

# CHILDBIRTH AMONG THE CANADIAN INUIT: A REVIEW OF THE CLINICAL AND CULTURAL LITERATURE

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## ABSTRACT

**Background.** This study reviews the historical, anthropological and biomedical literature on childbirth among Canadian Inuit resident in the Canadian Arctic. The modern period is characterised by increased tension as southern intervention replaced traditional birthing with a biomedical model and evacuation to metropolitan hospitals for birth. Inuit concern over the erosion of traditional culture has confronted biomedical concern over perinatal outcomes. Recently, community birthing centres have been established in Nunavik and Nunavut in order to integrate traditional birthing techniques with biomedical support.

**Objectives.** To review the literature on Inuit childbirth in order to suggest avenues for future research.

**Study Design.** Material for this review was gathered through combining library searches, database searches in ANTHROPOLOGYPlus, MEDLINE, CINAHL and Science-Direct, and a bibliographic search through the results.

**Results.** Epidemiological studies of Inuit childbirth are outdated, inconclusive, or inseparable from non-Inuit data. Anthropological studies indicate that evacuation for childbirth has deleterious social and cultural effects and that there is considerable support for traditional communal birthing in combination with biomedical techniques and technology.

**Conclusions.** Investigation of alternative solutions to maintaining acceptable perinatal outcomes among the Inuit seems desirable. Epidemiological and comparative qualitative studies of perinatal outcomes across the Arctic are needed to reconcile the cultural desirability of communal birthing with claims of its medical feasibility.

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**Keywords:** birthing, Inuit, Canada, midwifery, evacuation, epidemiology

## INTRODUCTION

The changes to childbirth in the Canadian Arctic over the last 60 years have been dramatic. The process of change, whereby birthing has moved from its traditional location on the land, assisted by midwives, to full integration in the biomedical system, followed by a gradual reassertion of traditional values and techniques, has only been incompletely documented. Although some extremely valuable regional studies have been made, overall this process of change remains understudied. Anthropological and historical studies of traditional birthing, using interviews and recollections of both Inuit themselves and Southern explorers to gain an understanding of Inuit perspectives on childbirth, do exist and provide valuable documentation of traditional birthing practices. Due to the paucity of medical researchers in the Arctic, biomedical studies of traditional childbirth are much rarer, particularly with regards to the period before the widespread introduction of southern medical services. The early medical studies of J.A. Hildes and O. Schaefer (1) are an exception to this rule, although both Hildes and Schaefer largely restricted themselves to small-scale case studies, or to the clinical details of individual births. Their research was directed toward understanding Inuit biological and cultural adaptations to the Arctic environment and their influence on Inuit health, and to some extent on the impact of acculturation on Inuit health (2).

From the 1970's onward, more quantitative studies of Inuit childbirth have been undertaken, most proceeding from a concern to reduce high levels of perinatal and infant mortality. Cultural studies have largely focussed on recording

traditional childbirth practices, although some have also considered the revival of traditional midwifery that occurred in the 1980's. There have also been a number of epidemiological studies of Inuit childbirth. Most have stemmed from the Inuit reaction to medical policy favouring evacuation for all births, which was introduced in the early 1980's. Inuit groups, such as the Pauktuutit/Inuit Women's Association, wish to balance the preservation of their culture with perinatal outcomes. The move to re-establish community birthing centres, which integrate traditional birthing practices with biomedical techniques, is the result of this concern, and has also led to increased research.

There is, however, a lack of quantitative research on Inuit childbirth. Although a number of large-scale perinatal studies have been undertaken in various regions of the Canadian Arctic, all remained regional studies. In particular, there have been no attempts to link the epidemiological data for Nunavut and Nunavik (Northern Québec), despite the common cultural identity of their Inuit residents, the Nunavummiut and Nunavimmiut, respectively. Thus, the quantitative research remains fragmentary, and often hard to access. As Luo *et al.* (3) and Baikie (4) have noted, the Canadian Perinatal Surveillance System, and other national epidemiological mechanisms, although providing useful data on the general population, do not discriminate Inuit from other populations resident in the Arctic, or distinguish Inuit children from others born in southern hospitals, save in Québec. Without both comprehensive and regionally distinctive epidemiological data, it is difficult to determine the effect of regional differences in health policy upon perinatal outcomes

and how they, in turn, compare with national results. This latter comparison is important, for health policy decisions are unlikely to be politically palatable unless their effect on perinatal outcomes compares favourably with those for Canada as a whole.

Most published research is the product of anthropological research in individual communities or small groups. However, Inuit customs vary across communities and regions. Therrien and Laugrand's informants (5) in Iqaluit came from different communities on Baffin and noted differences in traditional practices, often expressing surprise at their existence. Linking different anthropological studies together to compare their conclusions is an obvious means of gaining a sense of regional variation in traditional practices, as is an expanded version of the Memory and History in Nunavut project (5–7), in which Inuit elders discussed similarities and differences in their traditional beliefs together. The logistical obstacles of mounting such a study over a vast geographical area would, of course, have to be overcome.

The need for more qualitative and quantitative research is indicated by the widespread urge for change in birthing practices, which cuts across regional boundaries in the Arctic. Some regions, such as Nunavik, have successfully experimented with such changes, others desire to do so, while still others have encountered difficulties in implementing them. Although there is considerable cultural variation across the Canadian Arctic, there is also considerable cultural continuity, and institutions, such as the Inuit Tapiriit Kanatami and Pauktuutit, unite Inuit in pursuit of common goals.

Finally, populations in the Arctic are small. Regional epidemiological studies have thus tended to draw on limited populations, with

consequently substantial margins of error. Comprehensive epidemiological and qualitative research thus holds the potential to reduce statistical error, while linking the epidemiological data to cultural variations across the Inuit population in the Canadian Arctic.

## MATERIAL AND METHODS

Material for this review was gathered through a general library search, a specific search of the collections of the Circumpolar Library at the University of Alberta, and both ANTHROPOLOGYPlus, MEDLINE and CINAHL searches on the keywords INUIT, BIRTHING, MIDWIFERY and PREGNANCY. In addition, a search using similar subject terms was pursued through Science-Direct and a bibliographic search through the items gained from all of these avenues of inquiry elicited further documents. The documents obtained were limited to those articles found in scholarly or biomedical journals, books from scholarly publishers, the proceedings of academic conferences on the circumpolar region, unpublished graduate theses, published government reports, and articles on birthing by Inuit themselves.

## RESULTS

### **Traditional birthing**

Inuit births traditionally occurred within the family group, with assistance from either an experienced midwife, or the husband, when no one else was available. Anthropological studies by Saladin D'Anglure (8), the Traditional Medicine Research Project (9), Dufour's

studies of Canadian Inuit birthing and midwifery in Northern Québec and Igloolik (Nunavut) (10–12) and the relevant volumes of the Memory and History in Nunavut series published by Nunavut Arctic College (5–7), have documented this process. Each derives slightly different conclusions, perhaps due to the different dates of their studies, and possibly to geographical variations in birthing practices as well. The Traditional Medicine Research Project (9) describes certain prescribed positions for birthing, noting that women in labour would be required to assume a position, either squatting with hands braced on posts, or lying on their backs with their feet braced against a pad held by the midwife. The other studies disagree with this conclusion, noting that regional variations in birthing positions exist. The elders interviewed by Therrien and Laugrand (5) stated simply that the birthing position was chosen by the woman in labour. Both Saladin d'Anglure (8) and Dufour (12) noted that a traditional attendant known as the *sanaji* was responsible for cutting the infant's umbilical cord and, thereafter, assumed an important role in the child's life. Guemple (13) also recognised the role of this attendant among the Belcher Island Inuit, where the term used is *sanariak*. In addition to cutting the infant's umbilical cord, the *sanariak* was responsible for providing the first set of clothes for the child and maintained a close familial relationship thereafter. The *sanaji/sanariak* is a role distinct from that of the midwife, although midwives could also act as *sanaji* on occasion and Kootoo (14) does identify the *sanaji* with the midwife. According to Dufour (12), the role of men in birthing varied. In Igloolik, men were excluded from the birthing process altogether, while in Nunavik men

were only involved if no women were available. Laugrand, Öosten, Trudel and Kublu (15) noted that, if spiritual interference in the pregnancy or birth was suspected, the shaman (usually male) would then also take on a role in the birth. However, birthing only concerned the shaman when supernatural interference was already suspected. The shaman's role was simply to restore normal birthing conditions by removing the interference from either a spirit or another, malicious shaman. Stern & Condon (16) concur with both of these conclusions in their study of the Western Arctic community on Holman Island. They also note that the traditional Inuit practice of giving birth, while dispersed over the land in small groups, was due to the periodic lack of game, leading to the need to maintain a low population density. In other words, Inuit birthing practices may have been determined by the survival economy. More resource-rich and affluent areas, such as Northern Québec, may have maintained a more consistent and ritualistic set of birthing practices.

The elders interviewed by Öosten and Laugrand (6) agreed that, among the Eastern Arctic Inuit, the roles of attendants were very fluid. Although ideally both an experienced midwife and assistants would be present at the birth, often children were born while in transit, or in hunting camps. In such cases, either men would undertake the duties of birth attendant, or the birth would be accomplished without any assistance whatsoever. According to these elders, some of whom came from Igloolik themselves, women were free to assume any birthing position they wished, and the characteristics of any particular birth varied depending upon the circumstances. Thus, ideally, another woman experienced in

midwifery would assist, along with one, or more, less experienced women and girls who would benefit from the experience. During travel, however, it was not uncommon for women to give birth with no one but their husbands to assist them.

Although these studies disagree on the details of childbirth practices, the variations may be ascribed to geographical and chronological distance from one another. All these studies indicate that childbirth was traditionally a communal responsibility. That is, both midwifery and the birth itself were regarded as being under the authority of the elders, who were generally defined as the most experienced and respected members of the community. Birthing practices were mediated by the consensus of the community and the pregnant woman herself on what would be best for mother, child and community. This perspective is confirmed by interviews and articles by traditional Inuit midwives, which emphasise the community role in childbirth and the multiplicity of techniques that might be used to deliver a healthy child (17, 18). In this worldview, the only role for an expert in any way analogous to that of the biomedical doctor was that of the shaman, as Laugrand *et al.* affirm (15). Therrien (5), Dufour (12) and Saladin D'Anglure (8) agree that his role was distinctly peripheral to the normal birthing process.

Anthropological studies by Borré (19,20) have demonstrated the importance of "country food" (usually seal, but also caribou) to the Inuit sense of well-being, particularly that of the pregnant woman. Therrien's (21) study of Inuit traditional health supports this conclusion, and further suggests that well being is dependent on community involvement and, crucially, on the health of the community as a

whole. Thus the individual's health, including that of the pregnant woman, is traditionally tied to communal health in Inuit society. The identification of individual health with community health has had important implications for the relationship between biomedicine and the Inuit community. It has led to resistance to medical authority through unreported pregnancies in order to allow community births. Where resistance has not occurred, medical intervention has led to a severe erosion of community self-confidence, with the attendant social problems (eg. alcoholism, abuse, suicide) that a loss of community morale entails.

Until the Second World War, however, Inuit remained largely self-sufficient in health. Duffy (22) has outlined the historical development of the Canadian government's involvement in the region in the context of its failure to adequately address inequities between the Inuit and southern Canadians. He notes that, prior to the Second World War, the only medical facilities available in the Eastern Arctic were two mission hospitals, one in Pangnirtung, the other in Chesterfield Inlet, and the physician who accompanied the yearly cruise of the Eastern Arctic Patrol. There were two more mission hospitals in Aklavik in the Mackenzie Delta that provided some obstetrical services to the Inuvialuit (Copper Inuit) of the Western Arctic. Most Inuit, however, followed traditional methods of healing in general, and childbirth in particular, until at least the 1950's.

### **Medicalisation of childbirth**

The Second World War led to an enormous increase in Canadian government involvement in the Arctic. Smith (23) has pointed out that the increased availability of southern

health care was matched by intrusive attempts to extend political and administrative control over the Inuit populace. The excuse was the need to collect medical statistics on the Inuit population in order to identify risks to their health and efficiently deliver medical services to them. This was done through the creation of an identity disk system that functioned both as a means of keeping medical statistics and, ultimately, as a means of controlling access to the government services that were both becoming available and mandatory, such as schooling, medical services and hunting restrictions. It also became a means of enforcing the government policy of creating permanent Inuit settlements. Inuit health was perceived as being in crisis during this period, with dismal indicators in general, and very high perinatal mortality statistics in particular. Jasen (24) has suggested that perinatal mortality became symbolic of the Canadian government's responsibility toward the Inuit and reflective of the government's neo-colonial approach to the Inuit. The solution to improving perinatal outcomes was initially moving the Inuit into villages with access to medical treatment, including the services of nurse-midwives and evacuation to southern obstetric wards, if necessary.

This led to the creation of community health centres, also referred to as outpost nursing stations, in the villages that the government established and, simultaneously, insistently encouraged the Inuit to move to in the 1950's. Nurse-midwives staffed the community health centres and provided primary medical care, while physicians made regular visits to each community. Like Jasen (24), Kaufert *et al.* (25,26) have described the movement of birthing from the community to the nursing stations as a reflection of the process of colo-

nisation that the Canadian government was imposing on the Inuit. By the late 1960's, this process evolved into a medical policy that was formulated to discourage traditional birthing altogether in favour of either nursing station births, or emergency evacuation to a southern hospital for delivery. This increasing imposition of dependence on southern obstetrical services has been documented by the same research group, particularly John O'Neil (27), who provided the anthropological component of a multidisciplinary investigation of child-birth in the Kivalliq (Keewatin) region.

By the late 1960's, most Inuit had access to primary medical care through their community health centre. As well as the services of a resident nurse-midwife, medical staff, including specialists, visited each community periodically. During this period, child-birth gradually shifted from the home and the purview of the community, to that of the nursing station and the nurse-midwife. Community involvement in the pregnancy and birth remained significant, if less than before. Rajsigl (28) suggests that traditional midwives remained intimately involved in the birthing process and were even present in the delivery room in the Iqaluit hospital as late as the early 1980's. There is no documentation given for this claim, however, and it is not reflected in research by Kaufert *et al.* (25) in the Kivalliq region. The creation of an integrated medical system appears to have been completed by the 1970's. A major perinatal study (29) undertaken in 1973-4 by the Canadian government concluded that Canadian Inuit had better access to primary medical care than southern Canadians. There was undoubtedly resistance to the medicalisation of childbirth, including from women who contrived to give birth outside the

nursing stations, according to Kaufert *et al.* (30). However, most deliveries occurred in a medical environment, limiting the scope of traditional childbirth practices.

O'Neil *et al.* (31) used the results of the 1988 Childbirth Experience Survey of the Kivalliq Region to study the process of medicalisation there, although placing less emphasis on the role of nursing staff and more on that of the medical profession and government. Their survey was hampered by a lack of data due to the small population, incomplete participation and loss of some results. Selection error, inasmuch as those Inuit who declined to participate had their views selected out, may have also played a role. However, it still provided a qualitative anthropological analysis of the experiences of childbirth of Inuit mothers, traditional midwives and nurse-midwives. Their survey also interviewed southern policy makers and medical staff, and examined the medical records of the region dating from the 1950's. They pointed out the disruptive effects of the medicalisation of Inuit childbirth, beginning with the establishment of the outpost nursing stations in the 1950's, and the consequent disruption to traditional Inuit birthing patterns.

With the medicalisation of childbirth, perinatal statistics became more exact and epidemiological studies became possible. The first attempt to mount a rigorous epidemiological study of childbirth was the Perinatal Mortality and Morbidity Study of the Northwest Territories (32). Rather than attempting a statistical sample, the study examined all births (Inuit, Indian and white) in the Northwest Territories over a two-year period (1973-4) (33).

Although the interim report of the Survey suggested that increased evacuation would

improve perinatal morbidity and mortality rates (34), the final report presented radically different conclusions. The authors concluded that the primary health care system in the NWT was adequate and indeed superior to that available in southern Canada. They suggested that an improved socio-economic status would be the greatest determining factor in improving perinatal health. They further raised a point not examined before, or since, suggesting that an increased evacuation to southern obstetric wards would lead to more surgical intervention, particularly caesarean sections (32). This, they pointed out, carried its own health risks for women in remote communities.

Two further quantitative studies of infant mortality were conducted in the late 1970's. The first, by Murdock (35) in the Eastern (Baffin) Region, found a very high incidence of birth abnormalities, but has had its methodology called into question by Robinson (36) on the grounds that it constituted a hospital-based study, rather than a population study. A similar study of birth abnormalities among the Inuit of Keewatin, which gathered information on both births evacuated to southern hospitals and those occurring in the community (either in the nursing station, or outside of it) (37, 38), concluded that the mortality and morbidity incidence of community births was no higher than those evacuated to hospital.

In contrast, Rajsigl's (28) retrospective case-control analysis of infant mortality patterns in Iqaluit, Pangnirtung and Igloolik from 1950 to 1980 did conclude that evacuation significantly decreased infant mortality, and that evacuation to southern centres was preferable to evacuation to the regional hospital in Iqaluit. This study relied on relatively small birth cohorts from only three communities to

reach these conclusions and did not provide a convincing level of statistical proof, in part because unspecified numbers of records were disregarded due to missing data. However, this study indicates that, even with the presence of midwives in each of the nursing stations, evacuation for childbirth steadily increased over the course of the 1970's. By 1980, up to 98% of pregnant women were transferred to either Iqaluit or Montreal for birth, despite medical policy which officially favoured nursing station births (28,32). At this time, due to changing immigration policies, the supply of trained midwives for the community health centres began to decline. Concern with perinatal outcomes, coupled with an increased availability of air transport, led to a policy of uniform evacuation to hospital obstetric wards for all births in the Canadian Arctic. O'Neil *et al.* (27) discuss this process as the logical extension of the medicalisation of Inuit childbirth, and the stimulus of increased tension between Inuit culture and biomedicine.

### Evacuation of birth

As air transport improved in the 1960's and 70's, more women were evacuated to regional, or major southern hospitals for childbirth. However, as Kaufert *et al.* (30) point out, official medical policy continued to favour community birthing, supervised by nurse-midwives, and community involvement in childbirth remained significant.

Medical policy regarding childbirth in the Arctic changed in the 1980's. Kaufert and O'Neil (39) have pointed out that, historically, nurse-midwives in the Arctic were recruited from either the United Kingdom, or New Zealand, since Canada possessed no native midwifery tradition. Physicians also tended to

be non-Canadian, usually British or European. Changes in Canadian immigration policy in the late 1970's, however, restricted recruitment overseas. Although the Canadian nurses recruited to replace foreign nurse-midwives were technically trained in midwifery, they were seldom experienced, leading to an understandable reluctance to perform deliveries when evacuation was an option. At the same time, younger Canadian physicians taking up practice in the Arctic were uncomfortable with midwifery, and pressed for evacuation to obstetric wards, where a physician could attend all deliveries. The result was a *de facto* medical policy of uniform evacuation for childbirth throughout the Arctic (30).

The regional hospitals in the North (Yellowknife, Iqaluit and Churchill) were the initial beneficiaries of this policy, but women were increasingly evacuated directly to teaching hospitals in southern Canada, as noted by Macaulay in his study of mortality in the Kivalliq Region (40). Kaufert and O'Neil (41) pointed out that this shift was due to both epidemiological and clinical reasoning: The initial premise is that reductions in perinatal mortality and morbidity are dependent on the sophistication of the obstetric services available. Lessard and Kinloch's (42) study of births in the Central Arctic validated the change in policy by noting a general decline in infant mortality in the mid 1980's, attributing this to an increased evacuation to Stanton Regional Hospital in Yellowknife. In addition, as O'Neil *et al.* (27) noted, the increased evacuation for birth of women in the Kivalliq Region to both Churchill Regional Hospital and Health Sciences Hospital in Winnipeg were also associated with improved perinatal outcomes. Lessard and Kinloch's (42) study

even concluded that pressure for community birthing was likely to limit further improvements in obstetric care obtainable through evacuation to a regional or metropolitan hospital. Following the same reasoning, further evacuation to a more sophisticated obstetric ward in a southern hospital would produce further improvements in perinatal outcomes. Rajsigl recommended this move (28), while Kaufert and O'Neil (39) have also noted the tendency for evacuation to be increasingly directed beyond the regional hospitals to southern centres.

However, Finnemore (43) and Robinson (36) challenged the premise of this policy, that evacuation would (and did) improve perinatal outcomes. The former noted that improvements in infant mortality rates were difficult to attribute to evacuation. Rather, improvements in community prenatal care were more likely to have been a determining factor. Robinson criticized all quantitative studies of Inuit childbirth. In particular, she pointed out that studies of infant mortality and morbidity in the north suffer from a lack of data for statistically valid conclusions. She noted that both the populations and the statistical samples are simply too small in most cases. This problem has most recently been identified by Muggah, Way, Muirhead and Baskerville (44), whose study of perinatal outcomes of births in the Baffin Region (Nunavut) from 1998 to 2000 found high prematurity rates, but reached only tentative conclusions due to the small study population.

This problem with numbers in Arctic health research has not yet been rectified. Two large-scale surveillance systems do exist: the Canadian Perinatal Surveillance System (CPSS) (45), which tracks childbirth statistics

across the nation, and the Northern Contaminants Programme (NCP) (46), which is part of the multinational Arctic Monitoring and Assessment Programme (AMAP) (47,48). The CPSS, however, does not provide an adequate mechanism for distinguishing the ethnicity of women, or their children, anywhere outside of Québec. NCP and AMAP, on the other hand, are focussed on environmental contamination, including fetal and breast milk contamination, but do not track perinatal statistics in general.

The controversy over evacuation was driven by Inuit dissatisfaction with medical services in general and with evacuation for childbirth in particular. An essential component of traditional Inuit health is their connection with the land, which functions as an important part of Inuit identity. One of the most important components of this connection is birth within the community, and hence on the land itself. Thus, evacuation to centres hundreds, or even thousands, of kilometres away breaks this first connection between an Inuk and the land. Inuit women in the Kivalliq Region who had given birth to their first children in their communities and their later ones in Churchill or Winnipeg made this explicit when they told Kaufert and O'Neil (26,31) that only their first children were real Inuit, not the later ones.

Other Inuit populations have proved to have a strong preference for childbirth within, or close to, their communities. In a comparison of Canadian and Greenlandic Inuit populations, Bjerregaard and Young (49) noted in 1998 that either community or regional birthing was preferred by 99% of the Greenlandic Inuit population, while virtually no Canadian Inuit women had the opportunity to choose the place of birth, as the overwhelming majority were evacuated to southern hospitals.

### Traditional/medical hybrids

Inuit began pressing for the evacuation policy to be reversed shortly after it was introduced in the 1980's. In the Kivalliq Region, this led to the Childbirth Experience Survey (27), which combined an epidemiological survey of perinatal outcomes in the Kivalliq Region since the establishment of the nursing stations through the evacuation period, with an anthropological study of the experience of childbirth from traditional birthing to the inception of uniform evacuation for childbirth. Although, as noted, the Survey suffered from data collection problems, it concluded, on the basis of a partial survey of women evacuated for childbirth, that there was considerable support in the Kivalliq Region for a return to midwife-supported community birthing, although not for a regional birthing centre. In 1987, Bouchard (50) found that there was considerable Inuit interest in re-establishing traditional midwifery in Northern Quebec, and suggested that midwifery might reduce surgical interventions in delivery. In Labrador, Stevenson (51) found a similar evolution in maternity services toward evacuation, and resistance to it among Labrador Inuit.

Generally, Inuit objections to evacuation have centred on both the issue of family disruption and the medicalisation of childbirth, traditionally a social event in Inuit culture (52). Medical responses have emphasised means of reducing the period of evacuation, but not eliminating it (53), or have suggested that the desire for community birthing is possibly overrated (54). Failure to reconcile Inuit and biomedical perspectives has led Grondin (55) to suggest that there is a fundamental conflict between Inuit culture and biomedicine, while Gagnon (56) notes that this seems to be the general

attitude of Canadian physicians toward native healers. Pauktuutit (57), on the other hand, has suggested, through the medium of a video summarising and dramatising the progress of community birthing in Northern Québec and Nunavut, that this cultural and ethnic divide need not be insurmountable. By that time, as documented in the video, permanent birthing centres had been created in Nunavik in Northern Québec, and Rankin Inlet in the Kivalliq Region, and pilot projects had operated in several other communities in Nunavut.

The system of midwife-staffed community birthing centres, the Inuulitsivik Maternities, has been in existence in Nunavik (Northern Québec) since 1987. After a slow start, and some administrative setbacks, the Maternities now operate three community birthing centres in which Inuit midwives, southern midwives and medical personnel co-operate. The Maternities also train Inuit midwives, who are then certified to work within Nunavik. The first birthing centre was opened in Puvurnituq, followed by centres in Inukjuak and Salluit. The demand for the Maternities' birthing centres appears to be high, with Kuujuaq slated to receive a branch in the future (58). Another sign of the importance of the Maternities in Nunavik is that one of the major rationales behind the creation of a regional government in Nunavik appears to be establishing autonomy over childbirth and thus fostering the growth of the Inuulitsivik Maternities (59).

The political and cultural circumstances that led to the creation of the Inuulitsivik Maternities have been noted in an anthropological study conducted by Lavoie (60) and in the report of the Royal Commission on Aboriginal Peoples (61). These may be summarised as the culmination of Inuit resistance to medical evacua-

tion for birth, combined with a high degree of political activism in Puvurnituq, represented by both resistance to provincial hydroelectric development and pressure for affordable and culturally appropriate housing (62). Statistics collected by the Maternities itself (63) indicated that the rate of complications and birth interventions actually decreased when the majority of births began occurring at the Maternities instead of in southern hospitals. This increase in births at the Maternities was the product of an unusual risk evaluation approach that has been an integral part of the Maternities' guiding philosophy since their inception (64).

In an epidemiological study conducted at McGill University, Chatwood (65) examined the risk evaluation approach used at the Inuulitsivik Maternity (now Inuulitsivik Maternities) and evaluated its success using both the birthing records kept at the maternity and provincial perinatal records. Rather than the usual risk scoring methods, the Maternity used a community-based model in which evaluating risk was the responsibility of a committee with equally weighted representation from midwives, medical staff and the community. The decision to evacuate was the sole responsibility of this committee, not of the physicians alone. Chatwood (65) determined that the Maternity's internal evaluation of its success in using a community-based risk assessment was substantially correct: That the perinatal outcomes at the Maternity were equivalent to those at obstetric wards, and the rates of birth interventions were substantially lower. A recent study of perinatal outcomes at the Inukjuak branch of the Maternities by Houd *et al.* (66) has confirmed this conclusion for the first five years it operated there (1998-2002).

These conclusions confirmed the interim assessments of a study carried out at Laval University. That study was performed shortly after the original Puvurnituq branch of the Maternities was opened, in order to assess its effectiveness. It was published in two parts: An epidemiological study by Meyer and Belanger (67), and a managerial analysis by Tourigny, Ross and Joubert (68). Both groups' assessments were generally favourable, even though there was insufficient data, since the birthing centre had been operating for only three years.

Support for community birthing in Nunavut is also evident in a variety of sources from the 1980's. Pauktuutit, the national Inuit women's organisation, gave submissions in support of community birthing centres on the model of the one in Puvurnituq (69), as did the Inuit Tapirisat of Canada (70). Betty-Ann Daviss (71-74), one of the first midwives at the Puvurnituq birthing centre, has argued for culturally appropriate birthing and praised the cultural effectiveness of the Inuulitsivik Maternities in particular. More recently, the Inuit midwives working at the Maternities have agreed that the organisation is a powerful tool to both preserve and regenerate Inuit birthing traditions and prove their compatibility with acceptable biomedical perinatal outcomes (75,76).

According to England (77), the first midwife employed in Rankin Inlet, the birthing centre there had a slow start. This birthing centre was studied by an NHRDP-funded team in 1996 (78,79). Their conclusions indicated that the birthing centre was both economically feasible and medically safe. In their analysis, they noted that a traditional medical risk scoring approach was used at the Rankin Inlet Birthing Centre. Women were scored for risk based on

a variety of factors, such as primipara delivery, smoking, drug use and high multipara. A high-risk score led to automatic evacuation. One result of this is that the Rankin Inlet Birthing Centre has been allowed to accept only second to fourth births that have been defined as very low-risk. All primipara and high multipara deliveries are automatically evacuated. In practice, as England (77) notes, this limits the number of births at the Centre to about 20% of the total in the Kivalliq Region. All others continue to be evacuated to either Churchill Regional Hospital or Health Sciences Centre in Winnipeg. There is no community involvement in this process on the model of the Inuulitsivik Maternities. The NHRDP study suffered obstacles in data collection as a result of this situation, as the small number of births at the Rankin Inlet Birthing Centre limited numbers for statistical sampling. This study (79) was also plagued by the refusal and/or inability of many Inuit women to participate in the study due to logistical and cultural factors and the loss of some records in a fire. As a result, it has been difficult to reach firm conclusions regarding the perinatal outcomes of births at the Rankin Inlet Birthing Centre. As it shares a common goal with the Inuulitsivik Maternities, the RIBC could potentially serve as a means of comparing the impact of cultural and political factors on birthing in Nunavut and Nunavik.

## DISCUSSION

Inuit birthing has undergone substantial changes over the last 25 years. The introduction of medical services to the Arctic in the post-war period undoubtedly began this process. However, full-scale evacuation for

childbirth was more culturally disruptive than medicalised community birthing and provoked resistance from the beginning. The results of this resistance – the Inuulitsivik Maternities in Nunavik and the Rankin Inlet Birthing Centre in Nunavut – are attempts to resolve the tension between Inuit culture and biomedicine, by creating a hybrid form of health care. In this hybrid, Inuit use the tools of biomedicine, but within a framework of the traditional and communal authority that lies at the core of their culture. This experiment may succeed in moderating the consequences (80) of modernisation for the Inuit, and suggest solutions for other circumpolar peoples. For the birthing centres to flourish, it will require proof that Inuit birthing traditions work and can integrate biomedical techniques. In other words, that they are capable of producing perinatal outcomes that are at least as successful as those of hospital obstetric wards, all the while retaining the communal approach to health that lies at the core of Inuit tradition. Reconciling Inuit traditions and biomedicine will require a careful balance between Inuit desires and biomedical interests.

Biomedical concerns focus on clinical outcomes and physical data, while neglecting social and cultural concerns. Currently, there is also considerable interest in the issue of environmental contamination, since both heavy metals (Hg, Pb, Cd) and persistent organic pollutants (PCB's and dioxins) reach high concentrations in Arctic sea mammals and fish, the basis of the traditional diet. The AMAP executive overview of human health concerns in the Arctic (48) has suggested dietary restrictions for pregnant women that are anathema to Inuit culture. Canadian studies have been reluctant to make such politically

charged recommendations, since definite clinical effects have not yet been observed in the Inuit populace (81-87), while the traditional Inuit diet may actually counteract the effects of environmental contaminants (88).

Potentially, this issue strikes at the heart of the Inuit connection to the land, since it suggests that the land itself is poisoned (89,90), as well as the Inuit diet, which is the chief connection to it (20). As with evacuation for childbirth, balancing Inuit desire to maintain traditional culture with the biomedical interest in maintaining key indicators of health (eg. favourable perinatal outcomes, and acceptable levels of environmental contaminants in cord blood and breast milk) will require excellent epidemiological data balanced with comprehensive anthropological research to account for cultural variations across regions.

Yet, there are currently no comprehensive epidemiological studies of the Canadian Arctic. Health information on all aspects of Inuit birthing - infant mortality, morbidity, prenatal care and post-natal care - is both fragmentary and largely out of date. The most recent survey of childbirth is 17 years old, predates the establishment of birthing centres in the Kivalliq (Keewatin), and never considered other Inuit-populated regions of Nunavut, let alone the rest of the Canadian Inuit population in Quebec, the NWT and Labrador. The evaluations of the Inuulitsivik Maternities are similarly dated, while Houd, Qinuajuak and Epoo's (66) recent study evaluates only the Inukjuak branch. With the establishment of Nunavut, and recent proposals to create a Nunavik Assembly (59), and a Nunatsiavut Assembly in northern Labrador (91), most of the Inuit-speaking regions of Canada have gained self-government.

Birthing has had a major influence on most of these developments, and changes to birthing are likely to occur rapidly as Inuit self-government progresses. Yet, there is little solid information on which to base decisions on policy development. There is a pressing need for comprehensive quantitative and qualitative research on Inuit childbirth to meet and inform these political developments and balance Inuit desire for a traditional model of childbirth with medical concern for perinatal outcomes and environmental health. This need is as apparent for recent developments as it is for those in the past.

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