Individual- and community-level determinants of Inuit youth mental wellness

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ABSTRACT

OBJECTIVES: Following the onset of intensive colonial intervention and rapid social change in the lives of Inuit people, youth in Nunavik have experienced high rates of mental health problems and suicide. Inuit people describe a broad range of contextual influences on mental wellness based on lived experience, but most epidemiological studies have focused on individual risk factors and pathologies. This study aimed to assess the influence of multiple determinants of mental wellness among Inuit youth in Nunavik, including culturally meaningful activities, housing and community social characteristics.

METHODS: Mental wellness was measured in the form of two primary outcomes: self-esteem and suicidal ideation. Using cross-sectional data from the 2004 Nunavik Inuit Health Survey and multilevel regression modelling, we estimated associations between these two outcomes and various independent individual- and community-level explanatory factors among Inuit youth. All variables were selected to reflect Inuit perspectives on determinants of mental wellness. The study design and interpretation of results were validated with Inuit community representatives.

RESULTS: Pride in Inuit identity, traditional activities, community-level social support and community-level socio-economic status were found to be protective. Barriers to participating in traditional activities, household crowding and high community rates of violence were risk factors.

CONCLUSION: These findings support Inuit perspectives, expand the scope of epidemiological analysis of Inuit mental wellness and reinforce the need for locally informed, community-wide approaches to mental wellness promotion for Inuit youth.

KEY WORDS: Community psychiatry; Inuits; mental health; multilevel analysis; social conditions; social determinants of health

La traduction du résumé se trouve à la fin de l'article.

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Like many Indigenous groups, Inuit youth have experienced high rates of suicide following the historical trauma and ongoing marginalization associated with Euro-Canadian colonialism.¹ Suicide rates in Nunavik are among the highest in Canada.² Yet suicide rates vary substantially among communities,³ and many Inuit youth are thriving. Moreover, some Inuit “feel that it is detrimental to the health of individuals to continually tell them that they are at the highest risk for disease” and “are interested in research on ... concepts of wellness, and wellness indicators”.⁴

Mental wellness, defined by Inuit Tapiriit Kanatami (ITK) as “self-esteem and personal dignity flowing from harmonious physical, emotional, mental and spiritual wellness and cultural identity”,⁵ is a priority for Inuit organizations. Inuit cite a wide range of social and environmental factors that affect mental wellness,^{6–9} including a clear cultural identity and social role; supportive relationships with friends, family and community, particularly Elders; access to and knowledge of the land and the Inuktitut language; and regular consumption of locally harvested food (“country food”). Salient stressors include emotional stress in relationships, violence, poverty, overcrowded housing and environmental change.

However, epidemiological research involving Inuit has focused primarily on individual-level risk factors for psychobehavioural pathology.^{10–13} Little attention has been paid to protective factors or to community contexts as determinants of mental health, or to positive dimensions of mental wellness. This phenomenon is not specific to research involving Inuit: a recent review¹⁴ of the scope of

research on Indigenous mental health and wellness emphasized the need to include community-level perspectives in epidemiological research, as well as a focus on resilience and well-being. Such studies can be useful in guiding and supporting mental wellness promotion efforts for Inuit youth, and in directing research attention towards key dimensions of the complex community dynamics that give rise to variations in mental wellness among communities.

The current study aimed to quantitatively explore both the individual- and community-level determinants of Inuit youth mental wellness, emphasizing factors that have been identified as important to Inuit but that have rarely been considered in prior epidemiological research.

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Conflict of Interest: None to declare.

Table 1. Definitions of study variables

Variable	Definition	Possible individual-level values*
Land and culture		
Pride in Inuit identity	Agreement with the statement “I am proud to be an Inuk”	0% = Never; 33% = Rarely; 67% = Sometimes; 100% = Usually
Harvesting animals	Number of episodes of hunting or fishing in the last 12 months	Range: 0–320
Processing animals	Number of animal carcasses processed (skinning, washing, cutting) in the last 12 months	Range: 0–120
Sharing country food [†]	“Do you receive country food from your friends or relatives outside your household?” (community-level only: question not asked of individuals)	0% = Never; 50% = Sometimes; 100% = Often
Difficulty hunting	“Since 2000, have any species you hunt for food been harder to catch/hunt/find?”	0 = No; 1 = Yes
Social factors		
Emotional support	Has someone to talk to if feeling troubled or for emotional support	0% = Never; 25% = Rarely; 50% = Sometimes; 75% = Most of the time; 100% = All of the time
Positive interaction	Has someone to have a good time with	0% = Never; 25% = Rarely; 50% = Sometimes; 75% = Most of the time; 100% = All of the time
High emotional demands [†]	Someone causes worry or demands too much (individual-level only: the community-level mean was considered a consequence rather than a cause of prevalent mental health problems)	0% = Never; 25% = Rarely; 50% = Sometimes; 75% = Most of the time; 100% = All of the time
History of sexual abuse	Lifetime history of forced or attempted forced sexual activity	0 = No; 1 = Yes
History of threats of physical violence	Adult history of threats of physical violence that were so serious that the person became afraid	0 = No; 1 = Yes
Education, income and housing		
Educational attainment	Highest level of school reached	0% = No school; 25% = Primary only; 50% = Some secondary; 75% = Finished secondary; 100% = Some post-secondary
Personal income	Gross income in the past 12 months	0% = Less than \$20,000; 33% = \$20,000 to \$40,000; 67% = \$40,000 to \$60,000; 100% = Over \$60,000
Overcrowding	People per room, calculated as number of people divided by (number of bedrooms + 2)	Continuous

* Community-level variables were calculated as the community mean of the corresponding individual-level variable.

[†] All exposures were considered at both the individual and community levels, except where otherwise noted.

METHODS

Setting and sample

Nunavik is an Arctic region consisting of 14 fly-in communities ranging from approximately 200 to 2,500 people, of whom 90% identify as Inuit. The communities share a considerable degree of cultural and political history.

We obtained data from the 2004 Nunavik Inuit Health Survey, which has been thoroughly described elsewhere.¹⁵ Briefly, households in all communities were sampled by random systematic draw. If at least one household resident self-identified as Inuk, all household residents aged 15 or older were invited to participate. Questionnaires covered various health and social themes selected in consultation with Inuit representatives. The number of Inuit participating was 1,006, for an overall response rate of 51%. The current study focused on the 452 Inuit participants aged 15–30. This is the upper age limit for “youth” used by the National Inuit Youth Council.

Measures of mental wellness

Mental wellness was measured by means of one positive outcome (self-esteem) and one negative outcome (suicidal ideation) in order to provide a balanced portrait. Self-esteem, part of ITK’s definition of mental wellness,⁵ was measured by a seven-item version of the extensively validated Rosenberg Self-Esteem Scale. The original 21-point score was converted to a percentage value for ease of interpretation. Suicidal ideation was measured by the dichotomous question: “In the past 12 months, have you thought seriously about committing suicide?”, a minor modification of a question from the 2000–2001 Canadian Community Health Survey.

Individual- and community-level explanatory factors

Factors judged by Inuit to influence mental wellness were selected from the measures available in the survey. Table 1 provides definitions for each variable.

Individual-level factors were social support, education, income, pride in Inuit identity, activities relating to the land, difficulty finding animals to hunt, emotionally demanding relationships, histories of physical or sexual violence, and household crowding. Ordinal variables, treated as continuous in order to preserve information content and therefore maximize study power, were scaled to percentages for ease of comparability.

Community-level factors covered the same domains and were calculated as the survey-weighted means of individual-level measures among Inuit respondents of all ages, in order to reflect the characteristics of entire communities. The one exception was average educational attainment, which was calculated only among Inuit under 40. This reflects the cohort that attended Nunavik-run schools, rather than federal day schools or residential schools.

Statistical analysis

Missing data were handled by multiple imputation (Supplementary Appendix 1 – see ARTICLE TOOLS section on journal site).

Survey-weighted means of each explanatory factor and outcome were calculated overall, by sex and by community. Community-level variation was assessed by calculating intra-class correlation coefficients (ICCs) for each community-level explanatory factor and each outcome, using random-effect linear regression models.

Associations between each explanatory factor and each outcome were estimated by unweighted marginal multilevel regression

Figure 1. Causal diagram of potential influences on mental wellness among Inuit youth

models. Models were estimated by generalized estimating equations with an exchangeable correlation structure within households. Standard errors were estimated by the clustered sandwich estimator, adjusted for clustering by household. The link function was linear for self-esteem and logistic for suicidal ideation. No clear non-linearity was detected for any bivariate association, so all exposures were treated as linear.

We first calculated unadjusted bivariate associations between each explanatory factor and each outcome. Each association was then adjusted for age, sex and a distinct set of potential confounders (Supplementary Table 1). Minimally sufficient sets of potential confounders were selected separately for each association on the basis of a formal causal diagram, depicted in Figure 1. This diagram was developed through a review of qualitative literature on Inuit mental health.

For the sake of comparability across explanatory factors, we present predicted differences in average self-esteem and predicted differences in the prevalence of suicidal ideation as the measures of association, with contrasts corresponding approximately to the range of values in the population. For individual-level factors, the 5th and 95th percentiles in the population were contrasted. For community-level factors, two standard deviations below and above the mean were contrasted. Statistical significance was set at the 95% confidence level.

All calculations were carried out in Stata (Version 12.1, StataCorp, College Station, TX).

Community involvement

The original survey was designed in consultation with, and with oversight from, Nunavik community members.¹⁵ The current secondary analysis was requested as part of regular public health assessment and planning in the context of long-term collaboration between Dr. Richer's institution and the locally governed Nunavik Regional Board of Health and Social Services (NRBHSS). The results of the study were used by multi-sector working groups convened by the NRBHSS (including youth and Elders) to plan the next health survey and to develop mental health promotion recommendations for the

region. As recommended by participatory research principles,¹⁶ the research question, study design, choice of variables, interpretation of results and recommendations were generated or validated through discussions with the mental health promotion working group and the NRBHSS's Nutrition and Health Committee, which oversees health research in Nunavik. Both entities granted permission to publish the findings.

Ethics approval

Survey participants gave consent for their anonymized information to be used in future research. Data from the original survey are owned by the NRBHSS. Approval from the Nutrition and Health Committee is required to access the data and was granted for this study. Additional ethical approval was granted by the Research Ethics Board of the McGill University Faculty of Medicine (A11-B54-13B).

RESULTS

Sample characteristics

Table 2 summarizes individual and community characteristics. Inuit youth reported an average self-esteem score of 61%, and 21% reported suicidal ideation in the preceding 12 months. Young women reported higher levels of suicidal ideation and slightly lower self-esteem than young men. Young women also reported higher rates of violence and higher emotional demands, but experienced greater emotional support. Young men reported harvesting and processing animals more frequently, and reported more difficulty finding animals when they went hunting.

Across communities, the average self-esteem score among youth ranged from 56% to 69% (ICC 7.0%), and the prevalence of past-year suicidal ideation among youth ranged from 7% to 34% (ICC 0.8%). Communities varied the most in household crowding (ICC 10.8%), income (ICC 5.6%) and harvesting frequency (ICC 5.1%). Communities were similar in terms of pride in Inuit identity, emotional support and animal processing (ICC <0.1%).

Figures 2a and 2b show associations with 95% confidence intervals between explanatory factors and each mental wellness outcome.

Table 2. Survey-weighted means of individual and community factors experienced by Inuit youth in Nunavik, 2004

	Individual-level factors (<i>n</i> = 452)			Community-level factors (<i>n</i> = 14)	
	Overall mean	Women (<i>n</i> = 244)	Men (<i>n</i> = 208)	Minimum	Maximum
Self-esteem	60.9%	58.5%	63.6%	56.3%	68.5%
Suicidal ideation in past 12 months	21.8%	26.5%	16.2%	6.7%	33.6%
Pride in Inuit identity	90.1%	89.6%	90.6%	89.4%	97.4%
Harvesting animals (episodes/year)	73.5	55.6	94.4	71.7	157.8
Processing animals (animals/year)	10.7	6.7	15.5	10.1	29.0
Sharing country food	57.6%	59.3%	55.6%	38.2%	64.2%
Difficulty hunting	48.0%	43.5%	53.3%	37.2%	69.8%
Emotional support	54.4%	59.3%	48.6%	45.9%	60.3%
Positive interaction	71.7%	72.6%	70.6%	57.5%	72.7%
High emotional demands	39.0%	42.5%	34.8%	27.5%	53.3%
History of sexual abuse*	44.0%	61.9%	23.1%	25.5%	68.5%
History of threats of physical violence*	24.6%	33.1%	14.6%	13.2%	31.1%
High school completion†	27.6%	28.2%	26.8%	14.0%	41.0%
Personal income > \$20,000/year	27.3%	27.6%	26.8%	24.5%	53.0%
Overcrowding (people/room)	1.12	1.13	1.11	0.76	1.26

* Mean calculated for Inuit aged 18+ only, because these questions were not asked of those under 18.

† Mean calculated for Inuit aged 18–39 only, because older cohorts did not attend Nunavik-run schools.

Land and culture

Greater mental wellness was associated with greater pride in Inuit identity and with more frequent harvesting or processing of animals. There was some evidence of higher self-esteem among youth living in communities with greater collective pride in their Inuit identity. There was some evidence of a lower prevalence of suicidal ideation among youth living in communities that processed or shared more country food, and some evidence of more suicidal ideation among youth experiencing greater difficulty finding animals to hunt.

Social factors

Youth experienced greater mental wellness in communities with more positive interaction. Similar trends were seen in communities with more emotional support. Youth mental wellness was poorer in communities with a higher prevalence of sexual abuse. There was some evidence of more suicidal ideation among youth in communities with more threats of physical violence.

Education, income and housing

Youth mental wellness was higher in communities with greater average educational attainment and incomes. Mental wellness was poorer for youth living in an overcrowded household or community.

Adjusted associations

Adjusting associations for potential confounders did not contradict any of these results, although the magnitude of some associations was attenuated.

In adjusted models, greater cultural pride and living in a community with more positive social interaction, greater educational attainment and higher income were associated with greater mental wellness. Increasing difficulty finding animals to hunt was associated with reduced mental wellness.

In contrast, there was no clear evidence of a harmful effect of living in a community with scarce housing, after adjustment for potential confounders. The magnitudes of the associations with harvesting and processing animals were also reduced considerably by adjustment.

DISCUSSION

This study aimed to explore, quantitatively, determinants of Inuit youth mental wellness with explicit guidance from Inuit perspectives.⁶ To the best of our knowledge, this is the first quantitative study in an Inuit population that assesses the determinants of a positive mental wellness outcome, documents the potential protective role of cultural identity and traditional activities, and simultaneously assesses individual- and community-level factors in a multilevel analysis. Its results are likely generalizable to other Inuit communities and perhaps to other remote Indigenous communities.

In this study, pride in Inuit identity and participation in traditional activities relating to the land were associated with greater mental wellness. A clear and positive cultural identity is widely recognized as a crucial resource for mental wellness among Indigenous peoples¹⁷ and features prominently in the ITK definition of mental wellness. This cultural identity includes a strong relationship to the land, a relationship that is enacted, in part, through the harvesting, processing, sharing and consuming of traditional food.¹⁸ The food itself has both nutritional and symbolic value but is also embedded in social activities that serve to strengthen relationships, reinforce cultural values and transmit traditional knowledge. Barriers to hunting, associated with greater suicidality in this study, may deprive men, especially, of both a livelihood and a valued social role. Additionally, animal scarcity in an era of resource development and climate change may be understood by hunters as evidence of environmental degradation, which may be equivalent to a “direct assault on the person”¹⁹ for peoples who identify directly with the land.

At the community level, there also appeared to be positive associations with lower suicidality among residents of communities in which more country food was processed and shared. This may reflect the presence of extensive community networks through which sharing occurs, the availability of positive role models in a community with more successful and generous hunters, or greater optimism for the future in areas where food species remain abundant. The stronger collective relationship with the land and the traditional knowledge underlying these activities may also reflect a higher degree of cultural continuity, famously

Figure 2. (a) Associations between individual- and community-level factors and average self-esteem among Inuit youth in Nunavik, 2004. (b) Associations between individual- and community-level factors and prevalence of suicidal ideation among Inuit youth in Nunavik, 2004. Note: Percentages indicate ordinal variables treated as continuous, so that 0% corresponds to all community members giving the lowest possible answer to a multiple choice question, and 100% corresponds to all community members giving the highest possible answer.

linked to lower youth suicide rates among BC First Nations and seen as a key resource for youth to feel invested in their own future.²⁰

Despite widespread recognition of these links in grey and qualitative literature, few epidemiological studies have investigated the link between culture, land and wellness among Inuit youth. One recent article, which used data from the same survey as the current study, also found that hunting was protective against suicide attempts among young Inuit women.²¹

The current study found that greater mental wellness was associated with living in a community with greater social cohesion and greater socio-economic success. These results agree with previous ecological studies of Inuit and Alaska Native communities, which found lower suicide rates in communities with greater socio-economic success and with stronger ties to culture and family.^{22,23} Similar findings in other Indigenous communities in Canada include an association between individual perception of community caring and lower suicidality among adolescents in Manitoba First Nations communities.²⁴ Our study expands these results to a positive measure of mental wellness, and finds that these associations are robust to adjustment for individual characteristics.

Many mechanisms have been proposed to link Indigenous community social and economic capital to individual mental wellness: Inuit communities with greater social cohesion may provide individuals with greater social support, a sense of belonging, and positive role models.²⁵ Communities with higher educational achievement and income may also have more resources to invest socially, more successful role models for youth and more optimism based on visible opportunities.²⁶

A number of stressors were also identified in this study, including living in an overcrowded household, living in a community with inadequate housing and living in a community with highly prevalent violence.

Many authors have discussed the negative collective impact of violence in Indigenous communities, which can produce feelings of fear and insecurity even for those who have not directly experienced violence, and may be a manifestation of widespread feelings of anger, shame and helplessness as a legacy of historical and collective forms of violence.²⁷

Overcrowded housing at the individual level has been previously linked to physical markers of stress in Nunavik.²⁸ We are not aware of previous studies that have demonstrated an association directly with mental health or wellness or an association with community-level crowding. The latter association was not confirmed after adjustment, though this finding should be viewed with caution since household-level crowding is likely both a confounder and a mediator of the effect of community-level crowding. In overcrowded housing, the lack of private space may impair school performance and increase exposure to violence; at the community level, housing shortages may reduce the availability of safe havens for those fleeing violence.

Finally, prior analysis of the data set²⁹ has already demonstrated, and this analysis further confirms, that mental wellness is positively associated with individual-level social support, educational attainment and income; it is negatively associated with experiences of excessive emotional demands and violence.

Limitations

The study had several limitations. First, the scope of factors examined was limited by the availability of data. Macro-level factors such as collective political autonomy, climate change and systemic racism could not be assessed. Data on some important individual-level factors were also not available, such as culturally relevant knowledge, intergenerational relationships, childhood family disruption, and experiences of discrimination. The specific content of the measures used here may not have been ideal for the purposes of the current study, and none of the measures used here has been extensively validated in this population. Selection bias may also arise from the somewhat low response rate.

Our ability to adjust associations for confounding factors and to draw conclusions about causality was also limited by the complex multifactorial nature of mental health and wellness, the lack of temporality in cross-sectional data, and limited statistical power. Studies that pool data from multiple Inuit regions may partially overcome this last limitation.

RECOMMENDATIONS AND CONCLUSIONS

Extensive recommendations for improving the determinants of Inuit health have recently been published.⁶ Many of these recommendations find support in the current study. While the root causes of high rates of mental health problems among Inuit remain historical, structural and political, the current results can inform support for community-led mental wellness promotion efforts:

- *Promotion of cultural identity and traditional activities:* Land and culture camps bring together Elders and youth, providing opportunities to build positive relationships and to transmit cultural values and knowledge.³⁰ Culture and identity may also be supported by greater opportunities to learn Inuit history and language. Many non-Indigenous people, including health and social service workers, require anti-racism education. Economic barriers to harvesting can be reduced through harvester support programs, and environmental protection strategies are needed to maintain wildlife populations in the face of climate change and local resource development.
- *Promotion of social cohesion and community wellness:* Ongoing support is needed for locally developed activities to promote healing from historical trauma and to prevent violence. Natural helpers and community wellness workers require additional outside support to prevent burnout. Activities to promote traditional culture, which emphasizes interconnection as a core value, may also promote youth resilience.
- *Improvement of community living conditions:* The stress of overcrowding is one more of many reasons to provide adequate housing in Nunavik. Culturally appropriate economic development and educational opportunities are also badly needed. Improved opportunities for collective discussion and planning, from greater access to community centres to greater political autonomy for Nunavik overall, are likely to facilitate such work.

The results of this study are broadly consistent with Inuit perspectives on the determinants of mental wellness. This echoes

the prediction of Pauktuutit Inuit Women of Canada and collaborators: “as researchers become familiar with Indigenous-specific health indicator frameworks, we can expect more ‘new’ discoveries of ‘old truths’, as they incorporate the insights of Inuit and other Indigenous cultures into their assessments of Indigenous health”.^{8(p31)} These results remind us that in addition to their challenges, Inuit communities have important strengths that must be acknowledged and supported. Mental wellness promotion in Nunavik must include support for multifaceted, community-led initiatives that seek to create healthier environments for all.

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RÉSUMÉ

OBJECTIFS : Après une intervention coloniale intensive et le changement social rapide de la vie des Inuits, les jeunes du Nunavik affichent des taux élevés de troubles de santé mentale et de suicide. Les Inuits décrivent un vaste éventail d'influences contextuelles sur leur bien-être mental d'après leur vécu, mais la plupart des études épidémiologiques mettent l'accent sur les facteurs de risque et les pathologies individuels. Dans notre étude, nous avons cherché à évaluer l'influence de plusieurs déterminants du bien-être mental chez les jeunes inuits du Nunavik : les activités culturellement significatives, le logement et les caractéristiques sociales de la communauté.

MÉTHODE : Nous avons mesuré le bien-être mental selon deux effets principaux : l'estime de soi et l'idéation suicidaire. À l'aide de données transversales de l'Enquête de santé auprès des Inuits du Nunavik de 2004 et d'un modèle de régression multiniveaux, nous avons estimé les associations entre ces deux effets et divers facteurs explicatifs individuels et collectifs indépendants chez les jeunes inuits. Les variables ont été sélectionnées pour refléter les perspectives inuites des déterminants du bien-être mental. Le protocole d'étude et l'interprétation des résultats ont été validés auprès de représentants des communautés inuites.

RÉSULTATS : La fierté liée à l'identité inuite, les activités traditionnelles, le soutien social communautaire et le statut socioéconomique communautaire sont des facteurs de protection. Les obstacles à la participation aux activités traditionnelles, les logements surpeuplés et les taux élevés de violence dans la communauté sont des facteurs de risque.

CONCLUSION : Ces constatations confirment les perspectives des Inuits, élargissent le périmètre de l'analyse épidémiologique du bien-être mental chez les Inuits et soulignent le besoin d'approches communautaires éclairées par les données locales pour favoriser le bien-être mental des jeunes inuits.

MOTS CLÉS : psychiatrie communautaire; Inuits; santé mentale; analyse multiniveaux; conditions sociales; déterminants sociaux de la santé