

Instant Expert: Mental Health – Join our special event in London to discover the latest research into mental health and wellbeing

PROFILE 21 March 2018

Dad power: The surprising new science of fatherhood

When Anna Machin realised science was skewed towards mums, she set out to change that - and discovered fatherhood comes with a raft of changes to the mind and body



Anna Machin specialises in studying close relationships

Colin Kitchen

By **Jessica Hamzelou**

THE birth of Anna Machin's first child didn't go to plan. "Unfortunately, I suffered a haemorrhage, and it was a bit touch and go for a time," she recalls. Her newborn daughter was shuttled off for specialist care, while Machin herself, who had passed out, received emergency attention. "I didn't really see anything, whereas my poor husband, who was in the room, saw everything – blood flowing everywhere, about 30 members of staff rushing around, alarms going off... it was very, very dramatic."

Afterwards, Machin was offered support and counselling. But no such offer was

extended to her shaken husband. “And, actually, he was the one who needed it,” she says. This was evident when, even a year later, he was unable to talk about the birth, or even think about it, without crying.

Overlooking fathers in this way is harmful to these men and their families, says Machin, who is an anthropologist at the University of Oxford. “It struck me as unfair,” she says.

Close relationships, between parents and children, lovers or friends, are Machin’s specialist subject. So back at work after her daughter’s birth, her thoughts turned to new fathers. Like any academic, she began by digging through the research.

Yet while there was plenty to be found on mothers, Machin was amazed to find barely any research on fatherhood. The little there was seemed to focus on the negative impact of teenage or absent fathers. “There was nothing, absolutely nothing, about your average, standard dad who is around – divorced or not – who still sees his children and invests in them.”

In fact, there was virtually no recognition of fatherhood as something that affected men, let alone their families. “We thought men just floated through these experiences, and that becoming a father was not a biological phenomenon at all,” says Machin. “You could read things 10 years ago that literally denied that a father had any input into their child’s development. That’s not only a sadness for a father, but it’s a sadness for the family and the child, because we need to understand this important figure.”

Machin set out to put things right. She launched a study following soon-to-be fathers from about three months before birth until their child was 6 months old. Her plan was to change the mostly negative narrative on fatherhood, and shift focus onto the hugely positive role a father can have. She had no problem recruiting dads: “They were so grateful that someone was trying to understand this amazing life change.”

That’s partly because fathers’ roles have been changing. With both parents often going to work, parenting is becoming more of a joint enterprise. And where once a female relative might have been around to help a new mother, today couples often live far from extended families. “Dad is actually the one who has to catch the baby, essentially,” Machin says.

Ten years on, we now know that men undergo significant biological changes with fatherhood. And although much of the research so far has looked at heterosexual, nuclear families, it seems many of the findings apply to anyone in a father role.

Getting hormonal

Surprisingly, some of the changes can happen before a baby is even born. Men who live with their pregnant partners seem to sync up with them hormonally – and can start to experience hikes of the “love hormone” oxytocin just as their partners do. “It seems to have something to do with bonding the couple closely so that they’re ready,” Machin says.

Then, once the baby arrives, a man can expect his testosterone levels to nosedive. This change is permanent. “It might go up a little bit but it will never, ever return to where it was before he became a father,” says Machin. That’s explained by evolution, she says. We are one of only a handful of species with involved fathers, and the only ape. In other words, human dads are something of an evolutionary quirk. The fall in testosterone

helps a man fulfil this new role.

“Once a baby arrives, a man’s testosterone levels drop. This change is permanent”

Testosterone motivates a man to have as many sexual relationships as possible, Machin says. “When you become a father, your child needs you to stick around for their successful development, so that high level of testosterone is not such a great thing to have.” And the drop happens to all dads, whether they stick around or not.

For our ancestors, the father role would probably have focused on the physical survival of the offspring. Today, fathers seem to hold unique importance in contributing to their child’s social survival, particularly as they get older.



Recognition of a father’s role (above and below) helps the development of the child

Ariel Skelley/Getty

Evidence for this can be seen if you scan the brain of a new parent while they watch a video of their child, Machin says. In mothers, the limbic system, which is involved in risk assessment and nurturing behaviours, shows the most activity. In fathers, however, it is the neocortex, connected with understanding social situations and problem-solving that lights up the most.

But both these changes can happen in one person’s brain, too. In a male couple where one partner takes on the primary caregiving role, his brain will show activity in both areas. “What’s even more interesting is that those areas have a new neural connection to allow them to communicate with each other, so that the father can fulfil that dual role of being the nurturing parent but also being the one who is going to push those social developmental boundaries,” says Machin. “That is, I think, fascinating.” The work is very new, and we still don’t know if the brains of female couples or single parents adapt in the same way. Machin thinks they probably do.

Despite the changes that happen in a father's body and brain after his child is born, it takes a while for him to make the transition to fatherhood and feel comfortable with his new parental identity, Machin has found. For mothers, this takes about nine months, whereas for fathers it can be up to two years.

But it is around this time that a father's most important role kicks in. A 2014 study looked at mothers' and fathers' involvement with their children at 7 and 24 months, then assessed the children at 3 years old. The team found that both parents seemed to have an equal impact at 7 months, but at 24 months, the effect of the father was much greater. The more supportive the father, the more advanced the child's cognitive development. "It is only once the child begins to explore their world and develop a life away from their parents... that dad's unique contribution to development kicks in," says Machin.

Until recently, however, there hasn't been much recognition of a father's contribution, and this can cause problems (see "Daddy downsides"). "We provide very little support to the father and we don't have the conveyed rituals that non-industrialised countries have," Machin says. "In other societies, we see rituals to welcome that father into fatherhood and provide support for him. It's a public acknowledgement of the fact that his life is going to change."

Papa pep talk

That doesn't tend to happen in countries like the UK or US, says Machin. "Women have baby showers and a lot of fuss is made of the mum – absolutely understandably and properly – but nothing is done to acknowledge a dad," she says. "He might get a pint bought for him, but that's pretty much it."

Machin recommends fathers-to-be get involved as much as they can before the birth, and attend dad-only antenatal classes if possible. These can help build a support network. She would also like to see a change in hospital culture to appreciate how life-changing the experience is for a new father, and that he is more than a mere bag carrier.

As for the dads who volunteered to be in Machin's studies, they were the inspiration for her forthcoming book, she says. "They repeatedly said there was nothing that told them what was happening to them and treated them like an equal player rather than just mum's supporter."

She now has two children, and says her research has given her greater insight. "It made me make sure that I valued and supported my husband in his role because I understood how vital it was to the healthy development of both our children," she says.

Her advice, for nuclear families at least, is simple: "There are two people having a baby and they both need to be acknowledged," she says. "I think we need to shove mum over a little bit on the pedestal and pop dad up there as well."



plainpicture/Cultura/Christine Schneider

Daddy Downsides

At some point during pregnancy or after giving birth, between 10 and 20 per cent of women will develop depression. Less well known is that around 10 per cent of fathers can be affected too, says Anna Machin.

“It is a major problem, and we’re still trying to understand it,” she says, but the condition is under-acknowledged in men. “There are still no independent diagnostic tools for depression in fathers, and there need to be.” Symptoms in men differ from those in women, and include more anxiety and aggression. Also, Machin says, men tend to withdraw from the family and self-medicate with drugs and alcohol to a greater extent. “We know this because it is a constant theme across the now-quite-numerous studies that have recorded perinatal depression in men.”

Until recently, the prevailing theory was that, because men don’t experience the hormonal changes that women do, they couldn’t develop depression, says Machin. But men are affected by other hormonal changes. A man’s testosterone level drops once he becomes a father, for example. “Testosterone is a protector against depression, so if you have a particularly big drop when you become a dad, then you are at risk,” says Machin.

A man’s well-being can be affected before his baby is born, too. Take, for example, Couvade syndrome, sometimes called sympathetic pregnancy. It is a mysterious set of ailments sometimes experienced by male partners of pregnant women. “Men who have it seem to be experiencing some sort of reaction to their partner’s pregnancy,” says Machin. “It’s generally being very tired, possibly putting on weight and having digestive issues. Bizarrely, toothache is one of the symptoms, and you get a lot of headaches and things like that.”

This article appeared in print under the headline "Give dads a chance"

Jessica Hamzelou is a reporter at *New Scientist*. Anna Machin's book *The Life of Dad: The making of the modern father* will be published in June by Simon & Schuster

Magazine issue 3170, published 24 March 2018

