

Innovative Approaches in Public Health Research

Applying Life Course Epidemiology to Aboriginal Health Research

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ABSTRACT

A life course epidemiology approach embraces the complexity of disease risk and acknowledges the long-term effects of physical, social, psychological, and behaviour pathways, operating across an individual's life, a community's generation, and a population's development, on health and well-being. Researchers who adopt a life course epidemiology approach broaden their ability to understand, explain, and prescribe ways to mitigate the effects of chronic diseases and reduce risk factor development and interaction. Although there are many diseases that explicate the importance and usefulness of a life course approach for Aboriginal health research, this commentary focuses on the benefits for understanding chronic respiratory diseases in Aboriginal populations. The hope is that this will expose the benefits of a life course approach for the study of Aboriginal health research and draw attention to the need for well-rounded, high-quality Aboriginal respiratory health research.

MeSH terms: Indigenous populations; epidemiology; techniques; chronic diseases; respiratory tract diseases

RÉSUMÉ

L'épidémiologie biographique est une approche qui tient compte de la complexité des risques de maladie et reconnaît les effets à long terme des cheminements physiques, sociaux, psychologiques et comportementaux sur la santé et le bien-être, effets qui se manifestent au cours de la vie (à l'échelle individuelle), sur une génération (à l'échelle communautaire) et dans le développement d'une population. Les chercheurs qui adoptent cette approche améliorent leur capacité de comprendre, d'expliquer et de prescrire des moyens d'atténuer les effets des maladies chroniques et de réduire l'apparition et l'interaction des facteurs de risque. De nombreuses maladies peuvent illustrer l'importance et l'utilité de l'épidémiologie biographique pour la recherche sur la santé autochtone, mais notre commentaire porte sur les avantages de cette approche pour l'étude des maladies respiratoires chroniques dans les populations autochtones. Nous espérons ainsi mettre en lumière les avantages de l'épidémiologie biographique pour l'étude de la santé autochtone et attirer l'attention sur le besoin d'effectuer des recherches bien équilibrées et de haute qualité sur la santé pulmonaire des Autochtones.

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It has been well documented that Aboriginal peoples experience a disproportionate burden of ill health in Canada.¹⁻⁴ In fact, the well-being of Aboriginal communities in Canada is considered comparable to that of many developing nations.^{5,6} Recent studies that document an increase in chronic disease morbidity and mortality further highlight the need for research that can help improve Aboriginal peoples' health.⁷

Targeting adult risk factors has been the traditional method used by epidemiologists, public health practitioners, and policy-makers to combat chronic diseases.⁸ The adult risk factor model, however, has been criticized for its oversimplification of the etiology of disease and the lack of attention it gives to disease prevention.^{9,10} The World Health Organization (WHO) has recently recognized the benefits of a life course perspective for the development of policies and prevention strategies, as risks occurring throughout life can be identified, corrected, and/or modified in order to reduce the development and/or impact of chronic disease.¹¹ This article briefly describes life course epidemiology and illustrates its applicability to chronic diseases in the Aboriginal population in Canada, using chronic respiratory conditions as an example.

Life course epidemiology

As a conceptual approach to health research, life course epidemiology coincides with social epidemiology, which focuses on the impact that social factors have on a population's health.¹² The distinguishing feature of life course epidemiology is that it "attempts to integrate biological and social risk processes rather than draw false dichotomies between them".¹² The theoretical perspective offered through a life course approach provides the means for researchers to conceptualize how socio-economic determinants of health, which are mediated through social risks or influenced by risks incurred through biological and/or physiological processes, influence the development of chronic diseases in a given population.^{9,12,13}

The importance of intergenerational relationships, community well-being, and holistic understandings of health in Aboriginal communities¹⁴ is complemented by a life course perspective that examines the influence of a combination of biological, social, and environmental processes across all life

stages – from prenatal life to infancy to the elder years.¹⁵ The high rates of risk factors and risk factor interactions, intergenerational impacts of disease, and the unique position of Aboriginal peoples – historically, politically, and socio-economically – within the Canadian state^{15,16} further emphasize how life course epidemiology provides an appropriate lens to study Aboriginal health in Canada. To further this point, we will highlight how a life course perspective increases one's understanding and ability to assess the impact of chronic respiratory diseases among Aboriginal peoples.

Chronic respiratory health in Aboriginal populations

Throughout this paper, “chronic respiratory conditions” will refer to any condition of the upper and/or lower respiratory tract that persists over a significant time period or across an individual's life span; for example, tuberculosis, otitis media, asthma, allergies, and chronic obstructive pulmonary disease (COPD). Although there are many diseases that we could have chosen to explicate the importance and usefulness of a life course approach for Aboriginal health research – diabetes, cardiovascular disease, or cancer, for example – chronic respiratory diseases were chosen to increase awareness of these conditions as issues of Aboriginal health.

The need for attention to respiratory health in the Aboriginal population is exemplified by the fact that when compared to non-Aboriginal Canadians, Aboriginal peoples are at an increased risk of death from respiratory diseases¹⁷⁻²¹ and experience excessive morbidity.²² This is especially true for Aboriginal children: for example, 13 of 20 respondents in a survey of native children's health ranked respiratory illness as the most serious child health concern.²³ In addition, many Aboriginal communities have identified chronic and acute respiratory conditions as the fastest-growing health problem in their region.^{22,24-26} The Regional Health Survey has also documented that respiratory conditions are a growing Aboriginal health concern.²⁷

Life course epidemiology and chronic respiratory health in Aboriginal populations

Despite documented concern of an increased rate of chronic respiratory disease

in the Aboriginal population, “the reasons underlying the trends in respiratory mortality and morbidity [apart from smoking] are poorly understood”.²⁸ Life course epidemiology, which provides a framework to assess the myriad influences that affect one's health and instances where these factors are of concern, offers health researchers, policy-makers, and people across Canada with a way to conceptualize health in a more complete and understandable way. This is particularly useful for the study of chronic respiratory diseases, which develop over a long timeframe and can affect different people in different ways.²⁸ Applying a life course epidemiology approach to Aboriginal respiratory health, therefore, provides the means to assess appropriate ways to prevent risk factor development and interaction.

As is well documented, smoking is a fundamental risk factor for respiratory conditions:²⁹ exposure to smoke is known to cause damage and put strain on the lungs and respiratory system.³⁰ Although smoking among First Nations adults has declined slightly in recent years, Aboriginal smoking rates are still higher than those in Canada's general population.³¹ Increased rates of smoking among Aboriginal children and youth is of particular concern:³² children and adolescents are smoking at a younger age and smoking more cigarettes, more often.³¹ Life course epidemiology provides researchers with the necessary tools to engage in studies that examine and analyze smoking patterns, and investigate the impact of smoking cessation strategies at different life stages. Such informed research will be an important way to overcome the challenges of developing effective smoking cessation programs and prevention strategies appropriate for age groups at risk, such as adolescents.^{33,34} While smoking is a recognized risk factor for respiratory disease and lung function, recent research also shows that childhood lung function is affected by environmental, perinatal, and early life conditions and factors.³⁵ The integration of biological, social, and cultural aspects of disease within the life course methodology encourages researchers to examine the cultural dimensions of smoking, the effects of exposure to second-hand smoke and wood smoke, as well as other forms of indoor air pollution (i.e., mould and bacteria growth) on one's

health.³⁶⁻⁴⁰ Furthermore, examining socio-economic issues that exacerbate environmental risk factors for respiratory conditions (i.e., substandard housing, crowding, and poverty)^{22,41-43} through a life course perspective can add to current understandings of the interaction and impact of these various risk factors in Aboriginal communities and the appropriate ways to address them.

A common theme in the literature on Aboriginal research ethics is that the full participation of Aboriginal communities in research endeavours is fundamental to ethically sound and effective research.⁴⁴ Life course epidemiology in Aboriginal health is well paired with participatory approaches and community health concerns because it too allows researchers to integrate scientific and community understandings of health so as to improve Aboriginal well-being. This is evident in the success of participatory health promotion studies and healthy living programs, which focus on personal and social issues of health and facilitate relationships between researchers and community members in order to promote healthy living and life cycle development.⁴⁵ The Kanasatke breastfeeding promotion program, which was initiated by the community in response to research about the protective factors of breastfeeding for respiratory conditions in infancy^{46,47} and knowledge of decreasing breastfeeding rates in the community, is an example of the compatibility and potential benefits of life course and participatory research. Researchers consulting and working with community members raised awareness of the program and allowed the creation of comprehensive development and implementation strategies: as a result, “[breastfeeding] initiation rates have increased by 43% [in the community] and exclusive breastfeeding to four months of age has risen 23%.”⁴⁸

CONCLUSION

Understanding that risk factors develop at different stages of life and impact individual and community health throughout the life cycle and across generations provides the framework for well-rounded and focused research. Researchers who adopt a life course epidemiology approach broaden their ability to understand, explain, and

prescribe ways to mitigate the effects of chronic diseases and reduce risk factor development and interaction. A life course approach to chronic respiratory disease epidemiology, therefore, provides researchers with the means to map dominant risk patterns in Canada's Aboriginal population and target their eradication before the accumulation of risks becomes problematic.⁸ As "the purpose of life course epidemiology is to build and test theoretical models that postulate pathways linking exposures across the life course to later life health outcomes",¹² a persuasive rationale can be made for time-related research designs. Longer-term studies, in particular cohort studies, are needed to determine the interplay of risk factors and the impact of different life stages on the development of chronic diseases that a life course approach advocates. These activities should lead to interventions, which will then need to be studied to determine their effectiveness. Given the burden of chronic respiratory diseases in Canada's Aboriginal population, issues of Aboriginal health must be placed at the top of the research agenda and examined with the appropriate research tools, such as life course epidemiology, which will lead to the improvement of Aboriginal peoples' health.

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