epigenetics

Once upon a time, not so long ago, we believed that when we mapped the human genome we would be able to identify the kinds of children who would grow up to be. We hoped that understanding genetics would make it simple: Johnny has gene variants that support child and family health; his family should be encouraged to drink clean, safe water and therefore missing toothpaste; introducing toothpaste at an earlier age...
Much of the work that helped develop our understanding has been undertaken with animals but researchers are now beginning to undertake some investigations with humans.

**Epigenetics and the physiology of stress**

Our physiological response to stress from the outside world can have a detrimental impact on our health. Biologically, this is how stressors activate the hypothalamic-pituitary-adrenal (HPA) axis. When research has shown that, if there is a stressful event, the hypothalamus releases corticotrophin-releasing factor (CRF) which prompts the pituitary gland to release corticosteroids. Corticosteroids, in turn, prompt the adrenal gland to release glucose, which is stored in the liver, which is then used to create energy. Glucose and pro-inflammatory cytokines result in increased blood glucose. These may be harmful to the body as they lead to chronic stress.

**Holistic approaches to addressing health inequalities**

We are beginning to understand that effective interventions aimed at addressing health inequalities need to include understanding from neuroscience, molecular biology and child development (Francis, 2009, p. 251). Intervention need to be holistic and we can no longer operate in isolation; we need to work with others to ensure that we address the full range of disadvantages impacting on families.

Interventions proven to be effective are identified on the Promoting Practice Network (www.promotingpractice.net). Programs that are effective in developing secure attachments with their caregivers demonstrate more positive long-term outcomes across a range of health and developmental measures (Sims & Hutchins, 2011). Interventions also need to begin very early in children’s lives; the earlier the better. We now know that dysregulation has a cumulative effect not only on outcomes, but on the biology of each individual experiencing it (Perry, 2008). This means it is necessary to develop and deliver interventions that target families with very young children, including pregnant women and women before they become pregnant if possible. Child and family health nurses have a key role in supporting women to establish and maintain healthy lifestyle choices. We need to support and empower families to develop to their maximum potential (Perry & Hambrick, 2008). For nurses and other health professionals, this means considering how these external factors impact on the families we care for, and how we can intervene early to improve the health and development of children who have been maltreated or traumatised that depends on the model of intervention for children who have been maltreated or traumatised (Perry & Hambrick, 2008).

**The importance of secure attachments**

Attachment theory has been central to the understanding of how children develop and secure attachments between an infant and carers, play a protective role in children’s health. But infants under chronic stress from their environment for even a short period can be negatively affected. Children who need to be aware of the importance of establishing early interventions and opportunities for the high-risk child” (p.46). Interventions also need to begin very early in children’s lives; the earlier the better. We now know that dysregulation has a cumulative effect not only on outcomes, but on the biology of each individual experiencing it (Perry, 2008). This means it is necessary to develop and deliver interventions that target families with very young children, including pregnant women and women before they become pregnant if possible. Child and family health nurses have a key role in supporting women to establish and maintain healthy lifestyle choices. We need to support and empower families to develop to their maximum potential (Perry & Hambrick, 2008).

**Visits to the dentist**

At any two-year age, children should see a paediatric dentist to discuss early diagnosis and prevention of dental problems. The team should have specific training in working with infants and very young children. Dental Health Services Victoria advises parents not to wait until three for a visit, the earlier the better. We now know that dysregulation has a cumulative effect not only on outcomes, but on the biology of each individual experiencing it (Perry, 2008). This means it is necessary to develop and deliver interventions that target families with very young children, including pregnant women and women before they become pregnant if possible. Child and family health nurses have a key role in supporting women to establish and maintain healthy lifestyle choices. We need to support and empower families to develop to their maximum potential (Perry & Hambrick, 2008).

**Tooth development**

Primary teeth are important in guiding the growth and development of the jaw and its supporting bone structure. These teeth appear at varying times, usually between six and 12 months. At the age of seven, a fully set of 32 primary teeth by the time they are three. If there is a concern about the timing of these teeth, parents and nurses should refer the child to a specialist paediatric dentist.

**Tooth decay**

Tooth decay is caused by certain pathogenic oral bacteria growing on the tooth surface producing acids that lead to the destruction of dental structure. One of the first signs of tooth decay is small white lesions running along the gum line, called enamel white spot or demineralisation. This indicates that the enamel is being eaten away by acid. This can be prevented by identifying and addressing the environmental conditions necessary for positive long-term outcomes (Francis, 2009, p. 251). Interventions also need to begin very early in children’s lives; the earlier the better. We now know that dysregulation has a cumulative effect not only on outcomes, but on the biology of each individual experiencing it (Perry, 2008). This means it is necessary to develop and deliver interventions that target families with very young children, including pregnant women and women before they become pregnant if possible. Child and family health nurses have a key role in supporting women to establish and maintain healthy lifestyle choices. We need to support and empower families to develop to their maximum potential (Perry & Hambrick, 2008).

**The epigenetic story of stress:**

The DNA creates more complex molecules to switch stress responsive genes on or off (Perry & Hambrick, 2008).

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