

The psychological impact of circumcision

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Introduction

From a global perspective, most of the world does not practise circumcision; over 80% of the world's males are intact (not circumcised) [1]. Most circumcised men are Muslim or Jewish; the USA is the only country in the world that circumcises most (60%) of its male infants for non-religious reasons. Other countries that circumcise a significant minority of male infants for non-religious reasons include Canada and Australia. This article refers mostly to the American practice, because the USA has the highest rate of non-religious circumcision and the most contentious debate about circumcision.

Discussion about the advisability of circumcision in English-speaking countries that practise circumcision typically has focused on supposed health factors. However, recent information about circumcision often disagrees with previous long-held beliefs about the health benefits of circumcision. The conflicting conclusions, beliefs and opinions surrounding circumcision, together with the tenacity with which advocates and opponents of circumcision maintain their viewpoints, suggest that deep psychological factors are involved. The strong motivation to circumcise male infants is shown by the fact that the practice continues even though no national medical organization in the world recommends it.

Questions concerning the psychological motivation to circumcise and the long-term psychological effects of male circumcision have rarely been studied; this lack of studies on the long-term effects was noted in the literature about 20 years ago [2,3], and little has changed since then.

Infant pain and behavioural response to circumcision

To understand the long-term effects of circumcision, it is important to review the effects on the infant. The question of infant pain is often raised in debates about circumcision. Some physicians believe early work claiming that the newborn nervous system is not sufficiently developed to register or transmit pain impulses [4,5]. According to more recent work, this belief is 'the major myth' of physicians regarding infant pain [6]. That babies cannot physically resist and stop the circumcision procedure also makes it

easier to dismiss their pain [7]. Some doctors minimize circumcision pain by calling it 'discomfort' or comparing it to the pain of an injection, although these opinions have been refuted by empirical studies [8].

Anatomical, neurochemical, physiological and behavioural studies confirm that newborn responses to pain are 'similar to but greater than those in adult subjects' [8]. Infants circumcised with no anaesthesia (reflecting common practice) experience not only severe pain, but also an increased risk of choking and difficulty in breathing [9]. Increases in heart rate of 55 bpm have been recorded, i.e. ≈ 1.5 times the baseline rate [10]. After circumcision, the level of blood cortisol increased by a factor of 3–4 times the level before circumcision [11]. As a surgical procedure, circumcision has been described as 'among the most painful performed in neonatal medicine' [12]. Investigators reported, 'This level of pain would not be tolerated by older patients' [13]. Using a pacifier during circumcision reduced crying but did not affect the hormonal pain response [14]. An infant may also go into a state of shock to escape the overwhelming pain [15]. Therefore, while crying may be absent, other body signals show that severe pain is always present during circumcision.

There is disagreement among physicians about using anaesthesia during circumcisions. Before the mid-1980s, anaesthesia was not used because infant pain was denied by the medical community. That belief has changed among many physicians, but an anaesthetic (local injection, the best option tested) still is not typically administered, because of a lack of familiarity with its use, as well as the belief that it introduces additional risk [12]. Although there is an indication that the risk is minimal, most physicians who perform circumcisions do not use anaesthetics. When an anaesthetic is used, it relieves only some but not all of the pain, and its effect wanes before the postoperative pain does [16].

Behavioural changes in infants resulting from circumcision are very common, and can interfere with parent-infant bonding and feeding [3,8]. The American Academy of Pediatrics Task Force on Circumcision notes increased irritability, varying sleep patterns and changes in infant-maternal interaction after circumcision [17]. Canadian investigators report that during vaccinations at age 4–6 months, circumcised boys had an increased

behavioural pain response and cried for significantly longer periods than did intact boys. The authors believe that 'circumcision may induce long-lasting changes in infant pain behaviour' [18]. That study suggests that circumcision may permanently alter the structure and function of developing neural pathways [19].

The parents' responses

The severe pain of circumcision and the changes in infant-maternal interaction observed after circumcision raise the question of the effects on the mother. The typical hospital circumcision is performed out of view of the parents, in a separate room. However, a few are observed by parents, and many Jewish ritual circumcisions are carried out in the homes of the parents. There are no studies of how these parents respond to observing their son's circumcision. Personal accounts vary and may include strong emotions. Some parents regret their son's circumcision and report that they wish they had known more about circumcision before they consented to it. Margaret Viola submitted the following comments in her letter to a magazine:

'My tiny son and I sobbed our hearts out. After everything I'd worked for, carrying and nurturing Joseph in the womb, having him at home against no small odds, keeping him by my side constantly since birth, nursing him whenever he needed closeness and nourishment—the circumcision was a horrible violation of all I felt we shared. I cried for days afterward' [20].

Melissa Morrison was having a difficult time 7 months after she had watched the circumcision of her son:

'I'm finding myself obsessing more and more about it. It's absolutely horrible. I didn't know how horrific it was going to be. It was the most gruesome thing I have ever seen in my life. I told the doctor as soon as he was done, if I had a gun I would have killed him. I swear I would be in jail today if I did have a gun' [21].

Other mothers have reported to the author's institution that watching their son's circumcision was 'the worst day of my life'. Some mothers clearly remember their son's circumcision after many years; Pollack reported 15 years after the event, 'The screams of my baby remain embedded in my bones and haunt my mind.' She added, 'His cry sounded like he was being butchered. I lost my milk' [22].

Parents may not express strong adverse reactions to a son's circumcision for two possible reasons. First, because the feelings engendered by circumcision are so painful and are not generally supported by the community, they may be suppressed [15]. Second, as described earlier, if the infant goes into traumatic shock, he does not cry, and parents tend to interpret lack of crying as a sign that circumcision is not painful.

Circumcision as trauma

Studies investigating circumcisional pain have referred to circumcision as traumatic [9,18]. The *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV)* published by the American Psychiatric Association [23] is helpful in discussing the question of trauma as it relates to circumcision. Its description of a traumatic event includes an event that is beyond usual human experience, such as assault (sexual or physical), torture, and a threat to one's physical integrity. An assault is a physical attack; torture is severe pain or anguish. It does not necessarily take account of intention or purpose, but focuses on the act itself and the experience of the victim.

From the perspective of the infant, all the elements in this DSM-IV description of traumatic events apply to circumcision; the procedure involves being forcibly restrained, having part of the penis cut off, and experiencing extreme pain. Based on the nature of the experience and considering the extreme physiological and behavioural responses, circumcision traumatizes the infant.

The question of an infant's capacity to experience trauma needs to be emphasized. Wilson, an author with a national reputation for trauma research, supports the view that effects of trauma can occur 'at any point in the life cycle, from infancy and childhood to the waning years of life' [24]. In addition, the DSM-IV states that traumatic effects 'can occur at any age' [23]. Clinicians have documented that children are particularly vulnerable to trauma [25,26]. Psychic trauma seems to have a permanent effect on children, no matter how young they are when they are traumatized. Furthermore, psychopathology increases as the age of the child at the time of the trauma decreases [27].

Trauma results in dissociation, a separation of the traumatic experience and associated emotional pain from awareness [28]. Dissociation is a psychological survival response. To preserve a semblance of attachment to the mother, a child who has suffered trauma alters reality and 'forgets' that the trauma ever happened [29]. In altering reality, the child is also altered. Based on neurological research, painful experience and trauma in childhood can result in long-term physiological changes in the central nervous system and neurochemical changes [30–33]. Two brain-imaging studies of adults with histories of child sexual abuse reported a reduced size of the hippocampus, a part of the brain associated with memory, and in a test of verbal short-term memory, adults who had been abused had lower scores [34–36].

The possibility of circumcision resulting in traumatic effects on older children can be better explored because of the easier access to memory and the child's ability to talk. Two reports have studied the ritual as practised without anaesthesia on children in Turkey. In the first

report, testing subjects 4–7 years old shortly before and after the ritual yielded this result: 'Circumcision is perceived by the child as an aggressive attack upon his body, which damaged, mutilated, and, in some cases, totally destroyed him' [37]. According to this study, circumcision resulted in increased aggressiveness and weakened the ego, causing withdrawal, and reduced functioning and adaptation. Withdrawal is a defensive response that individuals use to protect themselves against further attack.

In the second study, children were observed to be 'terribly frightened' during the procedure, and 'each child looked at his penis immediately after the circumcision as if to make sure that all was not cut off' [38]. One 8-year-old boy fell 'unconscious' during the cutting and subsequently developed a stuttering problem. A few weeks later, parents being interviewed reported that their children exhibited increased aggressive behaviour and experienced nightmares. In the same report, adults were interviewed and recalled castration anxiety and other serious fears connected with their childhood circumcision, particularly if they had been deceived or forced by parents to undergo the procedure. Freud, who had a strongly critical view of circumcision, believed that it was a 'substitute for castration' [39]. Castration anxiety resulting from circumcision may be related to the finding that symptoms resulting from personal injury trauma often include fear of repetition of the trauma [40].

The traumatic impact of surgery on children is well-established. For example, the psychiatric literature documents serious long-term effects resulting from childhood tonsillectomy [41,42]. Psychiatrist David Levy reviewed the case histories of 124 children who developed psychological problems after a surgical procedure. He observed that the younger the child, the greater the chance of adverse reaction to surgery. The most severe anxiety reactions were observed in two boys, each of whom had surgery on his penis. One boy had a meatotomy at age 4 years, and the other had a circumcision at age 6 years; both exhibited destructive behaviour and suicidal impulses [43].

Long-term psychological effects

Without published studies, current knowledge of men's feelings about their circumcision is generally based on reports from self-selected men who have contacted the Circumcision Resource Center (CRC) and other circumcision information organizations [44]. The feelings reported generally include anger, sense of loss, shame, sense of having been victimized and violated, fear, distrust, grief, and jealousy of intact men.

The overwhelming majority of these men were circumcised as newborn infants. The memory of this event is

not in their conscious awareness. Consequently, the connection between present feelings and circumcision may not be clear. However, some men attribute many negative feelings to their circumcision. Based on the responses of men who contacted the CRC, the origin of this attribution is in the impact of discovering one's circumcision as a child. If a child grows up in a community that has children who are and are not circumcised, it is probable that someday the circumcised boy will notice the difference. Under certain circumstances, the realization that part of the penis was cut off can have trauma-like consequences, such as recurrent unwelcome thoughts and images.

One man told of an indelible scene when he was 4 years old; he was with an intact boy who showed him his penis and explained circumcision to him. He was shocked and ashamed at what had been done to him. He said that as an adult he thinks about it 'every time I take a shower or urinate'.

The following reasons explain why circumcised men report little about how they truly feel:

- (i) Accepting beliefs and cultural assumptions about circumcision prevents men from recognizing and feeling their dissatisfaction; e.g. being told when young that it was necessary for health reasons and not questioning that.
- (ii) The emotions connected with circumcision that may surface are very painful; repressing them protects men from this pain. If the feelings do become conscious, they can still be suppressed.
- (iii) Those who have feelings about their circumcision are generally afraid to express them because their feelings may be dismissed or ridiculed.
- (iv) Verbal expression of feelings requires conscious awareness. Because early traumas are generally unconscious, associated feelings are expressed non-verbally through behavioural, emotional and physiological forms [45,46]. Attitudes about people, life and the future may also be affected; e.g. a common attitude resulting from childhood trauma is a lack of trust and a sense of defencelessness. [47]. Lack of awareness and understanding of circumcision, emotional repression, fear of disclosure and non-verbal expression help keep circumcision feelings a secret.

Although men may be unaware of the effects of circumcision, the fear that their penis is somehow deficient is reported to be widespread in American culture [48]. Commercial interests have responded to this concern by advertising various methods for penile enlargement in men's magazines. Male preoccupation with the penis is also reflected in a survey of what men think women find attractive in men. The data showed that men greatly exaggerated the importance of penis size as a physical attribute that attracts women [49]. The effect of circumcision on this result is not known.

Negative feelings about the penis are related to the

idea of body image; this includes value judgements about how the body is thought to appear to others, and can have a great impact on how men live their lives are conducted [48]. In addition, the concepts of self and body image are interconnected and affect personal psychology. A diminished body image can diminish a person's social and sexual life. Those who have a bodily loss fear the judgement of others and the weakening of personal relationships. For example, psychological, sexual and social effects have been reported in women after a mastectomy. They felt less attractive, less desirable and had less sexual satisfaction after their surgery [50,51]. Poor body image can also affect motivation and reduce feelings of competence, status and power. In addition, depression and suicidal attitudes have been noted [52,53]. Although there are differences between the circumstances and age at the time of loss, the feeling that an important part of the body is missing is common to mastectomy and circumcision (for some men). The feeling of 'not being a whole man' can be especially distressing.

An aspect of self can be identified with a particular body part, as masculinity is typically identified with the penis. When that part is wounded there is often a corresponding psychological wound to the self and a loss of self-esteem. How much of a connection there might be between low male self-esteem and circumcision is uncertain. Low self-esteem often induces feelings of shame and these are projected by attacking the self-esteem of others; shame isolates us from others and ourselves. A physical loss, like circumcision, can be a source of shame. Such feelings are often mentioned in letters from circumcised men. Because shame remains a secret most circumcised men are unlikely to report their feelings.

Psychopathology is not always detectable by trained clinicians. The effects of circumcision trauma can be chronic and so deeply embedded that it is very difficult to distinguish them from personality traits or effects resulting from other causes. Furthermore, where circumcision is common, its effects are common and may be interpreted as normal. As with other traumas, the psychopathological outcome may vary, but preliminary reports appear to be consistent with the symptom pattern of post-traumatic stress disorder (PTSD) [21].

Examples of PTSD symptoms include recurrent thoughts and dreams about, and avoidance of, the topic of circumcision. Emotional numbing and inappropriate anger are potential common long-term psychological effects of circumcision that warrant investigation. Reduced capacity for emotional expression or 'numbing' response is a more likely PTSD symptom with increasing time after the traumatic event [54]. Those who have been violated generally have a problem with anger and

direct it either inward or outward toward others [46]. Adult symptoms could be considered delayed or chronic psychological effects of circumcision.

The link between adult circumcision, loss of sensitivity and impotence has been noted in the medical literature [55]. Since infant circumcision also decreases sexual sensitivity [54], it is likely that circumcision is an unrecognized factor in the high rates of impotence in American men and, by association, is also detrimental to male psychological health. According to a randomized study of 1290 men aged 40–70 years, 52% reported some degree of impotence, ranging from minimal to complete. This rate varied from $\approx 40\%$ at age 40 to 67% at age 70. (A literature search yielded no comparable European study.) Higher degrees of impotence were associated with increased levels of anger and depression. Self-esteem was also lower in impotent men [57,58]. The psychological response to impotence would compound any pre-existing psychological symptoms that have already been discussed.

The motivation to circumcise

Although research shows harmful effects of circumcision, and there is much that is not known about the long-term sequelae, it is difficult for advocates of circumcision to change because of powerful psychological factors. The behavioural re-enactment of the trauma is a compulsion of some trauma victims [46]. Circumcision of infants may be regarded as an example of re-enacting the trauma of one's own circumcision. A survey of randomly selected primary care physicians showed that circumcision was more often supported by doctors who were older, male and circumcised [59].

People want coherence and consistency in their beliefs and experience. If inconsistency occurs, called cognitive dissonance, beliefs tend to be aligned to fit experience [60]. The experience of many physicians regarding circumcision is that they have performed it many times. Choosing to circumcise is a serious choice. After such a choice is made, people tend to appreciate the chosen alternative and depreciate the rejected alternative [61]. As a result, beliefs are adopted to conform with experience and support the decision to circumcise. An example of these beliefs, as mentioned earlier, is that newborn infants do not feel pain. Another common mistaken belief is that the prepuce has no useful purpose; one advocate of circumcision stated, 'I believe the foreskin is a mistake of nature' [62].

Inconsistency can also be reconciled by denial, limiting experience; i.e. only information that fits the beliefs is perceived and accepted. If they strongly support circumcision, some physicians simply dismiss new information that conflicts with their view [63]. Although many

studies show the extreme pain of circumcision, physicians who circumcise may ignore this information. The tendency to avoid new information increases when the discrepancy between beliefs and experience increases [64]. (Even after learning something new, people remember better the information that supports established beliefs than conflicting information [65].) Avoidance may lead to rigidity of thinking and dependence on dogma to counteract and subdue doubt.

Parents are solicited by hospital personnel to make a decision about circumcision, implying that it is an approved practice. Circumcision is the only surgery that is decided by lay people. Those parents who agree to circumcision for their newborn son are typically unaware of important information and may not understand what circumcision is. They fail to appreciate that circumcision is surgery. In one study, half of the mothers questioned did not know if the father of their child was circumcised [66]. In another study, 34% of men incorrectly identified their own circumcision status [67].

Physicians say they circumcise because parents request it; parents choose it because doctors do it [63]. Communication between the physician and parents about circumcision is often insufficient for informed consent, largely because of emotional discomfort with the subject. Almost half the time there is no discussion between the physician and the mother about the medical aspects of circumcision [68]. If there is a discussion, it may include incorrect tacit assumptions by physician and parent about what the other really wants or means [63]. These assumptions tend to lean toward the decision to circumcise. The parents' lack of expertise leads them to defer to the physician's supposed knowledge, thus contributing to communication deficiencies and a decision to circumcise. Although physicians do not require that parents choose circumcision, and parents believe they are freely making their choice, physicians exercise control over the parents' decision by controlling information and sometimes making a recommendation [63,69].

A national study of 400 American paediatricians and obstetricians indicated that two-thirds of physicians took a neutral position on circumcision when advising parents [70]. A so-called neutral or balanced presentation of circumcision to parents is preferred by physicians and childbirth educators, so that they will not be accused of 'bias', but it does not provide accurate and complete information to those who are asked to make the decision [21]. It appears that few involved in the decision to circumcise are aware that the pain is severe and that circumcision may have a long-term effect on sexual experience and functioning. Furthermore, myths about social acceptance die hard.

The importance of conformity in the decision to circumcise is illustrated by a survey of parents of 124

newborn males born at an American hospital. The results showed that for parents making the decision, social concerns outweighed medical concerns. Parents' reasons for circumcising were based mainly on an interest that the baby 'look like' his father, brothers and friends. (Because of the large variation of appearance in circumcised boys, circumcision should be discouraged for cosmetic reasons [71].) Only 23% of the intact fathers had circumcised sons. In contrast, 90% of the circumcised fathers had circumcised sons. The authors concluded that the decision to circumcise 'is more an emotional than a rational decision' and has a strong base in social and cultural issues [72].

Social concerns were also a major consideration among parents making the decision about circumcision in a study at another American hospital. A group of parents was given special information on circumcision, based on the 1975 report of the American Academy of Pediatrics Ad Hoc Task Force on Circumcision, which concluded that circumcision is not medically necessary [73] (there was no information on significant harm caused by circumcision). A control group in the study was given no special information on circumcision. The circumcision rates of the two groups were not statistically different. Parents found social reasons alone sufficient to choose circumcision. The researchers concluded, 'Circumcision is a custom in our society; to change the attitude toward it is not an easy task' [74].

The assumption, mostly on the part of circumcised men, that a boy would want to be circumcised if his father is circumcised, is not supported by any published evidence. This idea may be the product of a psychological defence mechanism called projection, the process of attributing feelings to others that belong to oneself. It is the circumcised father who may have some psychological issues if he looks different from his son. The fear of confronting these issues in themselves could motivate circumcised men to cling to the myth that intact sons will have such issues. Furthermore, when the first generation of American boys was circumcised, they looked different from their intact fathers. This myth was not prevalent then because intact men generally had no repressed feelings about how their penis looked.

Pertinent information leads to the following inferences regarding the decision to circumcise for social or 'matching' reasons:

- (i) A circumcised boy who 'matches' others may nevertheless have negative feelings about being circumcised. These feelings can last a lifetime [21].
- (ii) It is not possible to predict before circumcision how a boy will feel about it later.
- (iii) Even though intact men are in the minority in the USA, there is no evidence that many of them are dissatisfied with being intact.

- (iv) An intact man who is unhappy about it can choose to be circumcised, but this is rarely done. The estimated rate of adult circumcision in the USA is 3 in 1000 [75].
- (v) An intact man who is unhappy about his status may feel different after learning more about circumcision and the important functions of the foreskin [21].
- (vi) The social factor is much less of an issue for boys born in the USA today because of the lower circumcision rate (60% nationally, under 40% in some states [76]).

Because it commonly affects behaviour, social science researchers have extensively investigated the issue of conformity and have verified what is suspected here; group pressure can lead people to abandon their judgement and conform. In a well-known study, 80% of subjects conformed to the false consensus of a group, even though that consensus was contradicted by visual evidence [77]. Conforming to group practice has also been shown to be more likely when the group is large [78]. Furthermore, when a situation is ambiguous, people are especially influenced by the group, and the greater the ambiguity, the greater the influence of the group on the judgement of individual members [79–81]. The need for social approval drives our tendency to conform. Until the environment of conflicting information about circumcision and general support for the practice changes, conformity will continue to be a strong factor in circumcision decisions by parents.

Religious circumcision

There are no empirical studies on the psychological aspects of religious circumcision. The following information is based on communications to the CRC and limited related literature. Jewish circumcision is associated with the Torah account (Gen. 17:6–14) where God commanded Abraham and his male descendants to be circumcised. Because the Jewish practice precedes its documentation in the Torah by over a thousand years [82,83], the divine commandment for circumcision may have been a way to relieve the parents of any sense of responsibility or guilt. The real origin of Jewish circumcision is a matter of speculation. Muslim circumcision is not mentioned in the Koran, and Muslim scholars debate its religious basis [84].

Since many Muslims and Jews either do not know or do not necessarily accept religious beliefs associated with circumcision (e.g. only 13% of American Jews believe the Torah is the actual word of God [85]), cultural beliefs have been adopted to replace religious beliefs and defend the practice. For example, Muslims and Jews reinforce circumcision by believing that all members of the group practise it. With this belief, Jews and Muslims put themselves under tremendous pressure to comply with

social expectations to circumcise. Having an ally helps people to resist conformity [86], but those in religious groups who question circumcision believe that they are alone and assume that they have no choice. A conspiracy of silence serves to suppress questioning. (An editorial in a Jewish newspaper claimed that circumcision 'is not subject to debate' [87].) In effect, religious circumcision is not necessarily chosen out of religious belief, but is often done out of fear of rejection if it is not performed. (The fear of rejection may be more a threat than a reality. Jewish parents of intact sons who have contacted the CRC report that it has not been a problem for them or their sons.)

Another cultural belief related to Jewish circumcision is that it ensures the survival of the Jewish people. This contention is especially compelling and may be used because of the Jews' long history of having to fight to survive. In fact the biggest threat to Jewish survival today is assimilation, and there is no evidence that circumcision prevents or slows it. According to a survey of American Jews, more than half of all Jews who marry choose a non-Jewish spouse [85].

Associated with the desire for survival is the idea of identity. Many Jews believe that males must be circumcised to be Jewish; this is not correct. As stated in the *Encyclopedia Judaica*, 'Any child born of a Jewish mother is a Jew, whether circumcised or not' [88]. Because a rational explanation is often sought for behaviour, Jews and Muslims may also use claims of medical benefit to provide reassurance about the advisability of circumcision [15,84].

Religious groups have virtually no awareness of the harm caused by circumcision. Rabbi and mohel (ritual circumciser) Ronald Weiss comments on the degree of pain: 'It's essentially as painless as you going to the barbershop to get your hair cut' [89]. Expert mohel Romi Cohn, who has carried out thousands of circumcisions over 17 years, agrees that the procedure is 'absolutely painless, for Jewish law is careful not to cause trauma to the child' [90]. Muslim children may remember the pain of circumcision if it is performed later in childhood, but there is a strong taboo against complaining about it. Muslim and Jewish writing on circumcision has defended the practice by claiming that the resulting reduced sexual sensitivity is a benefit [84,91,92].

Progress is being made among Jews; articles questioning circumcision have been published in the Jewish press, and more Jews are choosing not to circumcise their sons [93–95]. The CRC has records of hundreds of Jews in the USA, Europe, South America and Israel who either have not circumcised or would not circumcise a son. In Israel there is an organization that publicly opposes circumcision [96].

Cultural values and science

Among physicians, support for circumcision has been based on supposed 'rational' factors, but as psychiatrist Wilhelm Reich wrote, 'Intellectual activity has often such a structure and direction that it impresses one as an extremely clever apparatus precisely for the avoidance of facts, as an activity which really detracts from reality' [97]. This appears to have been the case in those advocating circumcision. Science has been adopted as the great arbiter between fact and fiction. This systematic approach to evaluating experience is of value, especially as research has shown that a surprising number of adults do not reason logically [98]. The scientific method is designed to help protect the scientific community and the public against flawed reasoning, but it is the flawed reasoning of supposedly reputable scientific studies that has contributed to the confusion on the circumcision issue.

One reason that flawed studies are published is that science is affected by cultural values. A principal method for preserving cultural values is to disguise them as truths that are based on scientific research. This 'research' can then be used to support questionable and harmful cultural values such as circumcision. This explains the claimed medical 'benefits' of circumcision.

Conclusion

There is strong evidence that circumcision is overwhelmingly painful and traumatic. Behavioural changes in circumcised infants have been observed 6 months after the circumcision. The physical and sexual loss resulting from circumcision is gaining recognition, and some men have strong feelings of dissatisfaction about being circumcised.

The potential negative impact of circumcision on the mother-child relationship is evident from some mothers' distressed responses and from the infants' behavioural changes. The disrupted mother-infant bond has far-reaching developmental implications [99-104] and may be one of the most important adverse impacts of circumcision.

Long-term psychological effects associated with circumcision can be difficult to establish because the consequences of early trauma are only very rarely, and under special circumstances, recognizable to the person who experienced the trauma. However, lack of awareness does not necessarily mean that there has been no impact on thinking, feeling, attitude, behaviour and functioning, which are often closely connected. In this way, an early trauma can alter a whole life, whether or not the trauma is consciously remembered.

Defending circumcision requires minimizing or dis-

missing the harm and producing overstated medical claims about protection from future harm. The ongoing denial requires the acceptance of false beliefs and misunderstanding of facts. These psychological factors affect professionals, members of religious groups and parents involved in the practice. Cultural conformity is a major force perpetuating non-religious circumcision, and to a greater degree, religious circumcision. The avoidance of guilt and the reluctance to acknowledge the mistake and all that it implies help to explain the tenacity with which the practice is defended.

Whatever affects us psychologically also affects us socially. If a trauma is acted out on the next generation, it can alter countless generations until it is recognized and stopped. The potential social consequences of circumcision are profound [21]. There has been no study of these issues perhaps because they are too disturbing to those in societies that do circumcise and of little interest to those in societies that do not. Close psychological and social examination could threaten personal, cultural and religious beliefs of circumcising societies. Consequently, circumcision has become a political issue in which the feelings of infants are unappreciated and secondary to the feelings of adults, who are emotionally invested in the practice.

Awareness about circumcision is changing, and investigation of the psychological and social effects of circumcision opens a valuable new area of inquiry. Researchers are encouraged to include circumcision status as part of the data to be collected for other studies and to explore a range of potential research topics [21]. Examples of unexplored areas include testing male infants, older children and adults for changes in feelings, attitudes and behaviours (especially antisocial behaviour); physiological, neurological and neurochemical differences; and sexual and social functioning.

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