RESEARCH ARTICLE

The influence of kinship networks and family relationships on pregnancy dynamics in North Greenland

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The purpose of this study was to explore the influence of kinship networks and family relationships on pregnancy dynamics in a settlement in North Greenland. We utilized community-based participatory research framework using ecological systems theory to conduct semistructured interviews with 26 women and 17 men living in Kullorsuaq, Greenland. The extent to which Greenland’s cultural traditions related to naming and adoption practices, intergenerational relationships and communication, educational pursuits, and material resources intersect with pregnancy dynamics in an Arctic Indigenous community is discussed. Results highlight the importance of familial and community connections in pregnancy decision making in Greenlandic culture. Findings suggest that public health programs, health care services, and policies address the involvement of kinship and family networks as well as community level pathways to promote sexual and reproductive health in Greenland.

Keywords: Sexual and reproductive health, Greenland, Family relationships, Kinship networks, Community-based participatory research, Qualitative, Pregnancy

Introduction
Sexual and reproductive health (SRH) disparities in Greenland are high in comparison to other Inuit communities in the Arctic as well as non-Indigenous Arctic populations (Bjeregaard et al., 2004; Erofeeva, 2013; Chen et al., 2015; Moison et al., 2016; Johansen et al., 2017). For example, between 2001 and 2005, perinatal mortality rates in Greenland were 14.2 per 1,000 births compared to 10.1 per 1,000 births for Alaskan Natives, 3.6 per 1,000 births for Icelanders, and 6.5 per 1,000 births for the Danish (Bjeregaard and Larsen, 2016). In addition, over the past 10 years, the chlamydia rates in Greenland have been reported as the highest in the Arctic at a rate of 6,403 per 100,000 (Johansen et al., 2017; Choudri et al., 2018). The incidence rate of gonorrhea in Greenland increased from 915 per 100,000 people in 2005 to 2,745 per 100,000 people in 2014 (Bernsten et al., 2017). Greenland’s sexually transmitted infection (STI) rates among young people also have consistently been twice as high as STI rates among Alaskan Native youth in the United States (Spein et al., 2013; Statens Institute, 2015). The total abortion rate in Greenland is one of the highest globally with a rate of 79.7 per 1,000 live births for women aged 15–49 years (Nordic Medico-Statistical Committee, 2017). In contrast, abortions in Alaska have a rate of 13.5 per 1,000 among women aged 15–49 years with 22% of the abortions in Alaska being among Alaskan Native women (Allan Guttmacher Institute, 2021; Charlotte Lizier Institute, 2021). In Nunavut, the abortion rate among Inuit women aged 15–49 is 21.7 per 1,000 (Johnston Archive, 2021). Juxtaposed to Greenland’s high abortion rates are low teen pregnancies with teen pregnancy (aged 15–19) decreasing from 150 per 1,000 live births to 74 per 1,000 live births between 2011 and 2015 (Moison et al., 2016). Although still higher than Inuit youth in Alaska, a similar trend is seen in a decrease in teen pregnancies among Alaskan Native females aged 15–19 from 84.1 per 1,000 to 31.1 per 1,000 females (Martin et al., 2015). While pregnancy is viewed positively in Inuit families and communities, teen pregnancy specifically has been associated in Greenland with increased rates of physical complications such as stillbirths, neonatal deaths (0–28 days after birth), postpartum hemorrhage, and maternal challenges such as depression and anxiety in Greenland (Montgomery-Anderson, 2013; Moisson et al., 2016). Furthermore, Greenland’s population growth rate for 2020 was ~0.08% (World Factbook, 2020). Taken as a whole Greenland’s epidemiological data is consequential for the SRH outcomes of current and future generations of Greenlanders.

Research related to SRH in Greenland has been examined through a predominately public health research lens.
A vast majority of the SRH research in Greenland has focused on the epidemiology of STIs and pregnancy (Gesink et al., 2008; Homoe et al., 2015; Bersten et al., 2017; Homoe et al., 2018). Other studies have considered the influence of geography and access to health care services (Meldgaard, 2004; Moisán et al., 2016; Rink 2016; Berntsen et al., 2017), environmental pollutants (Hjermit-slev, 2020), smoking and alcohol use (Bjerregaard and Larsen, 2018), and dietary and physical activity (Long et al., 2015; Terkelson et al., 2018; Watson et al., 2020). Far less research has been conducted that integrates public health with the cultural and social determinants that influence Greenlanders’ SRH. There is some evidence to suggest that cultural practices related to kinship networks and family relationships influence SRH in Greenland (Rink et al., 2009; Montgomery-Andersen and Borup, 2013; Rink et al., 2014). At present, two primary linkages have been made related to the intersection of kinship networks, family relationships, and SRH in Greenland. These linkages include concepts of trust and family collectiveness.

Personal responsibility has been identified as an important element in sexual decision making in Greenland. This idea of personal accountability is interconnected with the concept of family, place, and community in Greenlandic culture. A person’s birthplace and family’s home community is at the core of a person’s identity and situates a person in relationship to others (Nuttall, 1994). In addition, the concept of collectiveness and group formation is an essential element in Greenlandic culture that emphasizes a personal responsibility to the whole (Nuttall, 1992). In order to understand personal responsibility to the whole in terms of sexual relationships, Greenlanders assume that a sexual partner is personally accountable for her/his own behavior and that an individual’s personal accountability in a sexually intimate relationship is determined by the family they are in as well as the place and community they are from. Furthermore, the interconnectedness of personal responsibility, family, place, and community is linked to concepts of trust in sexual relationships in Greenland (Gesink et al., 2010). Greenlanders perceive they can trust each other in a sexually intimate relationship because of the family they are in as well as the place and community they come from (Rink et al., 2015). Trust, then, becomes a precursor for individuals to move quickly into a sexual relationship without considering condom use, birth control, or the risk of a possible pregnancy because perceptions of trust are based on familial, place-based, and community connectedness verses establishing trusting relationships based on time spent together getting to know each other (Gesink et al., 2010; Rink et al., 2015).

The intersection we find in Greenlandic culture between personal responsibility; connection to place, family, and community; trust; and sexual relationships which in turn influences sexual decision making that can lead to STIs and pregnancy is reflected in Inuit communities’ social practices and beliefs regarding autonomy, relatedness, and collectivism (Rasmussen, 2009). Previous research has documented Inuit cultural values of autonomy, relatedness, and collectivism which emphasize raising children to be independent individuals, emotionally attached in relationships, and connected to family and the community they come from (McShane et al., 2009; Healey, 2016; Salusky et al., 2021). If we apply these traditional Inuit values (autonomy, relatedness, and collectivism) to our understanding of how cultural beliefs influence SRH in Greenland, we can understand the following. First, Greenlanders believe in personal responsibility for their own sexual behavior in intimate relationships which comes from the value that Inuit culture places on autonomy and an individual’s right to make their own decisions. Second, personal responsibility, which is synonymous with autonomy, is determined by and dependent upon one’s connection to family, community, and place or one’s connection to the whole (collectivism). From a Greenlander’s perspective, sexually intimate relationships and relationship dynamics between sex partners are inherently understood and perceived based on where someone is from and what community and family a person is a part of. Third, concepts of collectivism are then taken one step further in terms of understanding sexual relationships in that one’s part of a collective (place, community, and family) establishes trust between sex partners which addresses how sex partners interact with each other which speaks to the Inuit value of relatedness. Thus, we find that autonomy, relatedness, and collectivism are intertwined in Greenlandic culture to influence intimate relationships and sexual behavior.

Family members can also play an important part in SRH decisions in Greenland (Montgomery-Andersen and Borup, 2013). Historically, decision making regarding pregnancy, such as birth, adoption, or abortion, was influenced by collective decision making within a Greenlandic family because children are viewed within Greenlandic culture as the regeneration of a family and a community (Trondheim, 2010a; Montgomery-Andersen, 2013; Montgomery-Andersen and Borup, 2013). In contrast to this view, Danish colonization (beginning in 1791) highlighted cultural differences between Western/colonial and Indigenous approaches to family, reproduction, and identity (Nuttal, 1992). The differences between Western/colonial and Indigenous approaches to SRH are most pronounced in the distinction between the Western emphasis on individual rights in SRH and an Inuit approach to SRH which emphasizes autonomy, relatedness, and collectivism as described above. In Western culture, SRH is viewed through the lens of individuality and individual rights. In Greenland, although autonomy and independent decision making are valued, one’s autonomy is in relationship with one’s family and community, with family and community connectedness having a major influence on one’s personal decision making.

In order to understand the collective decision making in Greenlandic culture within families regarding SRH as opposed to a Western individualistic decision-making model which emphasizes a women’s right to make her own decisions about what happens to her body and choose what happens with a pregnancy, one must understand the highly central position kinship networks and family relationships have in Greenland. Kinship
networks and family ties are a complex pantheon of interconnected and overlapping biological and nonbiological relations and social associations that are linked together through traditional soul name and adoption practices (Trondheim, 2010a; Trondheim, 2011; Trondheim, 2012). Traditionally, in Greenland, a newborn can be given the name of a recently deceased family member in order to retain that family’s connection to the deceased. The practice of naming is flexible and establishes relatedness between individuals, families, and communities. These naming traditions and beliefs about the significance of naming are similar to traditions in North American Inuit culture as well, including beliefs that names may transfer attributes or personality characteristics or give strength from the deceased to the living (Alia, 2006). Reproductive decision making may then be influenced by who is currently a part of one’s family, who has died, and whether or not it is time to bring back the deceased family member through the naming of a newborn. These decisions are made within families and may not be solely based on the decision of the pregnant woman and/or her partner. Similarly in Greenlandic culture, the adoption of children was a collective decision within a family based on who within an extended family system did or did not have children, how many children someone had or wanted and who within the family network did or did not have the resources to take care of a child (Trondheim, 2010b; Trondheim, 2012).

Given Greenland’s concerning SRH epidemiological data, the country’s decline in population growth, and the accumulation of public health-oriented research, there remains limited empirical research that examines multiple individual, familial, social, cultural, and contextual factors that influence SRH in Greenland. Therefore, our study sought to contribute to the growing discourse on the intersection of kinship networks and family relationships on SRH decision making in Greenland. The research presented here was part of a larger study called, Population Dynamics in Greenland: A Multi-Component Mixed-Methods Study of the Dynamics of Pregnancy in Greenland (PDG), that took place in the Greenland community of Kullorsuaq over a 5-year period. During its tenure, PDG examined multiple determinants of pregnancy including (1) individual characteristics (age, gender, physical and mental health, spirituality, and beliefs about sex, pregnancy, adoption and abortion), (2) interpersonal dynamics in sexual relationships, (3) contraception methods and cultural perceptions and/or behavioral norms regarding contraception, (4) cultural constructs regarding kinship and familial relationships, and (5) natural and built environmental characteristics that may influence pregnancy. For the purpose of this article, we focus our examination on how cultural constructs regarding kinship and family systems influence pregnancy outcomes. Specifically, we present findings on the convergence of traditional Greenlandic practices that include naming, adoption, and intergenerational living with the contemporary realities of material resources and educational pursuits on pregnancy dynamics.

Methods
Study setting
Kullorsuaq is a remote island settlement off the polar ice cap, along the southern end of Melville Bay located in Avannaata Municipality in northwest Greenland (Figure 1). The settlement was established in 1928 by three leading families that came from smaller settlements in the archipelago because of the island’s proximity to abundant fishing and hunting locations. Since its establishment, Kullorsuaq has had a history of fishing and hunting traditions and subsistence living. Today, Kullorsuaq remains one of the most traditional fishing and hunting communities in Greenland. The population of Kullorsuaq is 439 permanent residents with approximately half of Kullorsuaq’s population being under the age of 20 (Statistics Bank Greenland, 2020). Kullorsuaq’s infrastructure consists of a small fish factory, a school for 1st through 10th graders, a social service office, and a store that also serves as a bank and the check in for the heliport. In addition, the settlement has a club house and a sports hall. Young people must move away from the settlement to attend secondary school after passing the 10th grade. There is electricity, heating, and limited access to internet in Kullorsuaq. The settlement has no paved roads or running water. Transportation to and from Kullorsuaq is primarily by boat, helicopter, or in the winter when there is sea ice, by snow mobile and dog sleds. The primary occupations in Kullorsuaq are hunting and fishing for the men and working in the school, health station, social services, or in the home for the women.

Particularly relevant to our study is the health station in Kullorsuaq. The health station is staffed by two trained community health workers. There is no nurse or doctor employed full time at the health station. Rather, a nurse or doctor will travel to Kullorsuaq 1–3 times a year to provide medical care, governmental resources, availability of health care personnel, and weather permitting. Women seeking family planning or reproductive services, such as birth control, abortion services, prenatal checkups, or delivery of a baby, must travel to Upernavik by helicopter or farther south to Ilulissat via plane. Also, SRH education is not provided in the school. The lack of family planning and reproductive health services is consistent across small Indigenous communities throughout the Arctic that, prior to colonization, had locally, culturally grounded practices to address SRH (Ellsworth and O’Keeffe, 2013; Montgomery-Andersen, 2013; Schwarzburg, 2013). In this context, Kullorsuaq is similar to other small Arctic communities that have multiple barriers to access to culturally relevant and local applicable preventive health care. Compounding Kullorsuaq’s challenges with adequate health staff and logistical isolation is Greenland’s westernized medical and public health systems that are based on a Danish model of health care and prevention that have historically been superimposed on Greenland’s Indigenous population (Bjerregaard and Larsen, 2016).

Study background and design
Our study is grounded in a 15-year partnership between Ilisimatursarfik (the University of Greenland) in Nuuk,
Greenland, and Montana State University in Bozeman, Montana. Ilismatursarfik researcher, G.A.R., and Montana State University researcher, E.L.R., were invited by Greenland’s Minister of Social Affairs and community members from Kullorsuaq to discuss concerns about community members’ perceptions of the high number of pregnancies among young women in the settlement. During an initial trip to Kullorsuaq, G.A.R and E.L.R met with elected officials, key community leaders in the school, at the health station, and at social services, to discuss concerns about pregnancy among younger local people. G.A.R and E.L.R asked two primary questions: (1) How do people think it would be best to study pregnancy in Kullorsuaq? and (2) Who would be good for G.A.R. and E.L.R to partner with in the community to conduct a study that addressed pregnancy? These initial, iterative conversations between community members in Kullorsuaq, G.A.R., and E.L.R, lead to the development of our study design, which included a community-based participatory research (CBPR) framework, ecological systems theory (EST), and semistructured in-depth, qualitative interviews (Adler-Reimer and Rink, 2020).

Conceptual framework
Our study utilized CBPR using EST. CBPR is an established community engagement method for conducting research with Indigenous communities because it (1) builds and maintains trust and reciprocity in community-academic partnerships, (2) empowers communities to address health disparities of importance to them in a culturally relevant manner, (3) unites the skills and knowledge of researchers with traditional and local knowledge and resources of the community to enhance research relevance to improve health, and (4) enriches the interpretation of the research results through the integration community and academic expertise (Christopher et al., 2008; Rink et al., 2013). In keeping with a CBPR framework, a four-member community advisory board (CAB) was formed to collaborate with G.A.R. and E.L.R on a study about pregnancy in Kullorsuaq. The CAB, G.A.R., and E.L.R worked together to design the research questions, develop the interview guides for the study, assist with interpreting the data, and identify the best way to share the results with key stakeholders and policy makers in Greenland (Rink and Adler-Reimer, 2019).

The CAB, G.A.R., and E.L.R. also discussed the best way to conduct a study on people’s views of pregnancy in Kullorsuaq. For example, discussions focused on whether qualitative or quantitative methods were best suited for data collection and who was most appropriate to conduct the data collection, such as someone from Kullorsuaq or someone from outside Kullorsuaq. The CAB stated that it would be best for people from outside Kullorsuaq to collect the data and that the data would be best collected in...
private conversations due to the complexity of understanding how pregnancy decisions were made in Kullorsuaq. Thus, it was agreed that G.A.R and E.L.R would conduct semistructured in-depth qualitative interviews for the study.

The semistructured in-depth qualitative interviews were design using EST. EST has intuitive appeal for Greenlanders who have expressed an Indigenous worldview that emphasizes the interconnectedness of social, historical, cultural, spiritual, and kinship dynamics concerning SRH. Central to EST is an emphasis on the interaction of individual, family, social, cultural, and environmental factors to influence peoples’ behavior (Bronfenbrener, 1995, 1999). We specifically applied EST to assess family structure and kinship networks in Kullorsuaq, pregnancy decision making, cultural beliefs and practices about pregnancy, and environmental factors that influenced pregnancy decisions.

**Semistructured, in-depth interviews**

Recruitment for our interviews took place by word of mouth, via direct recruitment by the CAB, and by posting a sign on the board outside the community store. In total, 32 semistructured in-depth interviews were conducted in Kullorsuaq using purposive sampling. Interviewees included 17 men and 26 women ranging in age from 18 to 83. Because Kullorsuaq residents are descendants from the community’s three founding families and, therefore, were “in-family” with each other, every attempt was made to ensure an equal representation of individuals from the different families as well as any newer families that were living in the settlement. The interviews were conducted in Greenlandic and later translated and transcribed into English for analysis. Interviews lasted 1–3 h and took place either in the interviewee’s house, the house where G.A.R. and E.L.R. stayed during their fieldwork in Kullorsuaq, or in an empty classroom at the school after school hours. The interviewees were given a small gift, such as a bag of coffee, a candle, decorative napkins, or bullets for hunting, for their participation in the study. Interview questions addressed four overarching topics: (1) How were family structure and kinship networks organized in Kullorsuaq? (2) How did relationships within families influence pregnancy decisions within a family? (3) How did cultural beliefs and practices influence pregnancy decisions? and (4) How did circumstances or situations outside the family influence pregnancy decisions within the family? Ethical approval for the study was given by the Scientific Ethical Committee for Health Services Research in Greenland and the Montana State University Institutional Review Board.

**Analysis**

Our analysis of the interview transcripts included a combination of grounded theory to identify themes and, in keeping with our study’s CBPR framework, multiple interactions with the study’s CAB to discuss the themes that were emerging from the interviews (Table 1). Discussions with the CAB also addressed what the themes meant in terms of understanding the intersection of family, kinship, and pregnancy in Kullorsuaq (Charmaz, 2006). As such, our analysis included several steps. First, all interview transcripts were subject to open coding, followed by axial coding using Atlas.ti. The axial codes were then grouped into thematic categories that were shared with the CAB (Corbin and Strauss, 2014). Second, the CAB, G.A.R., and E.L.R discussed the meaning and the relevance of the thematic categories to understanding pregnancy dynamics in Kullorsuaq. Third, the information gathered with the CAB was integrated into a refined analysis of the thematic categories. Fourth, the themes and interpretations of the results presented in this article were then finalized by the CAB.

**Results**

Our study results are organized into the following thematic areas: (1) adoption, (2) naming, (3) material resources, (4) education, and (5) intergenerational effects. These thematic areas are discussed below.

**Adoption**

Participants described a relatively open culture of adoption in Kullorsuaq with adoption taking place within kinship networks. Taking care of children or bringing them
into a family unit was also spoken about as a common practice. One woman described feeling connected to her adopted children to the point that she was able to experience the same connection as a biological mother would. Others described gifting children to couples within their family who could not have children or family members asking a couple for their next child when they become pregnant. Some adoptions were the result of direct biological parents’ decisions, in others one parent made the decision. Grandparents or older members of a family also made decisions about who would take care of a child. In addition, some interviewees spoke about sharing children with others who could not have children as part of Greenlandic culture. One interviewee discussed being adopted as a child.

I was adopted, and when they got divorced, we moved to another care, and were welcomed really good by the others, and were never treated badly by them. They told me: “whenever another person comes and even though you only have a little water you give him some.”

The practice of adoption was discussed as a cultural norm in Kullorsuaq with the multiple purposes of ensuring children were cared for, families stayed together, and the responsibility of raising children within a family was shared. For example, children live with other family members even if their biological parents are nearby or move in and out of different households depending on circumstances.

My mother told me that she could take care of my son, because I was inexperienced and she was more experienced than me—so I let her take him with her... so from back then he has been with her. But we have him some days.

This interviewee reflected on her mother intervening with the raising of her son. Grandparents raising grandchildren was indicative of a larger theme throughout our interviews, with many interviewees describing grandparents as having a primary role in their upbringing, and parents expressing strong desires for their children to have children, so that they could have a primary role as a grandparent in raising their grandchildren. The adoption process described here fits into the larger construction of family for Greenlanders and is consistent with the history of traditional adoption practices in Greenland (Trondheim, 2010b). Many participants described very large family networks with the sentiment that they were related, either biologically or through nonbiological connections, to nearly everyone in their settlement. Participants described their families as including friends, cousins, and distant relatives, with little emphasis on the biological family or single-family unit.

Naming
Naming is a cultural tradition that is used to maintain connections to those who have passed on and to protect an enduring sense of family and belonging (Nuttall, 1994). Names of deceased family or community members are ascribed to newborns in order to preserve their memory. This practice was common among participants with some having children who were given the name of a deceased family member or others having been named after another themselves. One participant described the naming tradition as a means to comfort those who have had a family death.

In the case of the eldest—here in the north we have the habit when we get a daughter or a son to feel sympathy with families who encounter death, and we name our children after the deceased, and they are relieved by it, and I never considered to give them another name, we name them after the deceased—that is what I think. To comfort them.

The process of naming that this participant described was to offer sympathy and ensure a family member was not forgotten. This process can be informed by elders or other family members outside of the new child’s direct parents. The naming process also influences identity and the internal and external perceptions of identity for the newly named. Participants described a family member who was given a name taking on the mannerisms and characteristics of the person for whom they were named, internalizing the identity of the name.

As we say in the north, the one who got the name took the identity of the other—it’s very peculiar. And as we say in the north, the one who got the name begins to behave like the deceased one.

Others described being treated as special because of their names. Families of the deceased exhibit special affection for the person who is given the name of their loved one.

Their children all have an affection for me. I am given coffee and a big cigar when I am asked to come to their home—I have been invited as a name-fellow. I have even been given home brew because of my name . . . .

The social practice of naming infants after someone who was deceased occurred often for interview participants. It is an engrained part of life in North Greenland. Direct biological parents, grandparents, and other family members may all be part of the naming decision process. In Kullorsuaq, naming was used as a means to protect and sustain identity and family connection. In part because of this traditional practice, pregnancy was looked upon favorably within the community.

Material resources
The expense and shortage of housing influenced family dynamics and structure. Many families reported struggles around having sufficient financing for housing, food, and daily expenses.
Household crowding was a common occurrence and sometimes the choice of proximity to family was based on lack of alternative options. Often young people lived with grandparents because of lack of housing and challenges for having a steady income. Families relied on one another when this occurred. In the quotation below, a woman with her young son discussed these factors influencing her and her partner’s thinking about having a second child.

There are times when I want one (a second child) but our son doesn’t want any siblings. We think about our life and it can be difficult sometimes. There are days where we don’t have any food, so we rely on family. It is especially when the hunting or fishing is not going well, due to the weather. It can be difficult to have a steady income when we are having that kind of a life, we don’t want to bring another child into this world.

Individuals described resilience in coping with environmental and material restrictions. In particular, individuals described sharing within families and with community members to help make ends meet. Some interviewees described being raised with an attitude of helping someone in need. One mother described how her children’s friends stole food from her refrigerator, but she felt good that they got something to eat. Within families or kinship networks in our study, ample sharing was described and is consistent with the well-documented literature related to sharing economies among Inuit subsistence living communities (Harder and Wenzel, 2012; Dombroski et al., 2013; Ready, 2018; Ready and Power, 2018). With respect to Kullorsuaq, the practice of sharing might involve direct or equipment to adult children for hunting, splitting living and food costs with extended family, or sharing excess food with family or community members (especially harvested meat).

**Education**

The value of obtaining an education and improving family living conditions and financial circumstances was often discussed within the context of young people having children and when it was best for them to have children. Individuals reported being taught the logic of obtaining an education before having children and a family. One woman in the study spoke about her own experience of having a child before getting an education and her desire for youth to prioritize education first.

I have had some regrets having a child at too young an age and without an education. I hope that young people will get an education, before having children.

However, many participants felt it was a joy to have a child regardless of when it happened in their life course. And the values of having children and getting an education are not always viewed in opposition. One individual discussed having a child before getting an education and that the influence of her friends and the community to have an education first was not the only way.

My friends and others have said “first get an education and after that children” that’s what they say. But it goes together well, being young and a parent. I don’t think I am too young to be a parent; I do not think I got a child too young... I have never regretted having a baby.

Further, some wives of hunters described that they could not go away to complete their educations because they needed to be home to assist their husbands with preparing and processing their catch. Women also expressed the desire to complete their secondary education but could not because of family or caretaking responsibilities. In Kullorsuaq, there was not a kindergarten, and the local school only offers education through eighth grade. Youth must go elsewhere in order to complete further education.

**Intergenerational effects**

Considerations of sex and relationships for younger people were influenced by lessons they learned from family members or stories that were passed down from family members. For some, there was open discussion and learning about sex from family members, including conversations between grandparents and youth. Other individuals discussed a gap in family communications, reporting that in some cases, there was not a parent or anyone who was taking on the role of speaking to young people about having relationships or having children. In the following quotation, a participant discusses challenges she sees for many young people. In this case, her opinion is that those without a parent to teach them about sex and having children will continue to become parents when they are young and before they have gotten an education.

Their parents haven’t talked to them about raising a child. There are so many reasons. We have many young people here—many boys. I usually talk to give information about fertility/sex; I have noticed that young people are not using prevention/birth control. That is why some of those boys become fathers—they don’t even know how to be a father. If this continues in the future it will be worse than it is today.

Participants discussed learning about family dynamics and partnership dynamics from older generations and wanting to take part in the good dynamics they learned. One participant discussed learning how he did not want to be and working to proceed differently with his own children and family than what he had experienced from his older generation. These findings are supported in other studies conducted with Inuit communities in which acculturation and westernization have changed the way parents pass down Inuit teachings to their children and how...
Discussion
The examination of SRH in Greenland has primarily been limited to epidemiological studies. There is sparse research examining the social and cultural determinants of SRH among Greenland's Inuit communities. We address this gap in the literature and further our understanding of how kinship and family systems influence SRH in Greenland. Specifically, we examined how social and cultural beliefs and practices related to kinship and family networks influenced pregnancy in the North Greenland community of Kullorsuaq. Emergent themes related to influencing pregnancy dynamics in Kullorsuaq include adoption and naming practices, the impact of the scarcity of material resources such as food and housing, the hindrances to receiving an education, and the impact of intergenerational relationships and communication. Pregnancy themes demonstrate an integration of cultural beliefs and practices associated with Inuit values of autonomy, relatedness, and collectivism alongside the contemporary realities of material scarcity, educational pursuits, and changes in intergenerational roles and responsibilities.

An emphasis on relatedness and connections to others through biological and nonbiological kinship and family networks influenced pregnancy dynamics in our study. The Greenlandic construction of family is broad and fluid, with a low emphasis on direct blood relation. We found a common lack of rigidity regarding family structure among the people in Kullorsuaq. Our study supports previous research on kinship networks in Greenland that demonstrated the dynamics between family members and between generations contributed to how Greenlanders maintain their identity and relate to one another (Trondheim, 2010a; Trondheim, 2011; Rink et al., 2014). Among our participants, traditional Greenlandic adoption and naming practices were commonly used in Kullorsuaq to place oneself within the large context of the community as well as maintain and extend family relationships. For example, a child who has been given the name of a deceased community member may then be considered part of the family of the deceased, whether the child is biologically related to the family of the deceased or not. In addition, families may adopt or foster children in Kullorsuaq and consider them part of the family. In Kullorsuaq, pregnancy, birth, and raising of children continued to be intrinsically tied to how Greenlanders identify themselves and relate to one another. Thus, there was strong familial and cultural support for pregnancy in Kullorsuaq which was reinforced by traditional Greenlandic practices such as adoption and naming. These findings provide strong evidence to identify pathways to appropriately integrate cultural beliefs, values, and local practices related to how Greenlanders share and make decisions within families and extended family networks into Greenland's public health and health care systems (Aagard, 2017; Augustussen et al., 2017).

Participants in our study also reflected on internal considerations such as weighing the option to attain a certain education level versus having a child. In our study, participants discussed how education influenced their pregnancy decisions. Here, we saw a tension between autonomous desires to better oneself through education versus the socially supported desire to have children in order to recreate Greenlandic values of connectedness. In Kullorsuaq, the pathway to obtaining a secondary education level or a university education requires moving away from Kullorsuaq and one's family. Among our participants, moving away from Kullorsuaq and one's family was described as prohibitive. Many participants discussed their experiences of homesickness and challenges to continuing an education despite their desire to do so. For many participants, finishing high school would require moving to a different town, and for all participants, a university education would require moving to larger and culturally different towns in southern Greenland or to Denmark. Individuals placed high value on education and emphasized the desirability of attaining education and a profession before having children, but there was limited emphasis on practical steps to attaining education and postponing pregnancy. Overall, as the results from our study indicate, the benefits and joys of having a child outweigh the consequences or potential barriers to education. Furthermore, the willingness of grandparents and extended family members to care for children if the parent(s) decided to pursue an education also contributed to an acceptance of pregnancy. Although people generally believe that pregnancy and having a child is best after one has received an education, pregnancy, birth, and raising of a child is supported by immediate and extended family members. This contradiction creates a situation in which pregnancy is not perceived as a barrier to educational attainment because expecting and new parents believe their families will assist in the raising of their children should they decide to pursue their education.

Participants in our study expressed a desire to change generational beliefs about pregnancy by placing more emphasis on passing down contemporary knowledge about pregnancy and SRH to their children with less emphasis on what grandparents and older family members believed about pregnancy and SRH. Some participants indicated they had gotten the skills and resources to make healthy choices about their own SRH from their parents and older generations, but many others did not. This finding is reinforced by previous research conducted with Greenlandic parents which found that parents want to communicate with their children about contemporary topics related to SRH but lack the skills, resources, and social supports to do so (Rink et al., 2014).

Finally, our study demonstrated that the scarcity of material resources such as housing and food also gave people in Kullorsuaq pause when considering having a child. However, similar to the Greenlandic practice of grandparents or extended family members raising children in order to support a parent to go to school or work, we found that the Greenlandic tradition of sharing with family and community members taking care of each other, accommodated and adjusted to pregnancy, childbearing, and raising children. An example of this phenomena in
our study was evidenced by community members in Kullorsuaq taking in and feeding each other’s children. The sharing of material resources with children in Kullorsuaq exemplifies the Inuit value of collectivism and sharing (Kral et al., 2011; Dombrowski et al., 2013). However, it also alleviates complete parental responsibility for child-rearing by sharing that responsibility with other family and community members. This cultural practice, although in keeping with Greenlandic belief systems, in contemporary times may function to abdicate the importance of personal responsibility for one’s pregnancy decisions and parenting because there is an understanding within families and the community that children will always be taken care of regardless of the circumstances of the parents.

**Limitations and strengths**

Our study had limitations and strengths. We collected qualitative data to narrate pregnancy dynamics in a settlement in North Greenland. Pregnancy outcome data, such as number of live births, miscarriages, and abortions, specific to Kullorsuaq were difficult to obtain due to the method of tracking health data in the settlements throughout North Greenland. Thus, our data are solely based on self-reporting and the perceptions and personal experiences of the people in Kullorsuaq. In addition, our findings are nested within a remote Indigenous community above the Arctic Circle that still maintains traditional cultural practices related to pregnancy and the rearing of children that are linked to kinship and family systems and community networks. These connections may not be as apparent in Greenland’s more developed cities such as Nuuk, Ilulissat, and Sisimiut. As such our study results are contextually based and may be cautiously applied to understanding pregnancy dynamics in Greenland’s urban areas, communities in South Greenland, or other Arctic Indigenous communities.

Despite these limitations, our study also has strengths. First, our research was conducted by request from community members in Kullorsuaq using a CBPR, ecological approach to investigate local concerns about pregnancy. Because of the community’s strong interest in the topic, we received consistent community guidance, involvement, and trust in our research. For this reason, our study results are culturally relevant to understanding the forces underpinning pregnancy in Kullorsuaq. Second, our study supports the need for increased qualitative research in Greenland to augment the dearth of epidemiological research in the country in order to contextualize the social and cultural factors that may be driving Greenland’s pregnancy outcomes. Third, our research results have direct application for efforts to improve pregnancy outcomes in Greenland by offering local knowledge that highlights the importance of integrating familial and cultural understandings of SRH in future health policy and programs.

**Conclusion**

Our research underscores the importance of incorporating Greenlandic constructions of kinship and family systems in efforts to promote SRH in Greenland. Specifically, public health endeavors must consider the influence of grandparents and extended family members on pregnancy decision making of younger generations of Greenlanders. For example, SRH programming must include strategies that incorporate family members in interventions in order to address the balance between the importance of kinship and family connections in Greenlandic culture with individual decision making that is a hallmark of a westernized Danish public health system in Greenland (Ellsworth and O’Keeffe, 2013; Ingemann et al., 2018). The integration of cultural, familial practices with public health efforts to promote individual responsible pregnancy decision making in Greenland is even more necessary given the juxtaposition of the difficult access to family planning and reproductive services that men and women face in Greenland’s smaller, remote communities. Further, policies and programs aimed at increasing educational attainment among Greenlanders must acknowledge the closeness of Greenlandic families and the significant influence family members, in particular grandparents and parents, have on young peoples’ decisions surrounding having children and pursuing an education. Delaying pregnancy until after one has completed their schooling and is able to financially provide for their family is a Western ideal, not necessarily a Greenlandic ideal in which collectivism and the rearing of children and resource allocation is shared. Educating family members in ways they can proactively support the young people in their family to obtain higher levels of education and stay in school, regardless of whether a young person is pregnant or has a child or not, is warranted. Finally, in our study, structural-level challenges, such as lack of access to family planning and reproductive services, insufficient housing, household crowding, and food scarcity, appeared to inadvertently influence pregnancy decisions and the taking care of children in Kullorsuaq. This finding supports the need for increased infrastructure development in Greenland’s more geographically isolated communities in order to provide individuals with the opportunity to make autonomous decisions regarding their reproduction and how their reproduction will impact their housing situation and availability to provide food for their family. In conclusion, future research is needed to identify best practices and evidence-based strategies for incorporating cultural beliefs and practices related to kinship networks and family systems into policies and interventions to promote SRH in Greenland (Rink and Adler-Reimer, 2019; Adler-Reimer and Rink, 2020).

**Data accessibility statement**

Deidentified data of the transcripts from the interviews can be obtained by contacting Dr Elizabeth Rink at elizabeth.rink@montana.edu.

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Competing interests
The authors have no competing interests with this study.

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