 3.1 per 1000 and 9.5 per 1000 for FASD. In the Lazio region of Italy the prevalence of FAS was 3.7-7.4 per 1000 and FASD 20.3-40.5 per 1000 children. In some regions of Western Canada and South Africa the prevalence
is even greater. It has been estimated that for every child with FAS there are three or four with alcohol related neurodevelopmental disorder.

Many individuals with FASD have relatively well preserved non-verbal skills without significant cognitive impairment but frequently demonstrate social adaptive, executive function, attention and functional memory deficits. These contribute to high levels of school failure, mental health problems, drug and alcohol abuse, inability to function independently in society, inappropriate aggression, trouble with the law and imprisonment. Beattie et al provided clear evidence in 40 children with FAS, born between 1971 and 1981 in the West of Scotland that maternal alcohol abuse was a major problem at that time. Since then there has been a three fold increase in alcohol related deaths in Scotland and an alarming increase in binge drinking, particularly in women of child-bearing age. The proportion of fifteen year old girls drinking alcohol regularly had increased to 40% in 2004; more than double the rate in 1980. There is no doubt that social marketing through the production of drinks attractive to young people, targeted advertising and relatively less expensive alcohol are major factors in this move to increased alcohol consumption.

**How can the problems be tackled?**

The overall problem requires an input by everyone in Scotland with a social conscience. Those who feel obliged to alter their state of mind by the use of alcohol and other drugs must understand the damage which they can cause to their own minds and bodies, and to their children.

For children with FASD, early detection and treatment of congenital heart and other defects will help improve their health. Educational help with locomotion, learning and speech can improve school achievement. However, FASD is entirely preventable. In Scotland, the commonest preventable cause of congenital heart disease, microcephalus, growth failure, intellectual impairment, speech/language disorder, attention deficit/hyperactive disorder (ADHD), poor coordination and violent aggressive behaviour is alcohol abuse. Mothers found to be consuming alcohol during pregnancy must be encouraged to stop, as there is evidence that this will prevent on-going damage to their baby. Mothers of children with FASD must be warned of the risk to subsequent pregnancies.

Each year in Scotland, there are probably more children born with FASD than the total number of children born in Scotland with the malformations caused by Thalidomide. There is irony in the fact that Thalidomide was marketed in Scotland by the Distillers Company. Alcohol is a more damaging teratogen than Thalidomide but is still marketed by distillers and brewers without obvious public concern.

We need urgently to measure the incidence/prevalence of FASD in Scotland and institute effective diagnostic, treatment and prevention strategies.

The UK government has entered into a commitment to implement the articles of the UN Convention on the Rights of the Child. That declaration states that “The child, by reason of his physical and mental immaturity, needs special
safeguards and care, including legal protection, before as well as after birth”. It is time surely, that we in Scotland begin to meet this commitment in respect of our problems with alcohol. After all, we are a civilized society and children are our most precious resource.

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30 November 2009

Suggestions for Further Reading