

Stress hits hardest in the first trimester of pregnancy!

Many massage therapists believe, and have been taught that it is inappropriate to massage a client in the first trimester of her pregnancy. This idea is based on the fact that the majority of pregnancies that terminate do so during this time. Statics show that more than half of all embryos' are lost in the first six weeks.

Although there has never been any medical evidence to suggest a link between massage and lost pregnancies, most therapists adopt the philosophy of blame avoidance. If they don't treat their client during this time in her pregnancy they can't be blamed for any mishap that may occur.

For the majority of therapists this approach is probably for the best as their training in most cases is not comprehensive enough in the field of prenatal care.

What is becoming more apparent however is the value of relaxation in early pregnancy and the role a trained massage therapist can play in reducing the impact stress has on the woman and her child.

In this article the impact of stress throughout the crucial phases of pregnancy and the period immediately post partum will be examined in relation to the growth and natural development of the foetus. Many studies are now revealing the relationship between stress pregnancy and a range of foetal and childhood problems from birth defects to behavioural disorders.

Stress, although it is a natural phenomenon that all living creatures exhibit in response to a threat can have very detrimental impacts on the pregnant woman and her developing child. The hormones that are released during the stress response have a number of effects on human physiology. The hormone corticotropic releasing factor (CRF) for example is a major stress hormone released by the hypothalamus that causes a release of adrenocorticotrophic hormone (ACTH) from the pituitary gland. ACTH stimulates the adrenal glands to release two hormones. The first comes from the adrenal medulla the second from the adrenal cortex. Although released from the same organ these hormones have very different functions. Epinephrine or adrenaline as it is also called is released from the adrenal medulla and causes the dilation of smooth muscle and increased activation of cardiac muscle. Under the influence of epinephrine during the stress response, blood is redirected away from the digestive system and the skin and concentrated around the heart and working muscles. Fat cells are stimulated to dump their load of stored triglycerides into the blood stream and cholesterol levels rise. The heart rate is elevated and the person is ready to fight off an aggressor or flee if necessary.

Cortisol released from the adrenal cortex is a natural anti-inflammatory. Its effect is to depress protein synthesis. This depression of protein synthesis results in a mild suppression of the immune response and inflammatory response. Cortisol also acts on the liver to increase gluconeogenesis, the creation of glucose from protein or fats. The over all result during the stress response is an elevated heart rate, sluggish digestion with reduced absorption of nutrients, increased blood glucose, triglycerides and cholesterol and a depressed immune system.

“We have found that there is a highly significant correlation between maternal and foetal cortisol levels, although the maternal levels are ten times higher. This suggests that enough of the maternal stress hormone cortisol crosses the placenta to affect the development of the foetus.” [Glover V (No Date)]

During pregnancy these stress hormones have many other functions on top of their role in the fight or flight response. The placenta as well as the hypothalamus releases Corticotropic Releasing Factor (CRF) into the bloodstream of the mother causing cortisol levels to increase. Production of Corticotropic Releasing Factor (CRF) by the placenta continues to rise until parturition. The levels eventually stimulate the release of prostaglandins that eventually lead to the uterine contractions that expel the baby during birth.

The impact of stress in pregnancy is multifaceted. On the mother there are the same detriments to health as experienced by non-pregnant women or anyone else in the general population. Unfortunately for the pregnant woman many of the effects are amplified as the stress hormones have similar or synergistic effects to hormones released as part of a normal pregnancy. Progesterone the hormone responsible for stabilising the pregnancy, for example, affects smooth muscle and is responsible for slowing down the rate at which food is moved through the digestive system. Under normal circumstances this slower movement allows time for more absorption of nutrients. During the stress response however, this absorption does not occur as blood flow is directed toward the brain and skeletal muscles and away from the gut. The result tends to be more frequent constipation and often the development of haemorrhoids.

Stress has also been shown to increase poor health and nutritional habits by mothers. There is a tendency to increase the amount of alcohol consumption, cigarette smoking and poorer choice in dietary choices with chocolate often being at the top of the list. For the baby there may be a far greater impact. The presence of CRF in the mothers' blood has been linked to a number of foetal conditions including pre-term labour and low birth weight.

“A number of studies have suggested that very high levels of stress may increase the risk of preterm labor and low birthweight.” [March of Dimes Saving Babies Together – Stress & Pregnancy 2003]

“CRF, which is produced by the brain and the placenta, is closely tied to labor. It prompts the body to release chemicals called prostaglandins, which trigger uterine contractions. CRF also is the first hormone our brains secrete when we are under stress.” [March of Dimes Saving Babies Together – Stress & Pregnancy 2003]

“The risk of very low birth weight is one and one-half times greater if the mother perceived that she "almost always" felt stress during her pregnancy”.
[Sable, Wilkinson, 2000]

Low birth weight in its self hardly seems a major problem but the link between low birth weight and foetal mortality is well established. Aside from low birth weight other problems associated with stress and pregnancy, include, autism and birth defects.

“About 10 percent of all pregnancies in the United States end in premature births, which is considered the leading cause of disorders and death of newborns.”
[UCI Communications Office (2000)]

“Dr. David Beversdorf, a neurologist at OSU Medical Center and principal investigator of the study, reported on a study of 188 women who had delivered

autistic children. The research showed that these women were more likely to have experienced a major stressor the 24th through 28th weeks of their pregnancy". [Jill Boatman. 2001]

"Researchers have been examining the genetic component of the disease for years, but there is now evidence through this study that autism is also linked to external factors, such as prenatal stress," [Jill Boatman. 2001]

"About 1.18% of pregnancies in women under extreme stress resulted in an infant with a birth defect". [Dr. Joseph Mercola 2000]

"Previous studies have suggested maternal stress during pregnancy - such as job loss, separation, or bereavement - may lead to birth defects such as cleft lip and palate and spina bifida." [BBC News 2000]

Fortunately the stress involved in most of the research presented has been categorised as extreme. Events that trigger extreme stress responses tend to be severe. The death of another child during the pregnancy, divorce, separation and loss of a spouse tend to be the contributing life events or stressor.

"Pregnant women who suffer a major stressful event such as the death of a loved one, loss of a job or a long-distance move -- seem to have a greater chance of having a child with autism, researchers say".[Margaret Munro 2001]

"We have shown, using Doppler ultrasound, that the most anxious mothers have impaired blood flow through the uterine arteries. This could explain why mothers who are very anxious while pregnant tend to have smaller babies. We also have pilot data that anxiety precedes pre-eclampsia. It is possible that there is some common mechanism, possibly raised catecholamines, which causes anxiety, impaired uterine blood flow and pre-eclampsia"
[The Foetal and Neonatal Stress Research Centre (no date)]

The impact of stress on the pregnant woman and the health of her baby is becoming more apparent. Although the mechanisms are not fully understood at this stage the relationship between stress and poor foetal outcomes is well established. What is also becoming more apparent is the relationship between the time the mother experiences stress and effect that stress will have on the developing foetus. Stress that is experienced by the mother in the first trimester of the pregnancy appears to be far more detrimental than stress that experienced by the mother in the final trimester.

"Women who experience psychological stress during the first three months of pregnancy may have a greater tendency to have earlier births, a study led by researchers at UC Irvine's College of Medicine has found" [UCI Communications Office 2000]

" In addition, stress that occurs later in pregnancy does not appear to result in as many early births, indicating that women somehow become more resistant to stress as their pregnancies progress." [UCI Communications Office 2000]

The critical time frame in the case for children born with autism seems to be significant stress occurring before thirty two weeks of the pregnancy. This is the time “of development of the fetal cerebellum a key portion of the brain that is structurally different in autistic children”. [Margaret Munro 2001]

One mechanism that has been speculated upon is the ability of cortisol that depresses protein synthesis, to cross the placental barrier.

“Another recent observation is that the stress hormone 'cortisol' can cross the placental barrier when a pregnant women is under a high degree of stress and dietary protein is low. High cortisol levels can effect foetal brain development, specifically memory.” [Medconsult (2000)]

The impact of these studies for the massage therapy industry is that the majority of massage therapy schools teach students to avoid massaging pregnant women during the first trimester of her pregnancy. The standard practice is to wait until the pregnancy progresses to the second or third trimester when the pregnancy is well established. Unfortunately it is during the first trimester that the stress response has the greatest impact on the pregnancy itself and on foetal development. There is much evidence now to suggest that during the third trimester and particularly late in the third trimester as the woman approaches delivery, she and her baby are somehow naturally protected from the impact of stress.

“This shows that the HPA axis becomes hypofunctional to a natural stressor at the end of pregnancy. It is suggested that one possible evolutionary function for this is to protect the fetus from the stress responses of the mother.” [Kammerer. M, Adams D, von Castelberg B. & Glover V (2002)]

It would appear that the most crucial time for a woman and her baby to avoid the impact of stress is during the first trimester when she may be rejected by the very person she would normally turn to for relaxation, her massage therapist. The trained massage therapist can provide an invaluable service throughout the pregnancy. Providing essential relaxation early in the pregnancy to relieve or at least reduce the impact of stress and later provide relief from the physical pressures of carrying a baby late in the pregnancy. There is evidence coming to lite also to suggest that the trauma experienced by the baby during birth may also have lasting effects on the childs' psycho-emotional health.

“Those delivered by forceps/ventouse had the largest response, followed by those by normal vaginal delivery and those born by caesarean were the least responsive. This suggests that type of delivery may be one cause of long-term stress responses.” [The Foetal and Neonatal Stress Research Centre (no date)]

This study suggests that there may be a significant role for the massage therapist to play as a Doula or Labour Assistant during delivery to reduce the physical & psycho-emotional trauma experienced by the mother.

“The most impressive aspect of this newest choice in childbirth is the effect of having another woman present with the family at birth. In a series of six clinical trials, the presence of doulas and/or monitrices resulted in 50% fewer cesareans, a 25%

reduction in the length of labor; 30% less usage of pain medication, 40% less use of the drug pitocin, and 50% fewer Epidurals needed.”[**Paulina Perez**, RN, BSN, FACCE (1995)]

The important thing for the Massage therapist is to know their limitations legally, ethically, and professionally. To know what technique and treatment approach is most appropriate at each phase of the pregnancy and how they can operate in the constraints of “Best practice”.

If the massage therapist is planning to work with pregnant clients early in their pregnancy it is important for them to know which techniques are safe to apply and which are likely to increase the stress response rather than decrease it. The therapist must be aware of psychosomatic effect of pain and the possible consequences of specific remedial techniques.

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