

Envisioning an ecological systems theoretical approach to sexual and reproductive health programs in Greenland

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Abstract

People in Greenland experience disparate sexual and reproductive health (SRH) outcomes relative to populations in other circumpolar countries and Denmark. SRH in Greenland is intrinsically linked to multiple levels of an individual's life, including family, partner relationship, healthcare access, and unique sociocultural factors. In this article we advocate for the use of ecological systems theory to design SRH programs in Greenland that incorporate the many interrelated systems that affect individual health outcomes. We introduce key concepts and strengths of ecological systems models for SRH programs, and we elucidate specific constructs of ecological systems theory that complement the existing Greenlandic health environment. We suggest that ecological systems theory is culturally congruent with how people in Greenland understand the interconnectedness of individuals, families, communities, and the natural and built environment. Incorporating ecological systems theory in SRH program design may promote interorganizational collaboration of SRH services, and integrate SRH education across family, school, and healthcare settings.

Interconnected determinants of sexual and reproductive health

Sexual and reproductive health and wellness is a critical component of individual health across the lifespan and underlies many other indicators of population health. Sexual and reproductive health (SRH) is bidirectionally linked to mental health, maternal and infant health outcomes, infectious disease epidemiology, population dynamics, gender equity, and is inherently connected to

individual rights (McGranahan et al. 2021; WHO 2010). In recent years, public health researchers have called for increased use of theoretical frameworks, integrated throughout healthcare systems, to holistically and comprehensively address the structural determinants of sexual and reproductive health within unique communities and environments (Agurs-Collins et al. 2019; George et al. 2020; Jessen et al. 2016). Cultural practices, gender norms, and community power dynamics heavily influence individual SRH behaviors, and must be accounted for in the design of interventions, policies, and programs to improve population wide SRH outcomes (Levy et al. 2020; McGranahan et al. 2021). Despite the importance of SRH to human wellness, in many nations effective SRH policies and programs have been under-researched or underfunded for political, cultural, economic, and discriminatory reasons (George et al. 2020; Sully et al. 2020).

Historically, western SRH programs have primarily focused on individual factors that are antecedents to sexual risk behaviors, such as condom use self-efficacy, exposure to SRH education, impulsivity, depression, and substance use (DiClemente et al. 2007). Contemporary research engaging circumpolar populations, including Indigenous communities, has advocated for the use of comprehensive, holistic frameworks to design SRH programs that reflect the complex sociocultural and economic realities of the target population (Baroudi et al. 2021; Jessen et al. 2016; Lys et al. 2019; Rink et al. 2013; Rink & Reimer 2018). Holistic and multi-level frameworks for sexual and reproductive healthcare can unite expertise across multiple sectors to support an individual's overall sexual wellness, including through school systems, clinics and hospitals, and social services (Agurs-Collins et al. 2019; Rink & Reimer 2018; Steenbeek 2004). Multi-level SRH programs engage national and local governments, private institutions, and international development partners to promote vertical and horizontal knowledge transmission and program sustainability (Braddock et al. 2020; Levy et al. 2020).

Sexual and reproductive health epidemiologic profile in Greenland

People living in Greenland experience poor SRH outcomes relative to other circumpolar populations (Berntsen et al. 2017; Bjerregaard & Larsen 2016; Curtis et al. 2002; Homøe et al. 2015; Rink et al. 2021). SRH research in Greenland has typically used population health surveys to collect individual-level data to

document health inequities (Knudsen et al. 2015; Terkelsen et al. 2017; Weihe et al. 2016). Under the welfare model of healthcare provision in Greenland, SRH services are provided at no cost to the patient. Contraceptives, condoms, and treatment of sexually transmitted infections (STIs) are free and accessible in healthcare settings. Despite prevention resources, Greenland has high rates of STIs relative to other Arctic countries and Denmark. Over a ten-year period, the incidence of gonorrhea in Greenland increased from 25.2 cases per 1,000 population in 2012 to 46.7 cases per 1,000 population in 2022, despite increased research into underlying drivers of transmission (Berntsen et al. 2017; StatBank Greenland 2022b; Johansen et al. 2017; Kenyon et al. 2020). Since 2010 Greenland has experienced an epidemic of syphilis, reporting 0 cases of syphilis in 2009, with transmission steadily increasing to 143 cases of syphilis in 2020 (Albertsen et al. 2015; StatBank Greenland 2022b). Rates of perinatal mortality and infant mortality are higher in Greenland than in Iceland, Alaska, and Denmark (Bjerregaard & Larsen 2016; Naalakkersuisut 2013). While the Greenlandic government has created explicit policies to reduce the incidence of traumatic births and infant death since the early 2000s, the experience of pregnancy and birth in Greenland is often complicated by cultural incompatibility in the healthcare system (Montgomery-Andersen et al. 2013; Montgomery-Andersen et al. 2010). Greenland has one of the highest abortion rates in the world, reaching 78.8 abortions per 1,000 women aged 15 to 49 years in 2018 (StatBank Greenland 2022a). Given the epidemiologic profile of SRH in Greenland, there is a demonstrated need for improved collaboration across local and national health authorities, researchers, and community partners to intervene upon SRH disparities using evidence-based, theoretically grounded frameworks.

Overview of sexual and reproductive health programs in Greenland

While ample research in Greenland has monitored SRH disparities, the body of research into effective intervention strategies is narrow. Existing SRH programs and interventions in Greenland have primarily focused on improving adolescent health through sexuality education initiatives and a national strategy to prevent sexual abuse and assault. PAARISA, the Office of Health and Preventative Measures in Greenland, has implemented several sexuality education programs in the country. *The Sex Pilots* was a peer-to-peer edu-

cation program implemented in Aasiaat in the mid-1990s, but the program was not rigorously evaluated for effectiveness in improving SRH outcomes for Greenlandic youth (Berntsen et al. 2017; Homøe et al. 2015). PAARISA began implementing the *Doll Project* in 2006, a sexuality education program based on a Danish model that uses computer-controlled baby simulators to discourage pregnancy for youth aged 13-18 via realistic parental ambitions (Wistoft 2014; Christiansen et al. 2023). The *Doll Project* was adopted by Naalakkersuisut (the Government of Greenland) as a continuous school education program in 2012 (Wistoft 2013). Evaluations of the *Doll Project* were completed in 2014 and 2023, recommending increased parental and health services involvement to improve program delivery, as well as increased incorporation of culturally-grounded content (Wistoft 2013, 2014; Christiansen et al. 2023). The *SexInuk* program was implemented in Nuuk beginning in 2012, whereby nursing students educate adolescents about sexual health topics (Homøe et al. 2015). The *Doll Project*, *SexInuk*, and the *Sex Pilots* primarily focused on intervening upon adolescent beliefs and behaviors at the individual level. The program *Inuulluataarneq* (Having the Good Life) was implemented from 2009-2012 in Paamiut and Ummannaq and used an ecological systems framework to deliver sexuality education to youth and their parent/guardians (Rink et al. 2014; Rink et al. 2015; Rink et al. 2013). *Inuulluataarneq* emphasized the benefits of engaging multiple levels of a child's life (school, parents/guardians, and healthcare systems) to improve sexual and reproductive wellness (Rink et al. 2015). The public health strategy *Inuuneritta*, which began in 2007, is the most notable national strategy that specifically addresses sexual health. *Inuuneritta* (2007) included sexual health as a focus area to improve national public health, but encountered limitations to effective implementation (Lents et al. 2019). *Inuuneritta II* (2013-2019) did not list sexual health as a specific focus area (Naalakkersuisut 2013). The most recently implemented strategy, *Inuuneritta III* (2020-2030), specifically addresses improved sexual health outcomes as a national initiative (Naalakkersuisut 2020). The program proposes to achieve this through *Killiliisa*, Nalaakkersuisut's strategy against sexual assault (2018-2022), and through continued peer-to-peer and doll-based sexuality education programs organized by PAARISA (Naalakkersuisut 2020). While *Inuuneritta III* indicates a clear movement towards culturally grounded health promotion in Greenland, there exists a need for a comprehensive framework

for SRH programs to address all interacting systems that influence individual sexual health outcomes for adolescents and adults (Ingemann et al. 2018; Lents et al. 2019).

Ecological systems theory to guide holistic sexual health programs in Greenland

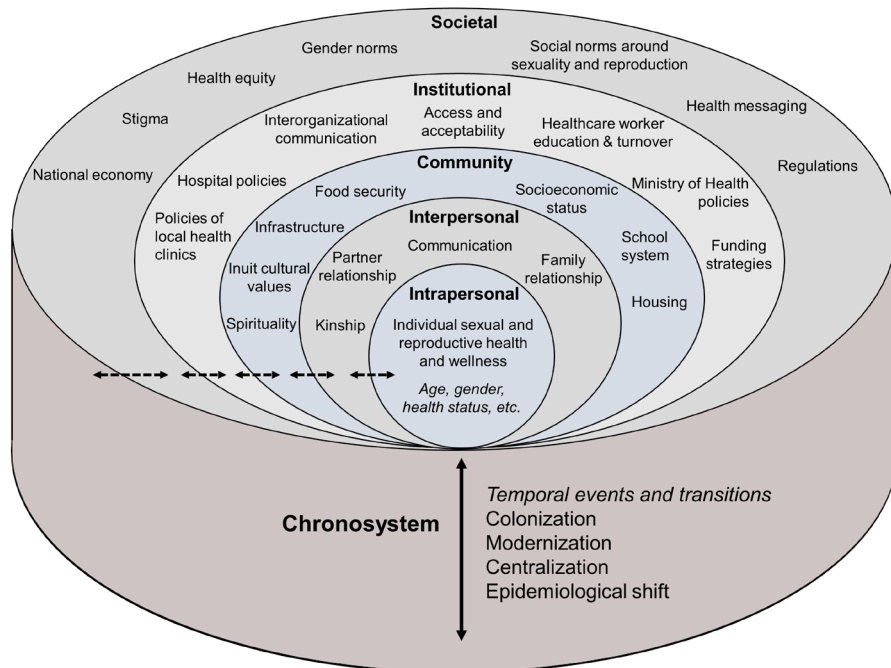
In this article, we advocate for the use of ecological systems theory to inform holistic, multi-level SRH programs to improve individual health outcomes in Greenland. We describe the key constructs of ecological systems theory, and outline how they complement existing components of the Greenlandic health system and cultural landscape. An ecological systems approach to SRH programs allows practitioners to address the unique cultural, economic, historical, and geographic factors that contribute to SRH disparities in Greenland. People in Greenland benefit from SRH programs that are designed to proactively intervene upon STI transmission and poor pregnancy outcomes through improved sexuality education for individuals, families, healthcare providers, and community leaders (Gesink et al. 2010; Rink et al. 2014; Rink et al. 2021; Rink et al. 2022). We assert that use of an ecological systems framework will align with a contemporary movement towards strengths-based public health programs that capitalize upon kinship networks, connection to land, and other core components of Greenlandic life (Berliner et al. 2012; Cueva et al. 2021; Rink & Adler Reimer 2020; Rink et al. 2021).

Overview of ecological systems theory in health programming

Building upon fundamental principles of ecology, an ecological systems model of SRH addresses the biological and behavioral SRH conditions of individuals within their social and physical environment (Bronfenbrenner 1995; DiClemente et al. 2005). While ecological models of human health and development date back to the 1800s, Bronfenbrenner's ecological systems theory has been the most widely utilized and cited ecological model to conceptualize issues of human health (Hayden 2014; Neal & Neal 2013). Bronfenbrenner's ecological systems theory proposed that human development occurs through a series of reciprocal interactions between an active human subject and the persons and objects in their immediate environment (Bronfenbrenner 1999). The variation and frequency of the reciprocal interactions between subject and environment affect the outcome of the subject (Bronfenbrenner 1995, 1999). From a health

perspective, ecological systems theory poses that intervening on a subject's social or physical environment will influence the subject's health behaviors and outcomes (DiClemente et al. 2005; Salazar et al. 2010).

Visually represented as concentric systems, the ecological systems model differentiates proximate and remote levels of the environment that affect individual behavior and outcomes within temporal and spatial contexts (Bronfenbrenner 1995). The innermost circle, the intrapersonal level, includes the characteristics of the individual subject (age, health status, race/ethnicity, knowledge, attitudes, beliefs, personality traits, skills, perceptions, self-efficacy, exposure to trauma, and history; Hayden 2014; McLeroy et al. 1988). The interpersonal level includes the influential family, partner, kin, and peer relationships that provide social identity, support systems, and roles within a social structure (Hayden 2014). The community level includes localized contextual factors that influence health behaviors and outcomes, such as cultural values, spirituality, median socioeconomic status, public safety, local politics,



Example of an ecological systems model including determinants of sexual and reproductive health that are specific to the Greenlandic sociocultural, physical, and historical context.

social services, food security, and the school environment (Bronfenbrenner 1995; Hayden 2014). The institutional level represents the broader factors that constrain or promote individual health outcomes, including government systems and policies (Hayden 2014). The societal level includes media influence, gender norms, economy, and social norms, especially as they relate to race/ethnicity and gender (DiClemente et al. 2007; DiClemente et al. 2005; Hayden 2014; Salazar et al. 2010). Finally, the chronosystem represents the sociohistorical conditions and temporal influences that underly individual life experiences and related health outcomes, such as the advent of a vaccine, occurrence of a disaster, or cumulative historical traumas (Campbell et al. 2009). While there are many adaptations of ecological models for health research, studies examining ecological systems related to SRH typically include the intrapersonal, interpersonal, familial, community, institutional, and societal systems (Campbell et al. 2009; DiClemente et al. 2007; Rink et al. 2020; Salazar et al. 2010). Above, we provide an example of how an ecological systems model can be constructed to identify and organize key determinants of SRH that are specific to the Greenlandic sociocultural, physical, and historical context (Rink et al. 2021; Rink et al. 2022).

Strengths of the ecological systems model in sexual and reproductive health programs

Ecological systems models can serve as conceptual tools to retrospectively explain SRH phenomena and to prospectively identify intervention points to improve SRH outcomes for a population (Rink et al. 2022; Salazar et al. 2010; Stokols 1996). An ecological systems approach to health poses that incremental health behavior change is dependent on the nature of interaction between the individual and the proximate systems in their environment (Bronfenbrenner 1999). As opposed to interventions that improve environmental quality (passive intervention) or directly modify individual behavior (active intervention), an ecological systems approach blends active and passive intervention across the individual, relational, institutional, and community levels (Stokols 1996). Ecological models offer opportunities for multiple levels of analysis, drawing conclusions across different systems to inform a variety of health promotion strategies (Rink et al. 2022). Individual factors (depression, sensation seeking) or relational factors (partner communication, relationship dynamics, parental

monitoring) may not independently predict sexual risk (Salazar et al. 2010). An ecological framework for SRH programs allows for the examination of multiple individual and ecological variables that preclude a specific SRH outcome. SRH interventions based in ecological systems theory allow practitioners and researchers to identify cultural characteristics of a target population that may serve as indicators of SRH outcomes or intervention points for health promotion. For example, in the study Inuulluataarnej seasonal patterns of hunting, fishing, community celebrations, and family gatherings needed to be incorporated into program design so that parents/guardians could be engaged in sexuality education alongside their adolescent children. To do this, Inuulluataarnej delivered a single 2-hour sexuality education session for parents, as opposed to organizing a multi-session curriculum. In this example, an SRH program designed with an ecological systems approach endogenously accounted for the temporal, physical, and cultural realities of the target population. Previous studies of SRH in Greenland have called for programs that incorporate Greenlandic cultural values, realistically match the healthcare environment of outer settlements, reflect collectivism over individualism, and aim to holistically address SRH as a component of overall wellness (Gesink et al. 2010; Homøe et al. 2015; Ingemann et al. 2018; Montgomery-Andersen et al. 2010; Montgomery-Andersen et al. 2013; Rink et al. 2013; Rink et al. 2015; Rink et al. 2021; Rink et al. 2022). Use of an ecological systems framework in Greenlandic SRH programs may effectively address these areas.

In support of an ecological systems approach to SRH in Greenland

Envisioning an ecological systems approach to SRH policies and programs in Greenland will build upon and strengthen existing components of effective preventative health strategies in the country that are culturally centered.

The chronosystem: Temporal and spatial events affect SRH in Greenland

SRH programs and interventions exist within the sociohistorical, temporal, and spatial characteristics of the ecosystem of the target population. Using an ecological systems lens, we may identify key factors of the chronosystem that influence SRH outcomes in Greenland, including the history of colonization and geographic redistribution of humans related to centralization and modernization.

Inuit life in Greenland was radically transformed by contact with European missionaries beginning in 1721 (Bjerregaard & Larsen 2016; Grydehøj 2020). Missionaries established residence and relationships in Greenland to promote Christianity and trade. The Christianization of Greenland disrupted traditional social structure, introducing concepts of gender, gender roles, racial hierarchy, monogamous marriage, and sexuality rooted in Christian morality (Arnfred & Pedersen 2015; Grydehøj 2020). Social structure and traditional conflict resolution practices were removed as shamanism was deemed demonic (Rud 2017a). Trade introduced market economics and spatial reorganization of human settlement, merging families that had been independent into central locations with hundreds of people (Grydehøj 2020). Western political organization and bureaucratic institutions were developed to organize communities and support the Danish colonial project (Grydehøj 2020). Epidemics of disease were documented for the first time (Bjerregaard & Larsen 2016). Throughout the 19th and 20th century wage labor and changing climactic conditions continued to reconstruct social aspects of Greenlandic life. Greenlanders were encouraged to adapt to market trends, transitioning between sealing, fishing, and mining (Rud 2017b). In the 20th century the Danish colonial government promoted centralization and settlement relocation to support commercial fisheries by concentrating development in productive centers and cutting off access to critical resources in outer settlements, like stores and health centers (Petersen 1986). With every market adaptation and imposed colonial interest, so marks the introduction of change in social identity, gender roles, and other characteristics proximate to SRH biology and behavior (Arnfred & Pedersen 2015; Hamilton & Rasmussen 2010; Rud 2017b).

Present day Greenland is on a path towards economic and political autonomy from Denmark, and in 2009 the Self-Government system was adopted to establish a clear path toward independence (Grydehøj 2020). Danish policy dominates many systems in Greenland, as healthcare, education, and bureaucracy are highly dependent on Danish labor and financial support (Grydehøj 2020). In recent years paradiplomacy of the Government of Greenland has been characterized by interest in capitalizing on certain effects of climate change to advance industrial and economic growth (Grydehøj 2020; Hansen et al. 2016). Forecasted socio-cultural and economic change related to climate adaptation in Greenland offers opportunities to design health programs that

account for shifting population dynamics (Anastario et al. 2021; Timlin et al. 2021).

Within an ecological systems model of SRH in Greenland, the conceptualization of colonization, epidemic, modernization, and centralization as significant factors within the chronosystem should not be reduced as linear, causal precedents to a specific SRH outcome. Rather, they are viewed as foundational to the processes between the different ecological levels that ultimately affect the SRH outcomes of the individual. The spatial and temporal elements of colonization and modernization in Greenland give rise to conditions that immediately affect institutional, societal, cultural, and interpersonal levels of the model. For example, historically a Greenlandic family was collectively involved in decisions about pregnancy, childbirth, abortion, and adoption, as children were viewed as the regeneration of a family or community (Trøndheim 2010a). By contrast, western approaches to pregnancy, childbirth, and abortion typically value individual rights, choice, and responsibility. The introduction and predominance of western and colonial ideology (temporal chronosystem factor) in the Greenlandic health system (individualism) informs health policies and mandates (institutional level) that may remove a pregnant Greenlandic woman from the traditional cultural values that inform SRH decision-making (collectivism) or may physically remove her from an outer settlement to seek childbirth or abortion services (spatial chronosystem factor, effect of centralization; Montgomery-Andersen et al., 2013; Montgomery-Andersen et al., 2010; Rink et al. 2021). The policy of referring women from outer towns and settlements to centralized locations for childbirth was implemented to improve poor perinatal mortality in Greenland. The policy reinforces the reliance on outside healthcare workers and institutions to support childbearing, though there are emerging opportunities to successfully integrate traditional midwifery to support women birthing in their home community (Houd et al. 2022). Accounting for these unique chronosystem factors that affect SRH in Greenland, health programs rooted in ecological systems theory might integrate traditional Greenlandic cultural values that influence pregnancy outcomes by incorporating family members into clinical decisions and including family members in patient education (Ingemann et al. 2018; Rink et al. 2021). Chronosystem factors may also be considered when designing SRH programs that fit within existing structural challenges of providing quality healthcare to

remote villages, for example, by increasing the development of health infrastructure in geographically isolated communities as opposed to encouraging patient travel to urban centers (Rink et al. 2021). Ecologically and culturally informed SRH programs can benefit from identifying and evaluating aspects of the Greenlandic chronosystem.

The institutional system and the cultural system: Health programs rooted in Greenlandic realities

Structural limitations of the existing Greenlandic healthcare system are connected to adverse SRH outcomes (Montgomery-Andersen & Borup 2013; Montgomery-Andersen et al. 2013; Montgomery-Andersen et al. 2010; Rink et al. 2013). An ecological approach to future SRH policy and program design can account for existing limitations at the institutional level and incorporate aspects of Greenlandic healthcare that work well. While most of Greenland's population lives in urban centers, the country contains over 60 small settlements ranging from 50 to 500 inhabitants. Remoteness, transportation limitations, socioeconomic circumstances, and infrastructure of the outer settlements contribute to a disparity in availability of quality healthcare resources (Huot et al. 2019; Ingemann et al. 2018; Montgomery-Andersen et al. 2010). Individuals from outer settlements must travel to urban centers to receive specialized SRH care, including for some prenatal care, childbirth, and lactation consultation (Nordic Co-operation 2022). Healthcare services in Greenlandic urban centers are modeled after the Danish healthcare system and primarily employ workers from outside of Greenland. This creates numerous cultural differences that affect the provision of health services and the experience of Greenlandic patients. Healthcare staff shortages and high staff turnover disrupt sustainable transmission of cultural knowledge, practices, values, and attitudes that affect the caregiver-patient relationship (Huot et al. 2019; Montgomery-Andersen et al. 2013; Montgomery-Andersen et al. 2010). Language barriers can impede patient education and communication and may discourage collaboration in interorganizational networks that bridge community healthcare workers with higher levels of municipal and national health centers (Ingemann et al. 2018). Disparate living standards, incomes, and education levels between non-Greenlandic healthcare workers and Greenlandic patients further constrain the accessibility and acceptability of SRH programs,

as there may be perceived or realized class and race-based misconceptions (Huot et al. 2019; Ingemann et al. 2018). Taken as a whole, reciprocal interactions between institutional systems and cultural systems limit or facilitate the provision of quality SRH care in Greenland. SRH programs designed with ecological systems theory may better account for such interactions and identify intervention points to improve the delivery of SRH care that fits the existing cultural needs, practices, and values of Greenlanders.

An ecological systems approach to SRH promotes the integration of goals and practices across multiple institutions to create a holistic, long-term, sustainable health system. An evaluation of the implementation of *Inuuneritta II*, the integrated public health strategy in Greenland, found a direct need for improved coordination across organizational structures (Ingemann et al. 2018). Political turnover and siloed funding streams constrained the effective implementation of *Inuuneritta II* (Ingemann et al. 2018). The Greenlandic adolescent public health strategy for 2020-2030, *Inuuneritta III*, explicitly states improved partnerships across municipalities, ministries, the health service, the Greenland Police, and other organizations as a goal of the program (Naalackersuisut 2020). This exemplifies the opportunity for an ecological systems approach to strengthen interorganizational collaboration and coordination of SRH services in Greenland. Using an ecological systems framework, key stakeholders are invited to take ownership of health promotion through the process of co-production of knowledge, operationalizing the goals of *Inuuneritta III* (Ingemann et al. 2018; Naalackersuisut 2020). Furthermore, an ecological systems approach complements existing goals to eliminate the undermining of different health policies by adopting a whole-of-government approach to program implementation (Ingemann et al. 2018).

Ecological systems design complements Kalaallit ways of knowing

Individual sexual and reproductive choices occur within the interconnectedness of family, place, and community in Kalaallit culture (Montgomery-Anderesen et al. 2010; Rink et al. 2021). Kalaallit cultural collectivism emphasizes the importance of individual accountability, trust, and responsibility to support the whole group (Nuttall 1994; Rink et al. 2021). Relationality is central to Inuit worldview, and the concept of self is connected to land, animals, and kin that sustain human life (Anastario et al. 2021; Trøndheim 2010b). In this worldview,

sexual decision making is promoted by social, familial, cultural, environmental, and structural layers of a person's life (Rink et al. 2021). Ecological systems thinking resonates with Inuit epistemology (how we know truth) and ontology (what is truth). An Indigenous epistemology holds that the relationship between things – concepts, ideas, objects, persons – and the formation of the relationship is key to building knowledge (Wilson 2008). Ecological systems theory hinges on the interaction of different systems, the forming of relationship (*process*), the nature of the relationship, and the context of the relationship (Bronfenbrenner 1995).

The study *Population Dynamics Greenland* (2014-2019) revealed examples of the epistemological fit between ecological systems theory and Greenlandic life. Rooted in ecological systems theory, the study examined the dynamics of contraception, pregnancy, and parenting decisions in the settlement of Kullorsuaq. Within Kalaallit understanding of relatedness, sexually intimate partnerships are connected to place, environment, community, and family (Rink et al. 2021; Rink et al. 2022). In turn, decision-making about contraception use, pregnancy, and abortion is not isolated only to the needs of the individual or partnership as is common in western culture of individualism. In Kullorsuaq, SRH choices are based in collectivism such that individual wellness and personal responsibility are nested within the wellness of the group (Rink et al. 2021). *Population Dynamics Greenland* found that relatedness and emphasis on whole-group caring influenced people's behavior, from sharing of food and materials, to understanding family as beyond strictly biological connections (Rink et al. 2021). To understand SRH at the individual level or to design programs to improve individual SRH outcomes, an ecological systems approach inherently appeals to existing Kalaallit knowledge systems connecting the individual within interpersonal, familial, environmental, and spiritual relations (Rink et al. 2021).

SRH education for children, parents, and healthcare professionals

Preventing the transmission of STIs and improving reproductive health outcomes in Greenland require more than mass STI screening efforts and the provision of condoms. Education is a critical component of improving SRH outcomes. The Greenland Sexual Health Study (2007-2009) and the subsequent study, *Inuulluataarneq* (2009-2013), demonstrated the merits of comprehensive sexuality education for parents as well as adolescents (Rink et al.

2014). Parents involved in *Inuulluataarneq* specifically requested improved collaborative partnerships between education and health systems to help them connect with their children about topics of sexual health, emotional wellness, and substance use (Rink et al. 2014; Rink et al. 2015). Both studies found that parent-child communication about sex is limited by parental knowledge about sexual health and discomfort talking about sex (Rink et al., 2014). Greenlanders have identified a need for sexuality education not just within the school system, but also in healthcare settings (Rink et al. 2014). Successful sexuality education programs in Greenland have included cultural values and culturally congruent modes of education that engage community members, such as through workshops and within the family (Homøe et al. 2015; Rink et al. 2014). This body of research supports the need for integration of sexuality education for families within the healthcare system, schools, and community organizations. An ecological systems framework to improve sexuality education at the familial and community level might provide after-school or evening programs for parents/families and a component of culturally relevant health education for healthcare professionals (Rink et al. 2014).

Conclusion

The status of SRH and overall health and wellness in Greenland is influenced by many complex factors. To improve population-level SRH outcomes, policymakers, healthcare providers, researchers, and educators must intentionally address the interacting ecological levels that shape an individual's life. Using ecological systems theory and/or multi-level ecological systems frameworks to design SRH programs in Greenland may support the recognized need to improve interorganizational collaboration, incorporate existing cultural values and worldviews into effective program design, and account for the unique sociohistorical environment in which Greenlanders live. In opposition to programs that are not theoretically grounded or are designed to intervene upon individual SRH behaviors, using ecological systems theory to inform SRH programs in Greenland will build upon existing cultural strengths of interconnectedness and will help to answer the circumpolar call for holistic models for health promotion.

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