Population Health Intervention Research: Advancing the Field
The Population Health Intervention Research Network (PHIRNET) is a six-year Strategic Training Initiative in Health Research funded by the Canadian Institutes of Health Research (CIHR). PHIRNET focuses on four priority areas in PHIR: methods, economic evaluation, ethics and research governance, and interventions addressing social health inequalities. PHIRNET’s internationally competitive trans-disciplinary training program provides trainees with opportunities to work with Canadian and international experts to develop core competencies related to PHIR. Trainees are eligible for internships, graduate scholarships and post-doctoral fellowships, and participate in monthly webinars and our annual Summer Institute. These opportunities enable trainees to acquire a comprehensive understanding of PHIR, with special emphasis on training opportunities that require analytical methods and insights that transcend conventional academic boundaries, thereby creating a truly trans-disciplinary training environment. Below is a summary of three of our many trainee and mentor partnerships. For more information, visit http://www.phirnet.ca.

Rod Knight and Jason Robert
Doctoral Trainee Rod Knight (Interdisciplinary Studies Graduate Program, University of British Columbia) was awarded a PHIRNET Research Internship to work with Jason Robert (Professor, School of Life Sciences, Arizona State University) to support Rod in developing new skills related to population and public health ethics. This internship focused on exploring the ethical implications of interventions that ‘target’ populations based on socially defined characteristics. It also provided Rod the opportunity to co-develop and serve as a co-investigator on an ethics catalyst grant recently funded by CIHR.

Josée Lapalme and Lois Jackson
Master’s Trainee Josée Lapalme was introduced to PHIR by PHIRNET mentor Lois Jackson (Professor of Health Promotion, Dalhousie University). Josée was awarded a Research Internship, supervised by Louise Potvin (Professor, Social and Preventive Medicine, Université de Montréal), to conduct her project, A Systematic Narrative Review of the Role of Context in Neighbourhood Interventions Promoting Positive Youth Development. Her internship addressed a key PHIRNET theme – interventions that address social health inequalities – and provided her with a deeper understanding of the benefits and challenges of evaluating public health interventions.

Olayemi Olabiyi and Lynn McIntyre
PHIRNET Post-Doctoral Fellow Olayemi Olabiyi (PhD, Public Policy and Political Economy, University of Texas at Dallas) joined Lynn McIntyre (Professor and CIHR Chair in Gender and Health, Department of Community Health Sciences) at the University of Calgary to study natural experiments that change food insecurity rates at the population level. Olayemi investigated the role of remittances in reducing food insecurity during the Global Food Price Crisis of 2006-2008 in 54 low-income countries. Multiple cycles of the Canadian Community Health Survey also permitted him to examine the impact of the economic crisis of 2008 in higher income households on food insecurity, as well as provincial-level variations in food insecurity related to health care premium policy, harmonized sales tax, and poverty reduction programs.

Acknowledgements

The Human Early Learning Partnership, and the School of Population and Public Health at the University of British Columbia, wish to thank all those who submitted papers for review, and those published herein. We are grateful for the support and guidance of Gilles Paradis, CJPH Scientific Editor, and CJPH staff Karen Craven and Ian Culbert. Particular thanks go to Brenda Kwan (Centre for Health Promotion Research, UBC) for her superb efforts in guiding this work to fruition. Funding was provided by the Canadian Population Health Initiative with in-kind support from the UBC School of Population and Public Health. Last, we recognize the continuing challenges faced by Canadians (and others) arising from significant social, economic and health inequities, and we thank those who work to improve society by addressing health inequities through population-health interventions.
Population Health Intervention Research: Advancing the Field

The contents of this special issue of the Canadian Journal of Public Health represent articles reviewed by a) an expert panel comprised of Jim Frankish (Supplement coordinator, University of British Columbia), Hope Beanlands (University of South Australia), Ted Bruce (Vancouver Coastal Health Authority), Erica Di Ruggiero (CIHR Institute of Population and Public Health), Nazeem Muhajarine (University of Saskatchewan), Louise Potvin (Université de Montréal) and Robert VanWynsberghe (University of British Columbia); and b) the standard peer-review process of the CJPH.

TABLE OF CONTENTS • TABLE DES MATIÈRES

S3 Population Health Intervention Research: Advancing the Field
J. Frankish

S5 Public Health Interventions to Reduce Inequalities: What Do We Know Works?
J. Frank

S8 Evaluation of an Educational Policing Strategy to Reduce Alcohol-related Crime Associated With Licensed Premises
S.C. Rowe, J. Wiggers, L. Wolfenden, J.L. Francis, M. Freund

S15 Health in All Policies: Evaluating the South Australian Approach to Intersectoral Action for Health
A. Lawless, C. Williams, C. Hurley, D. Wildgoose, A. Sawford, I. Kickbusch

S20 Les interventions de subvention du paiement des soins renforcent l’empowerment des communautés au Burkina Faso
O.M. Samb, V. Ridde

S26 Understanding the Impact of the Canada Prenatal Nutrition Program: A Quantitative Evaluation
N. Muhajarine, J. Ng, A. Bowen, J. Cushon, S. Johnson

S32 Maturité scolaire et mobilisation communautaire : étude rétrospective dans un quartier Montréalais
I. Laurin, A. Bilodeau, S. Chartrand

S37 Coverage for the Entire Population: Tackling Immunization Rates and Disparities in Saskatoon Health Region
J.A. Cushon, C.O. Neudorf, T.M. Kershaw, T.G. Dunlop, N. Muhajarine

S42 Adaptation and Implementation of the Nurse-Family Partnership in Canada

S49 Drinking Water Fluoridation and Oral Health Inequities in Canadian Children
L. McLaren, J.C. Herbert Emery

S57 Exploring the Value of Mixed Methods Within the At Home/Chez Soi Housing First Project: A Strategy to Evaluate the Implementation of a Complex Population Health Intervention for People With Mental Illness Who Have Been Homeless
E.L. Macnaughton, P.N. Goering, G.B. Nelson

S63 Epilogue: A Critical Look at a Nascent Field
L. Potvin
Population Health Intervention Research: Advancing the Field

James Frankish, PhD (Psychology), MA, BA

The population health approach aims to improve the health of entire populations and to reduce health inequities.* It recognizes both health as a capacity or resource and the range of social, economic and environmental factors that contribute to it. A related articulation of health is “the capacity of people to adapt to, respond to, or control life’s challenges and changes”.1

In their seminal paper, Hawe and Potvin2 raise a cogent related question, “what is population health intervention research (PHIR)?” They argue that population-level health interventions are policies or programs that shift distributions of health risk by addressing underlying social, economic and environmental issues. These interventions might be programs or policies designed/developed in the health sector, but more likely in education, housing or employment. PHIR aims to capture the value and differential effects of interventions, the processes by which they create change, and the contexts within which they work best. Further, Hawe and Potvin call for an integration of learning to assist in development of the PHIR field. They go on to highlight that the Population Health Intervention Research Initiative for Canada (PHIRIC) defines PHIR as research that “involves the use of scientific methods to produce knowledge about policy/program interventions that operate within or outside of the health sector and have potential to impact health at a population level.” “Population health” refers to the science underpinning the practice of public health and understandings about health that come from an appreciation of how it is generated in populations.

An additional aspect is that of “impact at a population level”. This involves not simply improving health or reducing health risks, but implementing interventions to change risk conditions in order to alter distributions of health risk. We concur with Hawe and Potvin that “all systematic inquiry and learning from observing an intervention’s process or implementation, impact or outcome is encompassed in ‘intervention research’.” Evaluation research and PHIR encompass many of the same activities and methods. All evaluation research in population health is PHIR, but not all population health intervention research is evaluation research.

Hawe and Potvin conclude that “the ever-growing burden of disease demands that we design effective interventions and put them into practice”.2 This Special Supplement, consisting of nine research papers, is offered as a modest “brick in the wall” of Canada’s population health agenda. It is based in the reality that the concept of PHIR continues to gain ground and that there is growing interest and concern among researchers and policy-makers to better identify effective and efficient interventions.

The selection process was rigorous and involved an international call for outlines of potential papers, a relevance review of the outlines by a Supplement Editorial Committee (see Acknowledgements), an invitation from the Committee to selected authors to submit full papers, and a final relevance review of full papers by the Committee. All invited papers were then submitted online and underwent CJPH’s standard peer-review process.

The call was advertised through academic/professional contacts, networks, associations, educational institutions, and listservs. We encouraged outlines of papers that reported on research from diverse disciplines/sectors on a wide variety of policies or programs designed to improve health at a population level. The 48 outlines received were rated for three “face” characteristics of “prototypical” PHIR, i.e., that it: 1) is a research project; 2) describes an intervention; and 3) aims to improve population health. The outlines were also reviewed based on breadth of coverage in five areas: 1) discipline/sector; 2) conditions of risk; 3) geography; 4) inclusion of community engagement; and 5) language (English/French). The following briefly summarizes each of the nine accepted papers.

Rowe et al. examine the effectiveness of an educational policing strategy in New South Wales, Australia to reduce the number of patrons of licensed premises involved in incidents of violence, disorder and motor vehicle crashes. The intervention in 21 non-metropolitan areas included letters, incident reports, covert audits and feedback meetings. Across all premises, the rate of patrons who consumed alcohol prior to involvement in incidents decreased as a result of the policing strategy. The authors’ findings suggest the benefit of a policing strategy as a possible PHI.

Lawless et al. report on the “Health in All Policies” intervention from South Australia. “Health in All Policies” is seen as a means of embedding concern for health impacts in policy-making. The primary mechanism is a “health lens analysis” – an intersectoral process drawing on public health research methods. In this paper, it was applied to water security, digital technology and migration, and appears to have led to increased understanding of the impacts on health outcomes, changes in policy direction, development/dissemination of research, partnerships between health and other government departments, and a positive disposition toward employing health lens analyses in future work.

In an interesting African paper, Samb assesses the impact of care subsidies on primary health centres in Burkina Faso. The government subsidizes 80% of emergency neonatal/obstetrical costs, while an NGO subsidizes the remaining 20%. Care subsidies have strengthened community members’ and their primary health centres’ power to act, such as participation in decision-making, as well as knowledge acquisition and skill development. (This article published in French, with translation of abstract.)

Author’s Affiliations
Professor, School of Population and Public Health; Director, Centre for Population Health Promotion Research, University of British Columbia, Vancouver, BC

Muhajarine et al. present the Canada Prenatal Nutrition Program as a PHI that aims to contribute to improved health outcomes for pregnant women and newborn children facing conditions of risk. Participants are socially, demographically and geographically diverse. Those who received high exposure to the program were more likely to reduce smoking and drinking, more likely to breastfeed, and less likely to give birth to preterm/low birth weight infants. An “equity” analysis showed variation by social group, indicating that benefits were disproportionally shared.

In a further Canadian example, Laurin provides a modeling of the collective decision-making process by which a community-based population-level intervention transformed the organization of early childhood services in a Montréal community. The area is one of the most multi-ethnic and poorest neighbourhoods in the city. The intervention (Understanding Early Years) is a Canada-wide initiative aimed at strengthening communities’ capacity to use quality information to support reflection on the organization of early childhood services. A time chart presents events that influenced the procedures. Also presented are contextual factors that influenced decision making. (This article published in French, with translation of abstract.)

Cushon et al. sought to determine the effectiveness of an “immunization reminders project” in Saskatoon, Canada in improving vaccination coverage rates and ameliorating geographical disparities in coverage. The intervention involved calling and/or writing parents/caregivers, and resulted in higher coverage rates and an apparent decline in disparities between groups. The findings have prompted practice/policy changes.

Jack et al. focus on the effectiveness of the Nurse-Family Partnership (NFP) intervention. NFP is a low-income, intensive nurse home visitation program. The qualitative case study sought to determine whether the NFP can be implemented in Canada with fidelity to the US model, and to identify adaptations required to increase its acceptability to service providers and families. The authors found that the model is acceptable to Canadian providers, nurses and families and suggest that a consistent approach to adapting the program in Canada is needed.

McLaren and Emery examined the association between exposure to fluoridation and oral health inequities in Canadian children. After adjusting for socio-economic and behavioural variables, data from the Canadian Health Measures Survey showed that fluoridation was linked to better oral health. The effect was seen across income/education categories, and was more pronounced in lower education and higher income adequacy households.

Finally, Macnaughton et al. present a methodological case study of the At Home (Housing First) Initiative. The model is underway in five Canadian cities as an intervention with homeless people with mental health issues. Quantitative and qualitative methods were used to evaluate the program’s implementation. Overall, the findings show how critical ingredients of complex interventions can be adapted to different contexts while implementation fidelity is maintained. This approach also identifies systemic and organizational factors that affect implementation. It gives information about both whether and how key aspects of the intervention are implemented effectively across different settings, thus providing implementation data that are rigorous, contextually relevant and practical.

This special supplement opens with John Frank’s eloquent questioning as to what we “know” when it comes to PHIR. It closes with Louise Potvin’s pointed but legitimate view that we certainly do not know what we need to if we want to seriously influence related policies and practices.

The supplement’s collection of papers provides a reasonable set of examples of PHIR as it is currently being practised. While the papers offer a range of relevant perspectives, they also serve to highlight the ongoing need for further refinement and development of the field. In the end, we would argue for four points in order to move forward in advancing both the science and practice of PHIR: the need for an explicit values stance; the adoption of a contextualist epistemology and pragmatic accountability; the development of explicit standards for measuring intervention success (and failure); and an explicit emphasis on building community capacity building and self-reliance for PHIs and related research.

The values stance and emphasis on capacity-building and self-reliance would be grounded in a set of “stewardship” principles for fostering PHIs. It would also recognize that communities cannot be reliant upon resources they do not have when it comes to mounting and evaluating interventions. Population health stewardship would argue for: respect for existing communities; the creation, nurturing and enabling of responsible actions; the engagement of local people in improving practices; the return of benefits equal to the benefits received; the viewing of PHIS as part of an extended “health” ecosystem; the judicious use of resources grounded in the way people view places and the values of those places; and last, a vision that is respectful of natural processes and cultural traditions and relevant to community needs.

The notions of a “contextualist” epistemology and pragmatic accountability align with the leading-edge thinking of Green and Glasgow and others who have powerfully argued that external validity is as important (perhaps more so) as internal validity when it comes to areas such as population health. All decision-making operates within a paradigm or environment that shapes the process and the outcome(s). To paraphrase Bertrand Russell,4 “change is scientific, progress is ethical”. In our view, the way forward for population health intervention research, its proponents, and all Canadians who wish to reduce health and societal disparities, lies as much in ethical progress as it does in ‘scientific’ change.

REFERENCES

Public Health Interventions to Reduce Inequalities: What Do We Know Works?

John Frank, MD, CCFP, MSc, FRCPC, FCAHS, FFPH

ABSTRACT

This commentary focuses on the notion of “what works” to reduce health inequalities. It begins by noting the need for and presence of a wide range of methodologies and approaches internationally. It then argues that it is useful to map out these contributions and those in the present Supplement against a set of principles (Macintyre, 2007) to guide the selection and implementation of public health interventions explicitly aiming to reduce health inequalities. The chosen principles derive largely from efforts to reduce steep and persistent Scottish health inequalities by social class. The commentary summarizes Macintyre’s analysis of the main characteristics of public health interventions. It then notes that the present Supplement provides clear examples of population-health interventions and their health impacts that are inequality-reducing. The suggested approach and principles align with calls for the use of structural changes in the environment, early-life interventions, reductions in preventive-care barriers, and a harm-reduction philosophy. The commentary concludes that there remains much to learn and to do in order for public health intervention research to clearly demonstrate how to effectively reduce health inequalities in a lasting manner.

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


This CJPH Supplement has much to teach us about “what works” to reduce health inequalities, based on a wide range of methodologies and approaches internationally. It is therefore useful to map out the contributions to the Supplement against one of the best-thought-out sets of principles to guide the selection and implementation of public health interventions explicitly aiming to reduce health inequalities, especially those by social position. Kudos for having authored the aforementioned principles go to Prof. Sally Macintyre, Director of the MRC Social and Public Health Sciences Unit in Glasgow, Scotland (a much larger and more established Unit than that headed by this writer in Edinburgh since 2008). In 2007, Professor Macintyre enunciated these principles in a little-known but extremely useful Working Paper, originally written for the Scottish Government as it embarked upon a broad initiative of diverse pilot projects to try and reduce Scottish health inequalities by socio-economic status – some of the steepest and most persistent in the Western World.

Box 2 in Prof. Macintyre’s article (see page 10 of http://www.sphsu.mrc.ac.uk/reports/OP017.pdf) summarizes her analysis of the main characteristics of public health interventions – including some primary-care-based policies and programs – which are a priori more likely to reduce rather than increase or maintain health inequalities, especially by social class. A fundamental feature of them all is that they tend to operate at a higher societal level than one-on-one clinical interventions. The reason for this generalization is not hard to fathom: individuals’ access to high-quality one-on-one interventions, especially in health and social care, and their long-term compliance with medical or hygienic measures to prevent future illness, are both typically differential across the social classes. The more deprived the individual and his/her family and neighbourhood, the more events tend to conspire against him or her obtaining excellent preventive advice, and faithfully following it for the long periods of life usually required for full health benefit. Universally legislated measures, on the other hand, tend to reach everyone to the same extent, and that reach tends to last over time. Furthermore, such measures, if well designed, tend to work far “upstream”, reducing adverse exposures to unhealthy influences, or lack of healthy influences, to a greater degree in those with the highest risk, who are typically the most disadvantaged. Whether that exposure is smoking, poor-quality diet, excess alcohol consumption, or lack of fluoride in the water supply, the effect is the same: high-level taxation and/or subsidies, and regulatory measures to universalize (fluoride) or limit access (for example to youth, in the case of alcohol and tobacco) typically work best to reduce systematic inequalities in exposure to the determinants of health, and thus inequalities in health outcomes down the line.

The papers in this CJPH Supplement provide several excellent examples of such interventions, and in some cases document thoroughly that the health impacts seen as a result are inequality-reducing. The most obvious example is the paper by McLaren and Emery, analyzing a Canadian national dental examination survey in children for socio-economically differential caries rates, by fluoridation status of the community of residence. Convincingly, the “Decayed, Filled or Missing” rate, a standard survey measure of cumulative caries incidence, is substantially reduced among children of parents with only high-school-level education, in Canadian settings with fluoridated water supplies. When one thinks of the likelihood of socio-economically equal uptake and long-term compliance with personally purchased and consistently utilized topical fluoride dental applications, or oral fluoride dosing, it is surely not surprising.
that community water supply fluoridation works more equitably. [That this does not appear to be true, in this study, for the apparent excess of caries in the wealthiest families’ children might be an artefact of increasingly aggressive detection and treatment of caries in routine dental care. In the present era of much-reduced overall population rates of caries, this could simply be a consequence of newly under-employed dentists dutifully carrying out treatment of very mild cases in those children whose parents can and do pay for regular private dental care, which is – remarkably – still not covered by Canadian Medicare after all these years.]

The paper by Lawless et al. evaluates the South Australian state policy requiring an explicitly “health in all policies (across sectors)” approach – analogous to similar policies in Quebec and Sweden. It reminds us that many of the most important potential policy levers, for influencing the broad determinants of health in modern societies, lie well outside the formal health services sector. This approach conforms to Macintyre’s principles calling for the use of “Structural changes in the environment; Legislative and regulatory controls; Fiscal policies; Income support; and Reducing price barriers.”

Other characteristics of the interventions described and evaluated in these Supplement papers also conform to Prof. Macintyre’s typology, particularly her advice to “Start young.” For example, the papers by Laurin et al., Muhajarine et al., and Jack et al. all describe interventions aimed at the first years of life, thereby conforming to Clyde Hertzman’s recent6 cover headline in the BMJ: “Get them while they’re young.” It is notable, however, that there is great variety in the approaches used, which are, respectively: implementation of the kindergarten Early Development Instrument (Clyde’s focus for over a decade now in British Columbia) in a Montreal community-action-oriented project; the national-level Canadian Prenatal Nutrition Program (with its careful targeting and higher coverage of high-risk populations); and the Nurse-Family Partnership Program pioneered by Dr. David Olds and colleagues in the US, and now piloted in low-income, first-time mothers in Hamilton, Ontario.

Similarly motivated, but aimed at improving overall population coverage with basic childhood vaccinations in Saskatoon, the paper by Cushon et al. shows the great merit in using high-intensity outreach, involving initial reminder letters to low-income-neighbourhood parents, with professional home visits where no response occurs, to reduce local inequalities in childhood immunization. It does seem remarkable to me (having first done this in a community clinic in northwest Toronto in 1979-80) that, even in a country with over 40 years of “free” medical care (at the point of use), there is still considerable disparity in the uptake of one of the most cost-effective preventive interventions we have in childhood – basic immunization. Yet, even in 2012, it fails to creative Public Health Units such as Saskatoon’s to do the outreach footprint, to prevent innocent children from paying the price because their parents’ lives and priorities are not conducive to obtaining proven-effective preventive care. Surely that outreach should have been fully incentivized in every primary care practice/PHU in Canada many decades ago! In sum, the four diverse interventions described in these papers, all aimed at early life, surely conform to Prof. Macintyre’s principles “Prioritize disadvantaged groups” and “Offer (them) intensive support.”

The paper from Burkina Faso by Samb and Ridde goes one step further in adhering to Macintyre’s principle “Reduce price barriers (to healthy goods and services).” It describes the positive effects on community mobilization of subsidizing point-of-care user fees in the publicly funded health care system of one of Africa’s poorest nations. For those of us who have followed the history of this pernicious user-fee policy, widely supported by the World Bank in recent decades as a means to increase the “economic sustainabili-ty of public care systems” in the developing world, it is heartening to see this rollback of an international development assistance policy that can only be described as diabolical. At long last, this foreign-aid equivalent of iatrogenic medical practice (doctor-caused disease) is on the retreat.

Finally, one of the papers in this Supplement, by Rowe et al. from Australia, concerns the universal application of a harm-reduction principle in line with, but apparently more voluntary than, Macintyre’s point “Legislative and regulatory controls” – namely, the implementation of systematic police instruction in how to target higher-risk licensed drinking premises and use a hierarchical set of variably aggressive policing measures in these premises, to change serving and drinking behaviour over time. While the intervention may have had a voluntary element, it is notable that the implementation arm involved the police, who have significantly more forceful measures available to them, for deployment in the case of non-compliance.

So there is much here that conforms to Macintyre’s helpful 2007 guidance on “What works to reduce health inequalities.” That some of the evaluations reported in these papers are not able to demonstrate large and unequivocal reductions in well-measured health outcomes should not be surprising, for that is what makes public health intervention research on health inequalities so challenging. As we have found out in our support in Scotland of a wide variety of “incubator project grants” for such interventions1 (see www.scphrp.ac.uk for details), the precise and valid measurement of reductions in socio-economic health inequalities often falls short of our expectations. Sometimes this is simply because the requisite measurement systems are not in place. [However, anonymized record linkage of routinely collected administrative data, especially across public service sectors, is proving very promising for this purpose, as the Manitoba Centre for Health Policy has repeatedly shown4]. Other times, the methodological challenge seems to have more to do with not being able to come up with an evaluative study design that is both scientifically robust and at the same time ethical and feasible (especially in terms of setting up equivalent “control” populations, for example by using staggered time-series across communities receiving the intervention earlier versus later, which can often be legitimately justified by cost and logistical considerations.) In still other situations, it may be that we have just not figured out correctly what the most appropriate health outcomes are, and the relevant time-frame of delay to full intervention impact. Frank and Haw1 point out, for example, that some quite statistically sophisticated countries seem to be largely unaware – unlike Canada, where this is long-established wisdom – that monitoring overall societal, or social-position-specific, trends in rates of low birth rates alone, can no longer be relied upon to show declines that unequivocally reflect better maternal and child health. A major reason for the obsolescence of this time-honoured early-life public health statistic lies in the increasingly aggressive, but generally ethically justifiable, practices of high-risk prenatal care. That care consists of inducing labour or performing a Caesarean many weeks
ahead of full term, in an ever-larger proportion of women (some of them much older and more overweight than pregnant women in the past) whose pregnancies show signs of intra-uterine growth retardation or fetal distress. Each time fetal survival or health is traded off against birth weight, the latter outcome looks a bit worse at the population level, even if the former outcome is better.

It is all these challenges that have led research-agency thinkers and researchers in the UK recently to enunciate some broad guidance for doing high-quality public health intervention research, particularly that involving “natural experiment” designs. Indeed, the Canadian Population Health Intervention Network (PHIRN – see www.rrasp-phirn.ca/) has been hard at work in recent years to advance our knowledge of this field, in which Canada is widely considered an international leader. But there is still much to do to ensure that a similar journal Supplement on public health intervention research, perhaps in another 10 years’ time, demonstrates more convincingly that we know not only how to follow Macintyre’s sage advice on how to reduce health inequalities, but also how to execute evaluation studies that show that we’ve done it – convincingly.

REFERENCES


RÉSUMÉ

Ce commentaire porte sur la notion de « ce qui fonctionne » pour réduire les inégalités de santé. Nous commençons par signaler le besoin et la présence d’un vaste éventail de méthodes et d’approches dans le monde. Nous faisons ensuite valoir l’utilité d’établir des correspondances entre ces apports, et ceux du présent supplément, et un ensemble de principes (Macintyre, 2007) afin d’orienter la sélection et la mise en œuvre d’interventions de santé publique visant explicitement à réduire les inégalités de santé. Les principes choisis découlent dans une large mesure d’efforts menés en Écosse pour réduire des inégalités de santé prononcées et persistantes entre les classes sociales. Nous résumons l’analyse par Macintyre des principales caractéristiques des interventions de santé publique. Nous notons ensuite que le présent supplément donne des exemples clairs d’interventions en santé des populations et de leurs effets sanitaires qui ont pour effet de réduire les inégalités. L’approche et les principes suggérés sont en harmonie avec les appels à utiliser des changements structurels dans l’environnement, à intervenir au stade précoce de la vie, à réduire les obstacles aux soins préventifs et à adopter une philosophie de réduction des méfaits. Nous concluons en disant qu’il reste beaucoup à apprendre et à faire pour que la recherche sur les interventions de santé publique montre clairement comment réduire les inégalités de santé de façon efficace et durable.
Evaluation of an Educational Policing Strategy to Reduce Alcohol-related Crime Associated With Licensed Premises

Shelley C. Rowe, PhD, Bsc(Hons),1 John Wiggers, PhD, BA(Hons),1,2 Luke Wolfenden, PhD, BSc(Hons),1 J. Lynn Francis, PhD, MMedStat,2 Megan Freund, PhD, BSc1,2

ABSTRACT

Objectives: Licensed premises are associated with a considerable level of alcohol-related harm. This study examined the effectiveness of an educational policing strategy, implemented as routine policing practice, to reduce the number of patrons of licensed premises involved in police-recorded incidents of violence, disorder and motor vehicle crashes.

Participants: The educational policing strategy targeted on-licensed premises registered as operating in 2003. The strategy was delivered by police and was overseen by the research team.

Setting: The intervention was conducted in 21 non-metropolitan New South Wales Police Force commands.

Intervention: On the basis of routinely collected and recorded police data, premises received one of three levels of police response on three separate occasions from December 2002 to July 2003. The police responses were letters, incident reports, covert audits and feedback meetings.

Outcomes: The rate of patrons who had last consumed alcohol on licensed premises before being involved in police-recorded incidents decreased from 1.24 per premises in the 4-month baseline period to 1.11 in the 4-month follow-up period (p=0.08). There was a significant reduction, from 7.08 to 5.65 patrons (p=0.03), in such a rate for high-risk premises that received the most intensive police response. High-risk premises also recorded a significant reduction in the rate of intoxicated patrons involved in such incidents, from 5.50 to 4.40 (p=0.05).

Conclusion: The findings suggest a potential benefit of an educational policing strategy in reducing alcohol-related harm associated with licensed premises. Further implementation of this strategy concurrent with rigorous evaluation is warranted.

Key words: Alcohol intoxication; crime; law enforcement; police; harm reduction

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

The consumption of alcohol to intoxication is associated with harms such as criminal damage, assaults and motor vehicle crashes.1,2 Given the substantial public health burden, in the form of deaths, injuries and psychological suffering, exacted by such alcohol-related harm,1,2 the implementation of effective interventions to reduce these adverse impacts has been recommended.1

One alcohol consumption context that is amenable to direct intervention is that of licensed premises. Despite the existence of harm-reduction laws regulating licensed premises,7 research suggests that licensee compliance with these laws is poor.5 Possibly as a consequence, licensed premises are associated with a considerable and disproportionate amount of alcohol-related harm. For example, they have been reported to account for up to half of alcohol-related violence and offences for driving after drinking.6,7 Given the association with such levels of harm, it is suggested that further initiatives are required to enhance licensee compliance with liquor harm-reduction regulations.4

A broad range of strategies are available to increase licensee compliance with liquor laws. These include training of staff in the responsible service of alcohol and voluntary codes of conduct.4,6 However, the available evidence suggests that those strategies limiting alcohol availability through server liability laws, sanctioned trading conditions and the active enforcement of legislated service and management practices represent the most effective means of reducing harm associated with this alcohol consumption context.4,6

Policing strategies designed to increase the compliance of licensed premises with liquor licensing legislation commonly draw on the principle of deterrence.9 Examples of deterrence-based policing strategies that target licensed premises include high visibility policing10-13 and warnings of greater enforcement activity on licensed premises.14,15 Such deterrence strategies are intended to propagate a perception that breaches of the liquor legislation are more likely to be detected and that resulting penalties may jeopardize income, profits and/or reputation. This perception is more likely to be achieved when exposure to the deterrence strategy is repeated and ongoing.9

The majority of previous trials of deterrence-based policing strategies in licensed premises have been found to be effective in reducing alcohol-related harms, including driving after drinking, assaults and motor vehicle crashes.10-16 To our knowledge, however, just three such trials were conducted in the past 15 years,12,13,16 a period in which there has been considerable change in the regulation of licensed premises.4 Furthermore, the policing strategies in a num-
ber of previous trials required significant resources for their implementation, including the establishment of specialist units and supplementary staffing costs.10,12-15 The potential for such strategies to be adopted and delivered by police on a routine basis, and hence their impact on alcohol-related harm at the community level, may therefore be limited.17

Of the more rigorously evaluated efficacy trials with suggested positive outcomes, the policing strategy described by Wiggers et al. required limited additional resources for its ongoing implementation.16 This randomized controlled trial was conducted across seven non-metropolitan police commands in New South Wales (NSW), Australia, between 1996 and 1999 and involved police provision of educational feedback to licensees with the aim of encouraging improvement in their alcohol service and management practices. Experimental group premises were classified as either high or low risk according to the number of people recorded by police in the preceding months to have consumed alcohol on the premises before becoming involved in a criminal incident. Low-risk premises received, on one occasion, a letter detailing increased police surveillance of licensed premises through routine police recording of alcohol-related intelligence. High-risk premises received, on one occasion, a letter (as described), a report of incidents associated with the premises and a covert premises audit and feedback. Overall, there was a 15% greater reduction in alcohol-related incidents associated with premises that received the policing strategy (p<0.08).

The policing strategy reported by Wiggers and colleagues involved three design elements intended to limit costs to police and to facilitate its adoption into routine practice.16 First, low-cost response options in the form of letters and reports to licensees were utilized as the principal mode of deterrence across all licensed premises.

Second, the policing strategy was designed to align with and systematize existing police practices, such as premises visits, walkthroughs and audits. Similarly, as the evidence suggests that the majority of alcohol-related harms associated with licensed premises may be attributed to only a small number of premises,18 the higher intensity response that included auditing and feedback was targeted to only those premises associated with the greatest level of harm. This cost-efficient approach was achieved through the application of intelligence-led policing, a method of crime reduction that uses police-collected information to identify and target high-risk sources and preconditions of crime.19 Such an approach has been shown to be effective in reducing a range of crimes, including violence and antisocial behaviour.19

Third, the educational nature of the policing strategy reminded licensees of their legal obligations and, in a manner that required fewer resources than more punitive policing approaches, provided guidance to help them comply.20 Accordingly, the deterrence strategy was designed to be delivered to a greater number of premises, thereby maximizing its reach and effect across the population of licensed premises. In addition, the use of an educational approach established procedural fairness by providing licensees with an opportunity to rectify alcohol service practices in an environment that was initially free from the threat of sanction.20

As an efficacy study, the trial reported by Wiggers and colleagues was conducted under the most favourable conditions in which to determine a causal association between the policing strategy and reduction of alcohol-related harms. However, the effectiveness of this policing strategy when implemented as part of routine practice by police remains unknown. In view of this, an evaluation study was undertaken to determine the potential effectiveness of the educational strategy when implemented as routine policing practice to reduce the number of patrons of licensed premises involved in police-recorded incidents of violence, disorder or motor vehicle crashes.

**PARTICIPANTS**

Licensed premises in the study were all those holding liquor on-licenses in the categories of hotelier, registered club, nightclub, nightclub/motel, beer/wine bar, university and casino, and registered as operating within the study area in 2003. Other on-license premises, such as restaurants and establishments limited to a maximum number of licensed functions per year, were excluded from the study as such premises are considerably less likely to be associated with alcohol-related harm.18

Everyone involved in police-recorded incidents of violence, disorder or motor vehicle crashes during a 4-month baseline period and the corresponding follow-up period 1 year later constituted the study sample.

**DESIGN AND SETTING**

A “pre-post” study was conducted in 21 non-metropolitan police commands in the state of NSW, Australia.

The study area (Figure 1), incorporating regional cities, towns, and rural and remote areas, had an approximate population of 1.3 million people (representing 20.1% of the state population).21 The area was serviced by approximately 2,400 police officers.

Ethics approval for this trial was granted by the Human Research Ethics Committee, University of Newcastle, Australia.

**INTERVENTION**

The educational policing strategy was implemented from December 2002 to July 2003. During this period, three rounds of the strategy were delivered.

Licensing and crime intelligence staff in each command were trained by the research team to deliver the strategy. As this was an
Policing of Licensed Premises

Table 1. Criteria and Level of Police Response for Each Round of the Policing Strategy

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Level of Police Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Round 1: December 2002 to March 2003</td>
<td></td>
</tr>
<tr>
<td>Level 1 Premises not cited by any person involved in a police-recorded incident in the 6 months May 2002-October 2002</td>
<td>Letter detailing licensee legal obligations under the NSW Liquor Laws and advising of the ongoing nature of the surveillance system</td>
</tr>
<tr>
<td>Level 2 Premises cited by at least one person involved in an incident in the preceding 6 months</td>
<td>Letter, and an incident report detailing the date, time, offence, type of involvement, sex, age and level of intoxication of each person who had last consumed alcohol on the premises prior to involvement in an incident</td>
</tr>
<tr>
<td>Level 3 Premises cited by at least one intoxicated person involved in an incident in each of the 6 months</td>
<td>Letter, incident report and a police-conducted covert audit of the premises and alcohol service practices, followed by a feedback meeting with police*</td>
</tr>
</tbody>
</table>

Round 2: February 2003

| Level 1 Premises not cited by any person involved in an incident in the preceding 2 months (December 2002-January 2003) | Information letter as described for Round 1 |
| Level 2 Premises cited by at least one person involved in an incident in the preceding 2 months | Information letter and incident report as described for Round 1 |
| Level 3 Not operationalized in Round 2 | Not applicable |

Round 3: April to July 2003

| Level 1 Premises not cited by any person involved in an incident in the preceding 4 months (December 2002-March 2003) | Information letter as described for Round 1 |
| Level 2 Premises cited by at least one person involved in an incident in the preceding 4 months | Information letter and incident report as described for Round 1 |
| Level 3 Premises that received a Level 3 response in Round 1 and those cited by at least 12 intoxicated persons involved in an incident in the 4 preceding months (with at least one intoxicated person citing the premises in each of these 4 months) | Information letter, incident report, covert audit and feedback meeting with NSW Police Force Licensing Officer as described for Round 1 |

* Officers were instructed to proceed with standard liquor licensing enforcement while conducting the covert audit. Accordingly, any serious breaches of the Liquor Act detected during the audit were to be considered for legal sanction.

Educational strategy, licensing officers were encouraged to discuss the intervention with licensees and premises staff when approached and during industry meetings. The aims of such informal discussions were to promote safe service practices and to remind licensees that the primary purpose of the intervention was non-punitive.

All general duties officers were briefed on the strategy and advised to refer all questions regarding the intervention to the command’s Licensing Officer.

Details of the policing strategy are described in Table 1. The strategy involved the delivery to premises of one of three levels of policing response determined by the number of people recorded by police to have consumed alcohol on the premises prior to being involved in a police-recorded incident.

In addition to its being implemented in a large non-metropolitan area, the present study incorporated a number of enhancements to the policing strategy described by Wiggers et al. First, to enhance the deterrence effect, the policing strategy was delivered on three occasions. Second, the earlier study included only two levels of police response, reproduced as Level 1 and Level 3 responses in this study. In order to limit the number of premises receiving the most intensive and costly response (Level 3), an additional intermediate level was introduced. Only those premises with an ongoing association of intoxicated patrons’ involvement in police-recorded incidents received a Level 3 response.

MEASURES

Existing NSW Police Force recording procedures provided the alcohol-related intelligence included in the policing strategy and the data for measurement of study outcomes. For each driver, victim or alleged offender involved in an incident, police routinely collected and electronically recorded, in the mainframe computer, information regarding the incident type, the person’s age and sex, and his or her alcohol consumption status.

Using direct testimony or police officer assessment, alcohol consumption status was recorded as “yes”, “no” or “not known”, and the level of intoxication was recorded as “not”, “slightly”, “moderately” or “seriously affected”. Intoxication status was determined by police assessment of the person’s appearance and demeanour, using indicators that have been reported to be valid and reliable in the assessment of intoxication.

In this study, “intoxicated” incorporated the response categories of “moderately” and “seriously affected”. These levels most closely reflect the signs and symptoms of intoxication as described by the NSW liquor regulatory agency.

On the basis of the report of the person involved in the police-recorded incident, last place of alcohol consumption was recorded as being a “home/private residence”, “licensed premises”, “public place”, “special event”, “non-licensed restaurant/café”, “other” or “not known”. When a person was recorded as having last consumed alcohol at a particular licensed premises, the name and address of that premises were recorded. Only people involved in incidents who had last consumed alcohol on licensed premises within the study area were included in this study.

Training of police in the collection and recording of such intelligence began in January 2002. In the 12 months after the adoption of these enhanced recording procedures, complete alcohol data were recorded for at least 87% of incidents.

Violence and disorder incidents and motor vehicle crashes were selected as the outcome measures because of their strong association with alcohol consumption and large contribution to overall levels of alcohol-related harm. Consistent with previous research, such incidents incorporated the NSW Police Force offences of major vehicle accident, major traffic crash, common assault, actual bodily harm, grievous bodily harm, shoot with intent other than to murder, assault officer, offensive conduct and offensive language.

Delivery of the policing strategy was measured in terms of the extent to which each of the three policing responses was delivered as planned (Table 1). Measurement of response delivery was based on the records of the mailing of letters and reports as well as police records of the conduct of covert audits.
errors were fitted.

Generalized estimating equations (GEE) were used to account for the correlation of paired premises during the three rounds. Negative binomial models with GEE and adjusted standard errors were fitted. Similarly, because of a lack of fit for each of these models, negative binomial models with GEE and adjusted standard errors were fitted.

As informal discussions and presentations by licensing officers to industry groups were deemed to be incidental components of routine policing practice, such interactions were not separately recorded as part of the intervention.

The rate per premises of all people recorded to have been intoxicated and last consumed on premises that received at least one Level 3 response significantly decreased (p=0.03). However, the rate of people who were intoxicated was calculated for the baseline and follow-up periods. Such rates were also calculated for people who were recorded as being intoxicated.

Poisson regression analysis was undertaken to determine whether the rates per premises of patrons who had consumed alcohol prior to being involved in an incident, and such rates for intoxicated patrons, were different at follow-up than at baseline. As over-dispersion resulted in a lack of fit for each of the models, negative binomial models were fitted. Generalized estimating equations (GEE) were used to account for the correlation of paired premises (baseline and follow-up) and to provide population averaged estimates. The standard errors in the regression models were adjusted to take account of the over-dispersion of the data. Results are reported as rate ratios with 95% confidence intervals.

Additional Poisson regression analyses were undertaken to determine whether the above rates per premises of patron involvement in incidents differed between baseline and follow-up for those premises that received at least one Level 2 response (but not a Level 3 response), and premises that received at least one Level 3 response. Similarly, because of a lack of fit for each of these models, negative binomial models with GEE and adjusted standard errors were fitted.

DATA EXCLUSION

Cited licensed premises that could not be verified against the list of registered licensed premises were removed from the data. Duplicate records of individuals for any one offence category within an event were removed.

ANALYSES

To determine the delivery of policing strategies, the number and proportion of police responses that were delivered during the study period were calculated.

The number of licensed premises that were eligible for each level of response during the three rounds of the educational policing strategy and the number of actual responses that were delivered are shown in Table 3. Across the three rounds, 331 premises (23.4%) were eligible to receive only Level 1 responses, 949 (67.2%) to receive at least one Level 2 response, and 133 (9.4%) premises to receive at least one Level 3 response. All (100.0%) of Level 1 and Level 2 responses were delivered, and 78.7% of Level 3 responses were delivered.

As informal discussions and presentations by licensing officers to industry groups were deemed to be incidental components of routine policing practice, such interactions were not separately recorded as part of the intervention.

The rate per premises of all people who had consumed alcohol on licensed premises prior to being involved in police-recorded incidents of violence, disorder or motor vehicle crashes, and the number and percentage who were intoxicated are displayed in Table 2.

Modeling was not undertaken for those premises that received only a Level 1 response because of the limited variability in the data.

OUTCOMES

The sample of 1,413 licensed premises consisted of 839 hotels (59.4%), 550 registered clubs (38.9%), 10 nightclubs or night-club/motels (0.7%), 8 beer/wine bars (0.6%) and 6 university premises (0.4%).

The number and percentage of people who last consumed alcohol on licensed premises prior to being involved in police-recorded incidents of violence, disorder or motor vehicle crashes, and the number and percentage who were intoxicated are displayed in Table 2.

The number of licensed premises that were eligible for each level of response during the three rounds of the educational policing strategy and the number of actual responses that were delivered are shown in Table 3. Across the three rounds, 331 premises (23.4%) were eligible to receive only Level 1 responses, 949 (67.2%) to receive at least one Level 2 response, and 133 (9.4%) premises to receive at least one Level 3 response. All (100.0%) of Level 1 and Level 2 responses were delivered, and 78.7% of Level 3 responses were delivered.

As informal discussions and presentations by licensing officers to industry groups were deemed to be incidental components of routine policing practice, such interactions were not separately recorded as part of the intervention.

The rate per premises of all people who had consumed alcohol on licensed premises prior to involvement in an incident decreased from baseline to follow-up (p=0.08) (Table 4). There was no difference in such rates between baseline and follow-up for premises that received at least one Level 2 response (p=0.90). However, the rate of people who had consumed alcohol on premises that received at least one Level 3 response significantly decreased (p=0.03).
The decrease in the rate per premises of all intoxicated patrons who had consumed alcohol on licensed premises prior to involvement in an incident was not significant (p=0.11) (Table 4). No difference in such rates was found between baseline and follow-up for premises that received at least one Level 2 response (p=0.84). However, the rate for premises that received at least one Level 3 police response significantly decreased (p=0.05).

**DISCUSSION**

The study found a non-significant reduction in the rate at which patrons of all licensed premises were involved in incidents of violence, disorder and motor vehicle crashes following the implementation of the educational policing strategy. Significant reductions were found, however, in the rate at which patrons of high-risk premises were involved in such incidents. Given the absence of a control or comparison group, the attribution of these reductions to the strategy remains qualified. Nonetheless, the results of this study, coupled with those of previous studies, support the potential public health benefits of the educational policing strategy to reduce patron involvement in police-recorded incidents. These findings suggest a need for further implementation and assessment of the effectiveness of the strategy.

The magnitude of the observed reductions in rates of patron involvement in incidents in this study (10% across all premises and 20% among high-risk premises) was comparable to the reductions in harm reported in other deterrence-based studies targeting licensed premises. However, the intervention implemented in this study departed from similar studies as it used systematically recorded criminal intelligence to achieve a deterrence effect. Accordingly, the findings represent a promising and potentially cost-effective additional deterrence-based approach to the policing of licensed premises in non-metropolitan areas, an under-researched area in the field. Accordingly, the findings add valuable evidence regarding the implementation of alcohol harm-reduction strategies in these areas.

Nonetheless, a number of trial limitations warrant mention. First, there is the possibility that the findings were the result of a regression to the mean effect. While no accepted adjustment for such an effect exists for the data and analyses described in this study, the use of trend rather than threshold criteria for the allocation of premises to the level of police response is considered to have minimized the likelihood of such an effect.

Second, although the use of a non-controlled pre-post study design limits the ability to attribute the study findings directly to the policing strategy, the design was considered appropriate in the context of the specific questions being posed and the study’s aim to evaluate a major policy implementation initiative. In the context of this latter characteristic, the opportunity to collect “last place of alcohol consumption” data in a control or comparison area elsewhere was not available. While the opportunity exists for evaluation of the initiative using proxy data, such as nighttime assaults or motor vehicle crashes, such an approach is itself limited through an inability to link these incidents with specific premises.

Third, the observed reductions in patron involvement rates in police-recorded incidents could simply reflect temporal trends in recorded crime rates. However, the likelihood of the results being attributable to such a cause is considered to be low, as the results of population surveys and agency data suggest that the prevalence of involvement in such incidents during the period remained stable across the state. Furthermore, while changes in the policing of licensed premises in the study area, other than those associated with the study, remains a plausible explanation for the observed findings, no such initiatives were consistently implemented across the 21 police commands involved in this study in addition, differential reporting of incidents to police remains a possible factor influencing the study findings. The degree of such differential reporting is unknown.

Fourth, “last place of alcohol consumption” data have been collected for a number of decades and provide the benefit of a direct measure of the association between an incident of alcohol-related harm and specific licensed premises. However, the validity of such self-report data is unknown. Furthermore, differential recording of crime, such as differences that might arise with the greater informality of policing in rural areas, has the potential to influence the effectiveness of interventions in the literature to our knowledge.

Effectiveness trials provide valuable information regarding the feasibility and consistency of intervention delivery. Further, this study has extended the research into interventions with licensed premises in non metropolitan areas, an under-researched area in the field. Accordingly, the findings add valuable evidence regarding the implementation of alcohol harm-reduction strategies in these areas.

Table 4. Number and Rate Per Premises of Persons Involved in Incidents During the Baseline and Follow-up Periods

<table>
<thead>
<tr>
<th>Premises</th>
<th>No.</th>
<th>Rate</th>
<th>SD</th>
<th>No.</th>
<th>Rate</th>
<th>SD</th>
<th>Change</th>
<th>Rate ratio</th>
<th>95% CI*</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol Consumed Prior</td>
<td>All premises (N=1413)</td>
<td>1751</td>
<td>1.24</td>
<td>2.97</td>
<td>1573</td>
<td>1.11</td>
<td>2.89</td>
<td>-178</td>
<td>-0.13</td>
<td>-10.12</td>
</tr>
<tr>
<td>All premises (N=1413)</td>
<td>Level 3 (n=133)</td>
<td>941</td>
<td>7.08</td>
<td>6.22</td>
<td>751</td>
<td>5.65</td>
<td>6.85</td>
<td>-190</td>
<td>-1.43</td>
<td>-20.19</td>
</tr>
<tr>
<td>All premises (N=1413)</td>
<td>Level 2 (n=949)</td>
<td>571</td>
<td>0.60</td>
<td>1.18</td>
<td>562</td>
<td>0.59</td>
<td>1.24</td>
<td>-146</td>
<td>-1.10</td>
<td>-19.97</td>
</tr>
<tr>
<td>All premises (N=1413)</td>
<td>Level 3 (n=133)</td>
<td>731</td>
<td>5.50</td>
<td>5.48</td>
<td>585</td>
<td>4.40</td>
<td>5.82</td>
<td>-138</td>
<td>-1.01</td>
<td>-10.57</td>
</tr>
</tbody>
</table>

* Confidence interval
the study findings. The extent to which the recording of crime differed among areas during the study period is unknown. Notwithstanding these limitations, the consistently high rates of correct recording of these data suggest that recording errors were unlikely to have influenced the study findings. Future evaluation of this and other policing strategies using “last place of alcohol consumption” data as an outcome measure would be strengthened through the use of additional recognized measures of alcohol-related harm that are less subject to policing activity and recording.28

Fifth, the duration of the baseline and follow-up data collection periods was limited and may not have provided a sample with sufficient power to detect statistical differences in the outcome measures. Similarly, the timing of the measurement periods coincided with the seasonal low for police-recorded incidents of violence and disorder,29 which may have also limited the sample of persons involved in incidents following their consumption of alcohol on licensed premises. Both the duration and timing of the measurement periods were constrained by the policy implementation context of the study, a reflection of the limitations inherent in the rigorous evaluation of major public health initiatives.26

Finally, given the profound burden on communities posed by excessive alcohol consumption,1 it has been suggested that a need exists for the implementation of new interventions even in the absence of statistical certainty regarding their effectiveness.8 The implementation of the policing strategy described in this study in such circumstances is further supported by community endorsement of interventions to reduce harm associated with licensed premises29 and the national alcohol policy that recommends an intelligence-led approach to reduce harms associated with licensed premises.3 Nonetheless, for interventions with limited evidence of effectiveness and no evidence that they contribute to harm, further examination is required of their effectiveness, acceptability, cost, consistency and sustainability of effect concurrent with their implementation.

CONCLUSION

The findings in this study suggest that a routinely delivered educational policing strategy may be associated with a reduction in involvement of patrons of licensed premises in police-recorded alcohol-related incidents. Given these findings, the study design employed and the contextual factors described above, further implementation and concurrent rigorous evaluation of the effect appears warranted to confirm the potential to reduce alcohol-related harms associated with licensed premises.

REFERENCES


RÉSUMÉ

Objectifs : Les débits de boissons sont associés à un niveau considérable de méfaits liés à l'alcool. Nous avons examiné l'efficacité d'une stratégie policière éducative, appliquée dans le cadre de contrôles policiers de routine, pour réduire le nombre de clients des débits de boissons impliqués dans des incidents de violence, de désordre et d'accidents d'automobile enregistrés par la police.
Participants : La stratégie policière éducative ciblait les débits de boissons autorisés en activité en 2003. Elle a été exécutée par la police et supervisée par l’équipe de recherche.

Lieu : L’intervention a été menée dans 21 postes de police situés à l’extérieur des régions urbaines en Nouvelle-Galles du Sud.


Résultats : Le taux de clients ayant consommé de l’alcool dans un débit de boissons juste avant d’être impliqués dans un incident enregistré par la police a diminué, passant de 1,24 par débit au cours de la période de référence de quatre mois à 1,11 durant la période de suivi de quatre mois (p=0,08). Il y a eu une baisse significative, de 7,08 à 5,65 clients (p=0,03), dans ce taux pour les débits à risque élevé qui avaient fait l’objet de la mesure policière la plus intensive. Les débits à risque élevé ont aussi connu une baisse significative de leur taux de clients en état d’ébriété impliqués dans de tels incidents, soit de 5,50 à 4,40 (p=0,05).

Conclusion : Ces résultats montrent qu’une stratégie policière éducative pourrait avoir l’avantage de réduire les méfaits liés à l’alcool associés aux débits de boissons. Une mise en œuvre plus poussée de la stratégie, conjointement avec une évaluation rigoureuse, se justifie.

Mots clés : intoxication alcoolique; crime; application de la loi; police; réduction des méfaits
Health in All Policies: Evaluating the South Australian Approach to Intersectoral Action for Health

Angela Lawless, DrPH,1 Carmel Williams, MPH,2 Catherine Hurley, BSocAdmin,1 Deborah Wildgoose, BSSc,2 Amy Sawford, Bsc,2 Ilona Kickbusch, PhD3

ABSTRACT

Objectives: Health in All Policies (HiAP) has been promoted as a means of embedding concern for health impacts in the policy-making process. In South Australia, specific structures and processes to achieve this have been developed and tested.

Participants: The HiAP approach is designed to engage policy officers and managers in all sectors of government.

Setting: South Australia, one of six Australian states, which operates under a system of cabinet government. There are 15 government departments.

Intervention: The primary mechanism of the South Australian HiAP approach is the health lens analysis (HLA) – an intersectoral, partnership process drawing on public health research methods. It has been applied to three separate public policy issues: water security, digital technology and migration.

Outcomes: Evaluation findings to date suggest that the HLAs have resulted in the following: increased understanding by policy-makers of the impact of their work on health outcomes; changes in policy direction; development and dissemination of policy-relevant research; greater understanding and stronger partnerships between health and other government departments; and a positive disposition toward employing health lens analyses in future work.

Conclusion: There have long been calls for intersectoral action in order to achieve public policy supportive of positive health outcomes. Evaluation to date suggests that the HLA is a promising means of moving the agenda from policy rhetoric to policy action.

Key words: Health policy; public policy; public sector

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

INTERVENTION

In 2008, the SA Government committed itself to a HiAP approach to building healthy public policy. Its introduction was promoted by Professor Ilona Kickbusch during her term as Adelaide Thinker in Residence.8 An important factor in the adoption of HiAP was the demonstration of its applicability to a key policy driver, South Australia’s Strategic Plan (SASP).8 SASP sets targets across portfolios and makes chief executives accountable to the Premier for their achievement. This is monitored through a subgroup of Cabinet, the Executive Committee of Cabinet Chief Executives Group (ExComm CEG). Linking HiAP with SASP highlighted the interconnections between health and SASP targets, and engaged the most senior levels of government.

Considerable developmental work had been undertaken to pave the way for such an approach. SA Health and the Department of the Premier and Cabinet led the creation of a number of strategies used

Author Affiliations

1. South Australian Community Health Research Unit, Flinders University, South Australia (SA)
2. Health in All Policies Unit, SA Health, South Australia
3. Graduate Institute of International and Development Studies, Geneva, Switzerland

Correspondence: Dr. Angela Lawless, Deputy Director, South Australian Community Health Research Unit, Flinders University, Sturt Road, Bedford Park, South Australia, 5042, Tel: +61-8-72218474, Fax: +61-8-72218424, E-mail: angela.lawless@flinders.edu.au

Acknowledgements: This research is part of the ongoing evaluation of the Health in All Policies initiative in South Australia and was funded by SA Health. The authors thank the participants for their valuable contribution to the project, Robert Quigley for his contribution to development of the HLA and evaluation framework, and Lynsey Brown for her feedback and assistance in preparation of the manuscript.

Conflict of Interest: None to declare.
to raise awareness of HIAP. A desktop analysis exploring the potential health impacts of a sample of SASP targets was undertaken. Intersectoral workshops explored the interrelationships between health and strategic plan targets, and tested methods of collaboration. A state conference brought together policy makers from across government and highlighted the interactions among sectoral agendas.1,10

From these beginnings, an SA HIAP model has been developed, a small HIAP unit established within SA Health, and a series of intersectoral policy projects completed with a number of others underway. Governance structures have been determined, and the ExComm CEG now provides cross-sectoral oversight of both HIAP and SASP.

The key mechanism in the SA model is a process termed “health lens analysis” (HLA). HLA examines connections among policy, strategies and health in a systematic manner and aims to deliver evidence-based recommendations that support sound policy and health outcomes.10 The process aims to identify how to not only ameliorate the negative health impacts of policy proposals but also promote the ways in which health can be developed and supported, a perspective sometimes neglected.5 The HLA is designed to shift the policy frame and inform policy at the conceptual stage rather than towards the end of decision-making processes, as is more typically the case with the traditional Health Impact Assessment.11

The HLA model (see Figure 1) describes a practical set of processes to support intersectoral policy development. A “how-to” guide details five stages in the process: engagement, evidence gathering, generating, navigating and evaluating.12 A defining feature of the SA HIAP approach is the notion of mutual benefit: equal emphasis is placed on achieving the objectives of other sectors as well as improving health.

SA Health has demonstrated a strong commitment to evaluation of the HLA, recognizing that methods are being tested and are likely to evolve. Evaluation has sought to examine both processes and short-term impacts in terms of changes in the knowledge, skills and attitudes of participants and the incorporation of health considerations in resulting policies. The evaluation did not track implementation of project recommendations or assess the extent to which policy changes influenced health outcomes.

The evaluation was conceived of as action research, whereby evaluation findings informed the development of HLA processes and structures. This was facilitated by ongoing interaction between evaluators and HIAP unit staff, in keeping with evidence that partnership between researchers and other stakeholders is critical in establishing research transfer.13

Each HLA has a project proposal that details the scope and focus of the analysis and agreed-on aims and outcomes. This paper deals with the impacts associated with the first three HLA projects completed (see Box 1).

PARTICIPANTS, SETTING AND INTERVENTION

The evaluation was commissioned by SA Health and conducted by researchers from the South Australian Community Health Research Unit at Flinders University. The evaluation design was developed with HIAP unit staff, but activities were undertaken independently and confidentially. A total of 31 participants from nine separate government departments or agencies were involved. Of these, 13 were from SA Health. Only one HLA project participant was unable to participate in the evaluation. It should be noted that HIAP unit staff were involved in more than one HLA. Evaluation participants were a mix of project and policy staff, middle managers, executive-level staff and university researchers. Group and individual interviews were used to gather feedback in a semi-structured format. Questions covered project development and impacts, explored how steps in the HLA model worked in practice and sought participants’ views on whether their specific HLA objectives had been achieved. Interviews were recorded, noted and partially transcribed. A primary descriptive analysis of each HLA project was undertaken led by one researcher and checked by a second. Draft reports of findings were circulated among those informants who requested this, and feedback and clarification resulted in minor adjustments. A second stage of analysis was then undertaken identifying themes, categories and relationships in the data across the three projects. This paper reports cross-cutting findings identified in the analysis of the projects.

Ethics approval for the research was granted by the Social and Behavioural Research Ethics Committee of Flinders University.
OUTCOMES

Each HLA dealt with a discrete policy focus and differed in the scope of the project and the size and complexity of the partnership and reporting structures. Many participants were aware of the HiAP concept from the developmental work described above. The HLAs were viewed by participants as establishing proof of concept. While the HLAs generally followed the processes outlined in the SA model, in reality the process was more organic.

The analysis identified common themes related to increased understanding of the social determinants of health, evidence to inform policy-making, changes in policy direction and a positive disposition to the HLA as a method of intersectoral collaboration.

Increased understanding by policy-makers of the impact of their work on population health and health equity

Projects were underpinned by a broad conception of health and a commitment to attend to the priorities of both health and the other agencies involved in the HLA. Project teams comprised members from sectors not normally involved in collaborative enterprises with health. Participants reported that the HLA resulted in new perspectives being brought to bear on the issues.

“...the process is a different way of going about things, moves from a narrow focus, it broadened the view, broadened exposure to other departments and...the partnering with health broadens the reach.”

(Digital Technology HLA informant)

The process of describing links between the project focus and health was critical in providing a basis for the collaboration. This occurred primarily in the “gather evidence” step of the model. In the case of the Water Security HLA this was relatively easy, given the obvious connection between health and the water supply. However, the HLA process enabled consideration of the issue in terms other than quality and safety. The notion was also raised of community amenity dependent on water supply contributing to both physical and psychological well-being. One respondent suggested that modern policy development was about “human adaptation”, and this frame encouraged broader thinking than a more traditional frame, such as resource management.

Participants in the Digital Technology HLA project found the links between digital technology and health and well-being more difficult to articulate and agree upon. In this project, an iterative process whereby evidence was commissioned and fed back to the project team enabled an understanding of the causal pathways between digital technologies as a determinant, and health and well-being as an outcome to be built.

Participants in the Migrant Settlement HLA all reported a broadening of their understanding of settlement issues. Processes ensured that the knowledge and expertise of project team members were used and their agency’s perspective was considered. Perspectives not usually canvassed in a “settlement” project were incorporated, allowing the interrelationships between health, well-being and settlement to be examined. One informant commented that the project became as much “migration in all policies” as it was health in all policies.

It is important to note that the HLA resulted not simply in non-health sectors gaining a better understanding of how their activities affect health but also in a shared and more sophisticated understanding of how health and other sectoral agendas are inter-related. Thus, health sector policy-makers also gained new insights into their own work. This is illustrated by this comment from a health sector participant in the Migrant Settlement HLA:

“I wasn’t expecting the issues for skilled migrants – seemed to be parallel [to humanitarian migrant] or in some cases worse – we thought we knew but we clearly didn’t.”

(Migrant Settlement HLA informant)

The new understanding raised awareness within the health sector that new health responses to migration issues were required.

Changes in policy direction as a result of a health lens analysis

The navigate step of the health lens process (assisting the progression of recommendations through the decision-making process) was seen as essential in realizing strategic outcomes from the process. Although it appears as a discrete step in the HLA model, there was, in fact, ongoing communication with senior bureaucrats who would have to sign off on any recommendations in all three HLAs. Central government endorsement of both the process and the recommendations of the HLAs was seen to increase the likelihood of policy change.

The first HLA undertaken focused on water security and took place during the development of the state’s water security plan. This represented a significant policy opportunity but also meant there were competing demands on participants. The scope of the HLA was narrowly focused on use of alternative water sources, which was only a small portion of the policy territory. Nevertheless, decision-makers responsible for the Water for Good policy document reported that the HLA influenced the policy through the way the issues were framed and through the language used.

“[the HLA report and recommendations] certainly informed our narrative in Water for Good... if you look at the work that was done in terms of focus groups and the research that was done into it, it came up with some opinions from people about what they were or weren’t prepared to drink and have in their water supply system.”

(Water Security HLA informant)

The Migrant Settlement HLA addressed a key aim of government – the promotion of population growth in regional areas of SA through overseas migration programs. The HLA developed recommendations for policies and programs for each of the agencies involved in the project (Department of Trade and Economic Development, SA Health and Multicultural SA) in order to improve settlement outcomes for migrants and the communities they settle in. Recommendations were endorsed by chief executives and will inform future policies and programs.

“The recommendation made for the department to implement …. an integrated settlement strategy which looks at broader than the individual skilled worker coming to work here – it looks at other family members and a range of other issues so (if implemented) that’s an impact on policy development.”

(Migrant Settlement HLA informant)
The importance of governance arrangements was also highlighted in the Digital Technology HLA. The final project report made a number of recommendations about ways in which government could work toward greater digital inclusion. Having the ExComm CEG endorse the HLA report was seen as giving weight and momentum to its recommendations.

Development and dissemination of policy-relevant research
With the current emphasis on evidence-based policy, bureaucrats were well acquainted with the use of data and research evidence to inform decisions. However, the HLA brief to examine interrelationships between health and other sectoral agendas led policymakers to frame issues in different ways, ask different questions of the data and seek different sources of evidence.

Gaps in data and evidence were noted in all HLAs. The need for policy-relevant research led to productive partnerships between bureaucrats and researchers. For example, there was a paucity of information about where migrants settled, leading the HLA to engage the National Centre for Social Applications of Geographical Information Systems at the University of Adelaide in providing advice regarding settlement patterns. Likewise, a partnership was formed with researchers from the Southgate Institute of Health Society and Equity at Flinders University to assemble evidence regarding digital technology and health.

An important part of these HLAs has been the use of focus groups to provide community perspectives on the issues (for example the Digital Technology HLA commissioned a series of focus groups involving people from lower socio-economic backgrounds, to explore their interest in and use of digital technology). This was an untried strategy for most bureaucrats involved in the HLAs, and initial support for its use was guarded. Bureaucrats felt that such exercises could be politically risky, particularly in areas such as water security, which is a highly visible and politically charged issue in a state known as “the driest state in the driest continent”. Independent facilitation of these was considered important to ensure that they were not perceived by community members as pushing a particular option. However, the results were seen as a useful means of capturing community perspectives and resulted in such perspectives being incorporated into HLA considerations. This comment captures the way in which community feedback challenged assumptions held by policy-makers:

“People in government are somewhat disconnected from user patterns in the community, particularly in this target group. I think there’d be a lot of assumptions about how people worked with the technology that were wrong so this data was important.” (Digital Technology HLA informant)

Participants felt that the rigorous approach to evidence gathering provided HLAs with credibility and noted that the research supported other areas of their work.

Participants from the HLAs also commented on the visibility and value of being involved in the 2010 Health in All Policies international meeting held in Adelaide.

Greater understanding and stronger partnerships between health and other government departments
Respondents noted that intersectoral collaboration, especially between departments without a history of interaction, can be time-consuming and difficult. The “engage” step, during which the project’s scope and focus were determined, was often lengthy but considered fundamental to the project’s success.

“There were lots of discussions trying to develop a common language, a common understanding of values, a common purpose and roles... we’ve all got very different models, languages and cultures within organizations and they can present barriers.” (Migrant Settlement HLA informant)

This appears to have contributed to a sense of joint ownership, exemplified in the observation that the project became as much about “migration in all policies” as health. The importance of the health sector attending to the agendas of other sectors was emphasized in all projects.

Some participants were unaccustomed to working in intersectoral partnerships and noted the positive nature of the collaboration. Comment was made that the groups were in general very productive:

“It’s quite uncommon to get a lot of agencies around the table for more than a one-off meeting and...it’s been quite enlightening for people to… share information and get different perspectives.” (Migrant Settlement HLA informant)

“The outcomes beneficial to us were the collaboration with health and other strong policy and program areas of government, the link up to cabinet committee which is something we don’t get a lot of and the link up to academic research. It certainly broadens the credibility of what we’re doing. .... It allowed us to examine and clarify our thoughts and our directions and our understandings.” (Digital Technology HLA informant)

A positive disposition toward employing health lens analyses in future work
Common to all projects was agreement by participants that the project had been worthwhile, even when difficulties in the process had been identified.

“I think it’s an excellent approach… there were aims and objectives which were about examining [HLA] as an approach and certainly those aims and objectives were met and I think we could learn from that.” (Water Security HLA informant)

There was consistent endorsement of the process when respondents were asked if they would recommend participation in an HLA to others. Two agencies involved have approached the Health in All Policies Unit regarding undertaking a second HLA focusing on a different area of policy.

There are currently four HLAs underway examining Healthy Weight, Aboriginal Road Safety, Literacy Outcomes for Schools in Low Socioeconomic Areas, and Wellbeing of Overseas Students.

Evaluation to date has primarily been formative with a focus on process and short-term impacts to document and inform development of the HLA model. A comprehensive 5-year program of work has now been funded by the National Health and Medical Research Council. Detailed assessment of the policy impacts of HLAs and the mechanisms that enabled these will be undertaken. The research will employ theory-based evaluation methods that examine the mechanisms responsible for social change by articulating and testing the links between program activities and the changes they are aiming to bring about.13 Kingdom’s14 agenda-setting framework will be used as a theoretical lens to analyze how evidence, theory and political processes respond to a range of influences – ideas, interests and institutions.
**DISCUSSION**

O’Neill et al. concluded that one of the main reasons for the failure of intersectoral initiatives was the failure of the health sector to attend to the legitimate agendas of other sectors. As Nutbeam notes, such “health imperialism” often led to other sectors withdrawing from partnerships that defined problems only from a health perspective. The SA model of HiAP is predicated on the notion of mutual benefit, and health sector participants in the HLAs were well aware of the dangers of health imperialism. While SA Health has been a driving force, it has also been mindful of the need not to dominate partnerships and has sought to take “a respectful and collaborative approach.” Ollila refers to this as a “cooperation strategy” whereby health aims are advanced through a systematic approach to cooperation.

Case studies of countries’ intersectoral action to reduce inequities suggest that how the issue was framed had an impact on strategies employed, partners identified and the definition of outcomes. Defining health broadly and bringing health into the policy frame early facilitated engagement of all sectors and implementation of intersectoral actions. This appears to have been one of the successes of this HiAP approach, with a sense of shared ownership of both process and product emerging.

As Lindstrom and Eriksson note, development of healthy public policy should not only identify potential health problems and address them but should also identify resources and mechanisms that support positive health. HLAs were successful in not only identifying possible negative impacts but in also identifying salutogenic factors that support positive health and well-being.

Reflections of participants suggest that the HLA process has resulted in a shift in policy-makers’ thinking. Both conceptual learning (redefining goals, problem definitions and strategies) and social learning (dialogue and interaction between stakeholders) appear to have taken place. As Harris and Harris-Roxas suggest, these types of learning require sustained and significant involvement by stakeholders and may well be contingent on a process that provides time for substantial interaction and relationship-building. Kickbusch believes that an understanding of the social determinants of health and development of a strategy that takes into account the range of factors over which the health system has no control require a change in the mindset of decision-makers.

The evaluation of these HLAs suggests that this process has considerable promise in achieving such a shift in mindset.

**REFERENCES**


**RÉSUMÉ**

**Objectifs** : La santé dans toutes les politiques (l’approche HIAP) est promue comme un moyen d’inscrire dans les processus décisionnels un souci des effets des décisions sur la santé. En Australie-Méridionale, on a créé et testé des structures et des processus spécifiquement à cette fin.

**Participants** : L’approche HIAP vise à mobiliser les agents de politiques et les gestionnaires de tous les secteurs du gouvernement.

**Lieu** : L’Australie-Méridionale, un des six États australiens, qui fonctionne selon un système de gouvernement de cabinet. On y trouve 15 ministères.

**Intervention** : Le principal mécanisme de l’approche HIAP en Australie-Méridionale est « l’analyse dans une optique de santé » (HLA) – un processus intersectoriel mené en partenariat qui fait appel aux méthodes de recherche en santé publique. Ce mécanisme a été appliqué dans trois dossiers de politiques publiques : la sécurité de l’eau, la technologie numérique et la migration.

**Résultats** : Les résultats de l’évaluation jusqu’à maintenant montrent que les analyses HLA ont entraîné : une compréhension accrue, chez les responsables des politiques, des incidences de leur travail sur les résultats sanitaires; des changements dans les orientations stratégiques; l’élaboration et la diffusion de recherches pertinentes pour les politiques; une meilleure compréhension et des partenariats plus forts entre la Santé et les autres ministères; et une tendance favorable à employer les analyses de type HLA dans les travaux futurs.

**Conclusion** : On réclame depuis longtemps des actions intersectorielles pour obtenir des politiques publiques qui favorisent les résultats sanitaires positifs. Les données d’évaluation obtenues jusqu’à maintenant montrent que la méthode HLA est un moyen prometteur pour passer de la théorie à la pratique dans les politiques.

**Mots clés** : politique sanitaire; politique publique; secteur public
Les interventions de subvention du paiement des soins renforcent l’empowerment des communautés au Burkina Faso

Oumar M. Samb1, Valéry Ridde, Ph.D2.3

RÉSUMÉ

Objectif : Cette recherche évalue l’impact des interventions de subvention du paiement des soins sur le pouvoir d’agir (empowerment) des membres des Comités de gestion (Coges) communautaires des services de santé et de leur organisation au Burkina Faso.

Participants : La collecte des données s’est effectuée en 2010 dans huit centres de santé primaire pendant six mois auprès de 140 personnes.

Lieu : Trois districts sanitaires du Burkina Faso (Dori, Sebba et Ouargaye).

Intervention : Depuis 2006, le gouvernement subventionne 80 % des coûts des soins obstétricaux et néonataux d’urgence pour les femmes enceintes. Depuis 2008, une ONG prend en charge les 20 % restant et elle subventionne à 100 % les soins pour les enfants de moins de cinq ans à Dori et Sebba. De plus, une stratégie communautaire d’exemption du paiement pour les indigents a été organisée dans ces trois districts.

Résultats : Les interventions ont renforcé le pouvoir d’agir des membres des Coges et de leur organisation. Cela se traduit par une plus grande capacité à s’impliquer dans la résolution des problèmes de santé de la communauté. L’intervention de l’ONG spécifiquement à Dori et Sebba fait que le renforcement du pouvoir d’agir y est plus grand qu’à Ouargaye.

Conclusion : La subvention du paiement des soins au point de service est portée d’un fort potentiel de renforcement du pouvoir d’agir des membres des Coges et de leur organisation.

Mots clés : exemption; paiement direct; Burkina Faso; empowerment; effets sociaux; communauté; pouvoir d’agir

The translation of the Abstract appears at the end of this article.

Pour relancer la politique des soins de santé primaires, plusieurs États africains ont formulé, sous l’égide de l’OMS et de l’UNICEF, une politique publique dénommée Initiative de Bamako (IB). Son objectif était de favoriser l’accessibilité universelle aux systèmes de santé en favorisant la participation des communautés à la gestion des formations sanitaires et en mettant en place une politique de recouvrement des coûts fondée sur le paiement direct des patients lorsqu’ils consultent. Mais cette participation financière a limité l’accès aux soins, notamment pour les femmes et les indigents, ces derniers étant considérés dans l’incapacité permanente de payer. Or, les dispositions prévues pour exempter du paiement les indigents n’ont jamais été effectives et le concept de participation communautaire a été interprété presque exclusivement sous l’angle de la participation financière. Pourtant, les soins de santé primaires renvoyaient à un idéal de justice qui voulait que les populations soient associées aux décisions concernant leur santé.

Toute volonté de réduire les inégalités sociales de santé et d’améliorer l’état de santé des groupes défavorisés doit passer par une réduction des barrières financières à l’accès aux soins de santé, et un renforcement du pouvoir d’agir (empowerment) des communautés.

Ainsi, plusieurs pays ont décidé à partir des années 2000 d’organiser des interventions de subvention du paiement des soins, faisant en sorte que les patients n’ait plus à payer directement lorsqu’ils viennent au point de service. De nombreuses recherches ont évalué les effets de ces interventions sur l’utilisation des services ou les dépenses de santé, mais aucune ne semble encore avoir été réalisée pour analyser leurs effets sociaux. Par effets sociaux, nous entendons les changements induits au niveau du pouvoir et de l’autonomie des communautés. Ainsi, le but de la présente recherche est d’analyser l’impact social de ces politiques sur le renforcement du pouvoir d’agir au Burkina Faso.

PARTICIPANTS, LIEU ET MESURE D’INTERVENTION

Les bénéficiaires des interventions sont les femmes, les enfants de moins de cinq ans et les indigents considérés comme vulnérables dans le contexte du Burkina Faso.

Affiliations des auteurs
1. Département de médecine sociale et préventive, Université de Montréal, Montréal, QC
2. Centre de recherche du Centre hospitalier de l’Université de Montréal (CRCHUM), Faculté de médecine, Université de Montréal, Montréal, QC
3. Chercheur, Département de médecine sociale et préventive, Université de Montréal, Montréal, QC

Correspondance : Oumar Mallé Samb, DMSP, Université de Montréal, Pavillon 1430 Boul du Mont-Royal, bureau 1108, Montréal, QC H2V 4P3, Tél. : 514-652-5204, Courriel : oumar.malle.samb@umontreal.ca

Sources de financement : Cette recherche a été financée grâce à une bourse doctorale obtenue dans le cadre du programme Population et santé en Afrique (PPSA), financée par la fondation Bill et Melinda Gates. Elle a aussi bénéficié du soutien du Programme de recherche « L’abolition du paiement des services de santé en Afrique de l’Ouest », codirigé par le Lasdel (Niger) et l’Université de Montréal (Canada), financé par l’AFD et le CRDI. Valéry Ridde est New Investigator (nouveaux chercheurs) des IRSC.

Remerciements : Nous remercions les personnes interrogées dans le cadre de cette recherche, nos enquêteurs, le personnel de l’ONG Help, ainsi que toutes les personnes qui ont contribué à la réalisation de l’enquête de terrain.

Conflit d’intérêts : Aucun à déclarer.
**Contexte**

Le Burkina Faso est un pays sahélien de 15 millions d’habitants qui vivent en majorité en milieu rural (77%). Il fait partie des pays les plus pauvres au monde avec une espérance de vie faible (57 ans en 2008) et des taux de mortalité élevés10. Les interventions se déroulent en lien avec le système de santé.

Dans les années 80, le pays débutait une ère de décentralisation avec les premiers centres de santé et de promotion sociale (CSPS) qui constituent le premier niveau de contact avec la population où on assure les services de première ligne (soins et accouchements). Les CSPS sont dirigés par un infirmier chef de poste (ICP) et gérés par des membres issus de la communauté au moyen des comités de gestion (Coges). Les Coges gèrent le produit de la vente des médicaments essentiels génériques (MEG) et des consultations curatives, ce qui assure le fonctionnement du CSPS.

L’une des recommandations majeures de l’Initiative de Bamako est que les bénéfices du paiement direct soient utilisés partiellement pour financer l’accès gratuit des indigents aux services de santé. Or très rares sont les Coges à avoir délivré des soins gratuits aux indigents, préférant thésauriser ou utiliser à d’autres fins leurs bénéfices11.

**Interventions**

Les interventions se déroulent dans trois districts (Tableau 1).

**Les femmes enceintes et les enfants**

Le gouvernement a mis en place en 2006 une politique nationale de subvention de 80 % des coûts des soins obstétricaux et néonataux d’urgence (SONU)12. En 2008, une ONG a décidé de compléter cette stratégie et de prendre en charge la part des 20 % réclamée aux femmes pour les accouchements et les césariennes dans les districts de Dori et de Sebba, où elle subventionne aussi à 100 % les soins des enfants de moins de 5 ans. Ainsi, les femmes enceintes et les enfants de moins de 5 ans sont totalement exemptés du paiement des soins au point de service. L’intervention repose sur la subvention par un tiers payeur (l’ONG et l’État) qui rembourse les Coges des soins fournis gratuitement. En plus, l’ONG renforce le plateau technique des CSPS, forme les agents de santé et renforce les capacités de gestion et de gouvernance des membres des Coges11. Ce renforcement des Coges les hisse au statut de partenaire actif dans le pilotage de l’intervention.

**Les indigents**

À la suite d’une recherche action11 démontrant la faisabilité d’un processus de sélection des indigents par les communautés dans le district de Ouargaye, les Coges utilisent leurs fonds propres pour accorder l’exemption du paiement des soins aux indigents sélectionnés par des comités villageois de sélection (CVS). L’efficacité de l’approche a permis le passage à l’échelle dans tout le district de Ouargaye en 2010 ainsi que son extension dans les deux autres districts (Dori et Sebba). Cette exemption pour les indigents dans le

---

**Tableau 1. Récapitulatif des interventions et du contexte**

<table>
<thead>
<tr>
<th>District sanitaire (DS)</th>
<th>Dori (DS1)</th>
<th>Sebba (DS2)</th>
<th>Ouargaye (DS3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population cible (%)</td>
<td>Femmes enceintes (100 %)</td>
<td>Femmes enceintes (100 %)</td>
<td>Femmes enceintes (80 %)</td>
</tr>
<tr>
<td>pourcentage de subvention</td>
<td>Enfants de moins de 5 ans (100 %)</td>
<td>Enfants de moins de 5 ans (100 %)</td>
<td>Indigents (100 %)</td>
</tr>
<tr>
<td>Financement</td>
<td>État + ONG + Communauté</td>
<td>État + ONG + Communauté</td>
<td>État + Communauté</td>
</tr>
<tr>
<td>Groupe social majoritaire</td>
<td>Peuhl</td>
<td>Peuhl</td>
<td>Mossi</td>
</tr>
<tr>
<td>Nombre de CSPS</td>
<td>17</td>
<td>11</td>
<td>25</td>
</tr>
<tr>
<td>Nombre d’habitants</td>
<td>290 000</td>
<td>170 000</td>
<td>260 000</td>
</tr>
</tbody>
</table>

Source : MS/DEP, annuaire statistique 2008.

---

**Figure 1. Dimension de l’empowerment individuel**

![Image](figure1.png)

Source : Réf. 14

**Tableau 2. Caractéristiques des participants**

<table>
<thead>
<tr>
<th>Échantillonnage</th>
<th>Dori et Sebba</th>
<th>Ouargaye</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entrevues individuelles (EI)</td>
<td>8</td>
<td>8</td>
<td>16</td>
</tr>
<tr>
<td>Membre des Coges (MC)</td>
<td>8</td>
<td>8</td>
<td>16</td>
</tr>
<tr>
<td>Utilisateurs ou non des services de santé</td>
<td>4</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Autorités administratives</td>
<td>20</td>
<td>20</td>
<td>40</td>
</tr>
<tr>
<td>Infirmiers Chef de Poste (ICP)</td>
<td>8</td>
<td>8</td>
<td>16</td>
</tr>
<tr>
<td>Femmes enceintes et allaitantes</td>
<td>4 (N=20)</td>
<td>4 (N=16)</td>
<td>8 (N=36)</td>
</tr>
<tr>
<td>Indigents</td>
<td>52</td>
<td>52</td>
<td>104</td>
</tr>
<tr>
<td>Coges</td>
<td>4</td>
<td>4</td>
<td>8</td>
</tr>
</tbody>
</table>

**Tableau 3. Liste des thèmes abordés durant les entrevues : thèmes principaux et sous thèmes couverts**

<table>
<thead>
<tr>
<th>Pouvoir d’agir individuel Participation</th>
<th>Prise de décision</th>
<th>Implication dans les activités</th>
<th>Capacité d’agir</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compétence</td>
<td>Acquisition de connaissances et d’habiletés</td>
<td>Acquisition de compétences</td>
<td>Exécution des activités</td>
</tr>
<tr>
<td>Estime de soi</td>
<td>Perception de soi</td>
<td>Perception de son action</td>
<td>Responsabilité sociale</td>
</tr>
<tr>
<td>Conscience critique</td>
<td>Conscience politique</td>
<td>Volonté d’agir</td>
<td></td>
</tr>
<tr>
<td>Participation</td>
<td>Niveau de participation dans le CSPS</td>
<td>Implication dans les activités et décisions du CSPS</td>
<td>Relation avec l’autorité sanitaire du district (ECD)</td>
</tr>
<tr>
<td>Compétences</td>
<td>Connaissance de l’organisation</td>
<td>Formation</td>
<td>Maillage et capacité à mettre en place des initiatives</td>
</tr>
<tr>
<td>Reconnaissance</td>
<td>Perception du Coges par les populations</td>
<td>Perception du Coges par ses membres</td>
<td>Clarification des enjeux</td>
</tr>
<tr>
<td>Conscience critique</td>
<td>Perception des problèmes de la communauté</td>
<td>Initiatives et changements sociaux</td>
<td></td>
</tr>
</tbody>
</table>
**Tableau 4. Synthèse de l'impact des interventions sur les différentes dimensions du pouvoir d'agir**

<table>
<thead>
<tr>
<th>pouvoirs d'agir individuel</th>
<th>Dori/Sebba</th>
<th>Ouargaye</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Participation</strong></td>
<td>= bon</td>
<td>= moyen</td>
</tr>
<tr>
<td>La plupart des membres sont impliqués au quotidien</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Compétences</strong></td>
<td>= bon</td>
<td>= moyen</td>
</tr>
<tr>
<td>des connaissances sur la gestion et la sensibilisation</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Estime de soi</strong></td>
<td>= fort</td>
<td>un renforcement de la confiance et de l'estime de soi</td>
</tr>
<tr>
<td><strong>Conscience critique</strong></td>
<td>= bon</td>
<td>une prise de conscience des inégalités d'accès aux soins et une grande volonté de les réduire</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>pouvoirs d'agir organisationnel</th>
<th>Dori/Sebba</th>
<th>Ouargaye</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Participation</strong></td>
<td>= bon</td>
<td>= moyen</td>
</tr>
<tr>
<td>renforcement du pouvoir des Coges dans la gestion du CSPS</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Compétences</strong></td>
<td>= bon</td>
<td>= moyen</td>
</tr>
<tr>
<td>un meilleur partage des connaissances au sein des Coges</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Reconnaissances</strong></td>
<td>= fort</td>
<td>Renforcement de la crédibilité des Coges</td>
</tr>
<tr>
<td></td>
<td></td>
<td>une meilleure clarification par le Coges de ses responsabilités</td>
</tr>
</tbody>
</table>

Légende : (niveau d’impact) : fort/bon/moyen/faible

district de Ouargaye s’ajoute à la subvention de 80 % des coûts des SONU pour les femmes enceintes.

L'une des innovations de ces interventions est qu'elles sont mises en œuvre en étroite collaboration avec les membres de la communauté, notamment à travers les Coges et les CVS. Ainsi, au-delà des effets souhaités sur l'augmentation de l'utilisation des services, il est attendu qu’elles produisent aussi des effets sociaux, notamment en augmentant le pouvoir d’agir des communautés et de leur organisation.

**Objectif de l'étude**

Il s’agit d’évaluer l’impact des interventions de subvention du paiement des soins sur le pouvoir d’agir des membres des Coges et de leur organisation.

**CADRE D’ANALYSE ET MÉTHODE**

L’analyse des effets des interventions sur le pouvoir d’agir repose sur l’utilisation du cadre conceptuel de Ninas14, créé dans le contexte du Canada mais dont l’utilisation s’est montrée possible dans les pays du Sud15,16.

Selon ce cadre, l’empowerment individuel (Figure 1) opère sur quatre plans : la participation (participation aux prises de décision), les compétences (acquisition des connaissances et développement des habiletés chez l’individu), l’estime de soi (amour de soi et valorisation de sa contribution) et la conscience critique (acceptation d’une responsabilité personnelle pour le changement). C’est l’enchaînement de ses quatre étapes, tel les quatre fils d’une même corde qui permet le passage d’un état avec peu de pouvoir à un autre où l’individu est capable d’agir en fonction de ses propres choix. De la même manière, quatre étapes définissent l’empowerment organisationnel : la participation (implication et participation de l’organisation dans les décisions concernant), les compétences (fruit de la mise en commun des compétences de ses membres et du transfert du savoir entre eux), la reconnaissance (crédibilité et légitimité de l’organisation, pour ses membres et le milieu qui l’entoure) et la conscience critique (capacité d’analyse des enjeux pour ses membres). Le cheminement de ces quatre étapes permet à l’organisation d’acquérir une capacité d’action et d’arriver à répondre efficacement aux besoins des individus14.

Pour rendre compte de l’effet des interventions sur le pouvoir d’agir, la recherche vise à comprendre l’amélioration perçue par les parties prenantes des interventions sur les quatre dimensions conceptuelles du pouvoir d’agir, tant pour les individus que pour les Coges.

Le devis de recherche est une étude de cas multiples reposant sur l’utilisation de données qualitatives. Nos cas sont constitués des trois interventions de subvention. La population à l’étude est composée de huit centres de santé où se déroulent ces interventions. Pour Dori, le choix est contraint dans la mesure où il n’existe que quatre centres de santé et de promotion sociale (CSPS) où s’applique l’intervention sur les indigents. En revanche, en ce qui concerne Ouargaye, dix CSPS participent à l’intervention. Ainsi, les quatre CSPS ont été choisis au regard du critère d’homogénéité ethnique des populations. Les données qualitatives proviennent de trois instruments de collecte qui ont été utilisés au cours d’une enquête de terrain qui a duré six mois en 2010.

Des entrevues individuelles (n=104) et de groupe (8 : n=36) ont été effectuées auprès des principales parties prenantes (Tableau 2). Un interprète habitué aux enquêtes qualitatives a été sollicité lorsque nécessaire. Pour la sélection des participants, tous les groupes d’acteurs ont été d’abord identifiés (échantillonnage par homogénéisation), puis à l’intérieur de chaque groupe, on a pris les profils les plus divers afin de croiser les points de vues (diversification interne)17. Ces entrevues ont porté sur les dimensions du cadre d’analyse opérationnalisées dans le Tableau 3. L’étude documentaire a reposé sur les supports de formations, des rapports d’activités et des plans d’action des trois interventions.

Pour l’analyse, toutes les entrevues ont été retranscrites en français à partir de l’enregistrement numérique. Les données ont été codifiées à partir des thèmes et des catégories prédéfinies (Tableau 3). Le matériel a été analysé avec le logiciel QDA-Miner selon une démarche thématique18. Cette recherche a été approuvée par les comités d’éthique de l’Université de Montréal et du Burkina Faso.

**RÉSULTATS**

Aucune différence particulière n’a été observée entre les districts de Dori et de Sebba. Ainsi, la comparaison des résultats (Tableau 4) se fonde principalement entre ces deux districts et celui de Ouargaye.
Pouvoir d’agir individuel : les membres des Coges

Participation
Un plus grand dynamisme des membres des comités de gestion (MC) est constaté à travers l’implication dans les campagnes de sensibilisation à l’utilisation des services et à l’entretien du CSPS : « On s’occupe de tout, on garde l’argent, on part payer les médicaments. On contrôle toutes les entrées et les sorties » (EG, D1#42).

À Dori/Sebba, la participation s’accompagne d’une plus grande régularité des réunions et d’un rôle plus actif dans la gestion quotidienne du CSPS : « Les réunions, ce n’est pas comme avant car le projet a tout le temps des réunions. Chacun a donc constamment en tête ce qu’il doit faire et ne peut pas l’oublier » (EG, D1#39). En revanche, à Ouargaye, la participation semble encore confinée aux périodes de mobilisation sociale : « À part les réunions mensuelles, les restes des jours, ça ne regarde que le président et le trésorier » (MC, D3#90).

Compétence
Une majorité des MC s’estimait plus compétente grâce à une meilleure connaissance de leurs missions et l’acquisition de nouvelles habiletés en matière de sensibilisation et de gestion : « Nous sommes plus formées sur les questions de sensibilisation, à gérer et développer notre dépôt pharmaceutique » (EG, D2#25). Ce sentiment est plus marqué à Dori/Sebba grâce notamment à la formation donnée par l’ONG. Cependant, il semble subsister un problème commun à tous les Coges, soit l’analphabétisme de leurs membres. Ainsi, plusieurs infirmiers chefs de poste (ICP) doivent s’impliquer directement dans l’organisation : « On est obligé de faire le rapport mensuel, de remplir le livre de trésorerie, normalement c’est le trésorier qui doit le faire » (ICP, D2#41).

Estime de soi
L’impact le plus fort de ces interventions observé dans les trois districts concerne le plan psychologique. « Auparavant, j’étais géné quand je sensibilisais car on n’aidait pas les gens, mais aujourd’hui je suis vraiment serein car je sais que leur prise en charge est assurée » (EG, D1#39). L’effritement de l’image négative des MC a amélioré leurs relations avec la communauté : « À part les réunions, on peut dire pratiquement que c’est à nous que le travail a été confié » (EG, D1#38). À Dori/Sebba, le Coges a renforcé son rôle dans la gestion du CSPS.

Conscience critique
Une prise de conscience collective vis-à-vis de l’accès aux soins se manifeste par des déclarations des MC : « On ne savons pas grand choses des textes » (MC, D3#55).

Pouvoir d’agir organisationnel : les Coges

Participation
L’implication des Coges a été déterminante dans les interventions : « C’est nous qui sommes à la tête de ce travail, … on peut dire pratiquement que c’est à nous que le travail a été confié » (EG, D1#38). À Dori/Sebba, le Coges a renforcé son rôle dans la gestion du CSPS.

Conscience critique
La prise en charge gratuite des indigents marque une rupture dans la démarche des Coges. Beaucoup ignoraient l’existence de cette possibilité pourtant officielle : « Nous ne savons pas grand choses des textes » (MC, D3#55).

Compétences
Les différentes réunions et formations ont permis de développer une compétence organisationnelle : « Avant le Coges était là juste pour la forme … Aujourd’hui, nous pouvons nous même former des gens, nous savons comment gérer notre centre (EG, D1#39). La mise en commun des compétences individuelles au service du Coges a renforcé son pouvoir vis-à-vis des agents de santé : « Dans le passé nous ne pouvions rien leur reprocher, aujourd’hui nous leurs reprochons leurs erreurs quand ils en font » (MC, D3#75). À part les réunions mensuelles, les restes des jours, ça ne regarde que le président et le trésorier » (MC, D3#90).

Reconnaissance
Le fait de donner des soins gratuits a valorisé le travail des Coges. La population salue les subventions : « Je les félicite, c’est bien. Ils ont fait ce que moi en tant que chef je devais faire » (D3#53). La suspicion de connivence entre les Coges et les agents de santé est « définitivement effacé » aux dires d’une autorité (D1#5), ce qui a contribué à renforcer leur crédibilité : « On les écoute maintenant » (D3#73).

DISCUSSION
Cette recherche étant basée partiellement sur une intervention d’une ONG, le biais de désirabilité sociale était réel pour une partie des personnes interrogées. Cependant, nous avons insisté constamment sur notre indépendance par rapport à l’ONG. Pour limiter les biais d’interprétation liés à la traduction, nous avons tout au long des entrevues clarifié et vérifié auprès de nos informateurs le sens de leurs propos. Par ailleurs, les résultats de la recherche étant globalement similaires alors que les contextes sociaux des trois districts sont relativement différents, cela renforce la validité interne de l’étude et facilite la généralisation des résultats vers d’autres contextes du pays.

L’initiative sur les indigents est vécue comme un moment de regain de la participation communautaire, surtout que : « l’État n’a pas mis sa main » (MC, D3#90). Cependant, cette marque d’autonomie des Coges semble être restreinte par la tutelle encore toute puissante de l’autorité sanitaire du district (Équipe Cadre du District), surtout à Ouargaye : « Il n’y a pas une activité que nous allons mener sans que le district [ÉCD] ne soit au courant même si c’est une activité exclusivement Coges. On n’a pas le plein droit d’agir » (MC, D3#66).
Les compétences : un déterminant majeur de la participation

L’absence de compétences techniques est un des facteurs essentiels de la faible participation des communautés aux décisions qui les concernent. À Ouargaye, où les formations ont été insuffisantes, l’implication des membres des Coges est restée faible à l’inverse de Dori/Sebba. Ce renforcement individuel est essentiel, car il est instrumental au pouvoir d’agir des organisations. Ainsi, une relation étroite s’établit entre compétences et participation, tant le pouvoir de décider, d’accepter ou de refuser est intrinsèquement lié à la capacité du sujet, nous dit Sen, dont les compétences constituent une composante essentielle. De plus, les résultats s’inscrivent en cohérence avec d’autres recherches faites au Burkina Faso et au Mali qui montrent, au contraire, comment l’insuffisante compétence des Coges fait qu’ils se trouvent souvent dans l’incapacité d’exercer le rôle qui leur est réservé dans les systèmes de santé.

Estime de soi et confiance

L’imposition des paiements directs des soins est considérée par les communautés comme allant à l’encontre de leurs intérêts. Ainsi, la mise en place des interventions de subvention, de surcroît dans un contexte où le paiement direct et la vente des médicaments constituent la norme, est perçue positivement par toutes les personnes rencontrées. Pour les membres des Coges, la disparition des perceptions négatives à leur égard est supplantée par une meilleure perception de soi. L’effet valorisant se traduit par une plus grande implication dans le CSPS, attitude décrite par les théories psychologiques qui ont établi une relation entre une bonne perception de soi et l’agir motivationnel. Par ailleurs, au niveau organisationnel, l’effritement de la relation exclusivement marchande avec les populations, instaurée lors de la généralisation du paiement, favorise le renforcement de la crédibilité des Coges. Ceci a contribué à l’avènement d’un nouvel équilibre dans les rapports entre les agents de santé. Mieux outillés techniquement et plus exigeants envers leurs responsabilités, les Coges sont devenus des partenaires respectés, assumant un rôle d’interface entre les agents de santé et la population. La relation entre l’augmentation du pouvoir d’agir et une plus grande capacité de négociation est confirmée par une étude en Guinée-Conacry qui montre comment les responsables d’une muette de santé ont poussé les agents de santé à plus de transparence dans la gestion, jusqu’à obtenir d’eux le remboursement des sommes détournées. Cependant ce gain de pouvoir par les communautés ne se traduit pas toujours par sa distribution équitable dans le Coges. Du fait des jeux de pouvoir, il arrive qu’il soit concentré entre les mains de quelques-uns.

De l’inertie au changement : l’importance de la conscience critique

La volonté affirmée des Coges de pérenniser l’initiative de subvention pour les indigents marque un tournant par rapport à l’accès aux soins des plus pauvres. Elle illustre l’importance du développement de la conscience critique dans la mise en place du changement. Bien que préconisée dans les textes administratifs, l’affectation d’une partie des bénéfices de la vente des médicaments pour favoriser la prise en charge des indigents n’a jamais été appliquée. L’inertie sur cette question est en partie liée à la conjonction de deux facteurs, soit l’ignorance de ces textes et la persistance des valeurs qui véhiculent les principes d’égalité plutôt qu’un traitement préférentiel. Voilà pourquoi, tout projet de transformation sociale doit prendre en compte les valeurs et croyances des personnes qui forment des éléments incitatifs du processus de changement. Le développement de la conscience critique à la base du changement a débuté avec la recherche action sur la prise en charge des indigents. Elle a notamment permis de modifier favorablement la vision des Coges en leur montrant qu’ils pouvaient, socialement et financièrement, améliorer l’accès aux soins des indigents de leur communauté. Rien n’est donc imuable. Des travaux dans le domaine de l’équité sociale ont en effet montré que la conception de la justice sociale n’a rien d’absolu dans une société, mais elle repose sur ce que ses membres considèrent comme juste. Autrement dit, les individus peuvent changer s’ils sont incités à voir le monde autrement et si leurs valeurs évoluent.

CONCLUSION

Cette étude menée au Burkina Faso montre que la subvention du paiement des soins est portee d’un fort potentiel de renforcement du pouvoir d’agir des membres des Coges et de leur organisation. La crédibilité qu’ils y gagnent apparaît comme un puissant incitatif à leur participation à la gestion décentralisée des centres de santé. Les communautés privilégient d’autres voies de participation communautaire que le seul paiement et sont disposés à prendre en charge leurs besoins sanitaires. Aussi, les résultats de cette recherche plaident en faveur d’un retour à l’esprit d’Alma Ata, notamment la gouvernance communautaire. Cependant, toute volonté de renforcer le pouvoir d’agir des communautés restera un vœu pieux si elle ne passe pas par un renforcement de leurs compétences et une prise en compte des enjeux de pouvoir inhérents à toutes dynamiques communautaires, ce qui reste à étudier dans le contexte de ce type d’interventions.

RÉFÉRENCES

ABSTRACT

Objective: This research project assesses the impact of care subsidy interventions on the empowerment of members of community health services Management Committees (MCs) and their organization in Burkina Faso.

Participants: The data collection took place in 2010 in 8 primary care centres over 6 months with 140 people.

Location: Three health districts of Burkina Faso (Dori, Sebba and Ouargaye).

Intervention: Since 2006, the government subsidizes 80% of emergency neonatal and obstetrical costs for pregnant women. Since 2008, an NGO assumes the remaining 20% and subsidizes 100% of health care costs for children under 5 in Dori and Sebba. In addition, a payment exemption strategy for indigents has been organized at the community level in all three districts.

Results: Interventions have strengthened MC members’ and their organization’s power to act. This has translated into an increased capacity to get involved in the resolution of health problems within the community. The NGO’s intervention specifically in Dori and Sebba has led to even greater empowerment there than in Ouargaye.

Conclusion: Subsidizing care payments at points of service significantly enhances the potential for increasing the empowerment of MC members and their organization.

Key words: Exemption; direct payment; Burkina Faso; empowerment; social impacts; community; power to act
PUBLIC HEALTH INTERVENTION

Understanding the Impact of the Canada Prenatal Nutrition Program: A Quantitative Evaluation

Nazeem Muhajarine, PhD,1,2 John Ng, MSc,2 Angela Bowen, RN, PhD,3 Jennifer Cushon, PhD,2 Shanthi Johnson, PhD2

ABSTRACT

Objectives: The objectives of this study were to assess whether high exposure to the Canada Prenatal Nutrition Program (CPNP) improved 1) the personal health practices, such as smoking and breastfeeding, of participants and 2) birth outcomes, such as low birth weight and preterm birth.

Intervention: The CPNP is a population-level health intervention that aims to contribute to improved health outcomes for pregnant women and their newborn children facing conditions of risk. The program, which is jointly managed by the federal and provincial governments, serves more than 45,000 Canadian women annually.

Participants: Participants were women who entered the program prenatally in 2002-2006 and were socially, demographically and geographically diverse. Almost 12% were adolescents, and almost 10% were over 34 years of age; 5% were recent immigrants (in Canada <10 years), and close to one quarter were Aboriginal.

Setting: This comprised a broad range of community-based projects in 2,000 communities.

Outcomes: Descriptive statistics showed that the CPNP is reaching the women for which it is intended. Participants with high CPNP exposure were more likely to reduce the number of cigarettes they smoked, to cease drinking, to breastfeed their infants and to breastfeed for longer, and to increase their use of vitamin/mineral supplements from never to daily. Furthermore, they were less likely to give birth to an infant that was preterm, had low birth weight, was small for gestational age or had poor neonatal health. Unexpectedly, participants were more likely to give birth to a large-for-gestational-age infant. Our stratified “equity” analyses showed some variation by social group, indicating that the benefits were not consistently shared by all.

Conclusion: High CPNP exposure improved the health behaviours and birth outcomes of women and their newborn children facing conditions of risk. Furthermore, our equity analysis found that the associations between higher CPNP exposure and healthy behaviour changes, and even more so, better birth outcomes, were generally found across many social groups. In the absence of a control group, the study used an innovative approach to estimating the impact of the CPNP by comparing those who received a higher “dose” with those receiving a lower dose of CPNP services.

Key words: Child development; vulnerable populations; risk factors; program evaluation; early intervention

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


B etween 350,000 and 400,000 infants are born in Canada every year.1 One in 10 of them shows adverse birth outcomes, such as low birth weight and preterm birth, often related to maternal health and nutrition as well as underlying social and economic conditions.2 Poor birth outcomes contribute to both poor short- and long-term growth and development, and can have substantial impacts over the life course, including decreased educational attainment and labour force attachment, and greater use of health care.3-7 Therefore, preventing adverse birth outcomes through comprehensive population-based interventions that target modifiable risk factors, such as maternal health and health behaviours, and are based on principles of equity represents an important public investment in society. One such intervention is the Canada Prenatal Nutrition Program (CPNP), launched by the Government of Canada in 1995.8,9 This paper reports the results of a comprehensive quantitative evaluation of the CPNP, including an equity analysis of outcomes for different groups of clients in the program.

THE INTERVENTION: THE CANADA PRENATAL NUTRITION PROGRAM

The CPNP aims to improve health outcomes and reduce disparities among pregnant women and their newborn children facing conditions of risk, such as poverty, teen pregnancy, recent immigration to Canada, alcohol or substance abuse, and family violence. The CPNP is a federally funded program that is managed jointly with the provinces and territories, allowing each region to identify its own priorities and target groups. The program consists of approximately 330 projects in about 2,000 communities across Canada.10 The projects encompass a wide range of services, including food supplements (e.g., milk or food), dietary assessment, one-on-one and group education on nutrition and other aspects of lifestyle, and other services (e.g., parenting education, child care support, transportation, housing, breastfeeding preparation). They involve partnerships with

Author Affiliations

1. Department of Community Health and Epidemiology, College of Medicine, University of Saskatchewan, Saskatoon, SK
2. Saskatchewan Population Health and Evaluation Research Unit, University of Saskatchewan, Saskatoon, SK
3. College of Nursing, University of Saskatchewan, Saskatoon, SK

Correspondence: Nazeem Muhajarine, PhD, Health Sciences Building, University of Saskatchewan, 107 Wiggins Rd., Saskatoon, SK S7N 5E5, E-mail: nazeem.muhajarine@usask.ca

Acknowledgement: This research was done under a competitive contract from the Public Health Agency of Canada (#6D016-08-2C08018), which also provided de-identified data. The interpretation and conclusions contained herein do not necessarily represent those of the Government of Canada or the Public Health Agency of Canada.

Conflict of Interest: None to declare.
related government and non-government initiatives at all levels: local, national and First Nations organizations.

In 2004, a Results-based Management and Accountability Framework was developed to guide the management and evaluation of the CPNP; it included a program logic model that outlines the program’s expected outcomes. Studies have confirmed that the CPNP is meeting its short-term objective of reaching women and their infants living in conditions of risk and providing them with access to appropriate services. Low-income women made up about 60% of those served by the CPNP between 1998 and 2003. Additionally, in 2005/2006, 18% of clients entering the program were 19 years old or younger, 67% had less than high school education, 29% had lived in Canada less than 10 years, 23% were Aboriginal, 31% smoked and 35% were single, widowed, divorced or separated.

This study adds to the ongoing understanding of the CPNP by investigating whether the program has met its intermediate objective of improving maternal health behaviours and its long-term objective of improving birth outcomes and infant health. As well, we investigated whether the CPNP’s impact on health behaviours and birth outcomes varied across social groups or was experienced similarly by all clients (i.e., equity analysis).

DATA SOURCE

Data on clients’ health, demographic characteristics, use of CPNP services and birth outcomes came from the Individual Client Questionnaires, version 2 (ICQ2), a self- and staff-administered questionnaire used by the CPNP. The ICQ2 has three sections: Part A, Prenatal Interview; Parts B and C, Postnatal Interview; and Part D, Staff Observations. National data were collected in 2002/03, 2003/04, 2004/05 and 2005/06 for women born in the months of May, June or September who entered the program prenatally. Data available from 2002 to 2006 were merged to create one comprehensive data file on 48,184 pregnant women. Thus, the total possible pool available for investigation was 48,184 client cases; however, the number of cases for certain queries was smaller because of incomplete data entries or the inapplicability of certain variables.

STUDY MEASURES

Dependent variables

We examined two types of outcome: health behaviours and birth outcomes, including neonatal health. Clients’ health behaviours consisted of weight gain during pregnancy (relative to recommended weight gain, adjusted to pre-pregnancy body mass index); increased vitamin/mineral supplement use; smoking cessation; smoking reduction; drinking cessation (alcohol); and breastfeeding initiation and duration. Birth outcomes consisted of preterm birth (gestational age <37 weeks); low birth weight (LBW; birth weight <2,500 g); small for gestational age (SGA; birth weight below 10th percentile for the same gestational age and sex, using Canadian standards); large for gestational age (LGA; birth weight above 90th percentile for the same gestational age and sex, using Canadian standards); and poor neonatal health (complications at birth).

Independent variables

This evaluation assessed the impact of two aspects of the CPNP: the degree to which clients were exposed to the program and the particular types of services they received (previously listed). Program exposure was conceptualized as comprising three dimensions: 1) program initiation (when in her pregnancy the client started attending the program); 2) program intensity (number of contacts the client had with the program); and 3) program duration (number of weeks the client was involved in the program). We combined these dimensions into an overall CPNP exposure index, akin to a “dose”, with two levels: “high” and “low” exposure. The index was created by first dividing each of the three variables at the median to create two categories for each variable: clients who had started earlier in their pregnancy vs. later; clients who had a higher number of contacts vs. a lower number; and clients who stayed in the program for a longer vs. a shorter period of time. Clients who scored high on at least two of the variables were defined as having overall high CPNP exposure. Alternative methods for combining the three exposure dimensions were considered (such as using three equal groups, or tertiles, or developing a program exposure score), but we settled on the method described here as it represented an easily understood, replicable approach.

In addition to the effects of overall CPNP exposure we present in this paper, we also estimated the effects of each of the three constituent program exposure variables. The results for each of these are given in the full technical report available at www.kidskan.ca. Briefly, of the three program exposure variables, having more contact with the program was associated with the most number of positive health practices. In addition, those who initiated contact with the CPNP earlier or had more contact with the program were more likely to quit smoking during their pregnancy. An exception, however, was that earlier program initiation and greater duration of contact were both associated with a slightly higher tendency to gain more than the recommended amount of weight. For the birth outcomes, clients who initiated contact with the program earlier in pregnancy, had more contact with the program and remained enrolled for longer were all associated with a lower likelihood of preterm birth, low birth weight, small for gestational age and poor neonatal health; however, they were more likely to give birth to a large-for-gestational-age infant.

Data from the ICQ2 were used to determine whether clients received any of the following types of service: food supplements, dietary assessment, one-on-one nutrition education, group nutrition education, lifestyle education, and “other services” (e.g., parenting, child care support, transportation, housing and breastfeeding preparation). In general, group services were available to all clients, whereas one-on-one services were offered to women facing conditions of especially high risk. Notably, projects

| Table 1. Results (Odds Ratios and Confidence Intervals) from Final Models Showing Effects of Overall High CPNP Exposure on Health Behaviours |
|-----------------|-----------------|-----------------|
|                | OR              | 95% CI          |
| Weight gain (n=23,378) |                |                 |
| Below recommended weight gain | 1.03 | (0.95-1.11) |
| Above recommended weight gain | 1.11* | (1.04-1.18) |
| Supplement use (n=7,064) |                |                 |
| Never to irregular | 2.50* | (2.12-2.94) |
| Never to daily | 2.19* | (1.89-2.55) |
| Irregular to daily | 1.22* | (1.09-1.37) |
| Smoking reduction (n=3,793) |                |                 |
| 1.19* | (1.05-1.36) |
| Drinking cessation (n=10,871) |                |                 |
| 1.42* | (1.28-1.58) |
| Breastfeeding initiation (n=28,415) |                |                 |
| 1.08* | (1.00-1.17) |
| Breastfeeding duration (n=20,642) |                |                 |
| 4.20* | (2.68-6.58) |

* Significant at p<0.05; ORs are independent of the effects of type of CPNP services received and socio-demographic risk.
The pregnancy-related risk index variables were history of miscarriages, stillbirths or LBW infants; whether the client had consulted with a doctor, midwife and/or nurse/practitioner since becoming pregnant; interval between births (<12 months); parity (nulliparas or primiparas – no previous births and 0 if it was absent). The scores were summed across all items, given time, a project's access to the appropriate staff to provide the service, and so on. Information on the quality, frequency and intensity of the services could not be determined from the ICQ2, a drawback that should be addressed in future program development and documentation.

**ANALYSIS**

We conducted a series of bivariate analyses involving the key independent variable (overall CPNP exposure), the outcome variables (health behaviours, and birth and neonatal outcomes) and the three risk indices (data not shown here). These associations were significant for each of the outcomes. To adjust for possible confounding factors (namely, socio-demographic risk, behavioural risk and pregnancy-related risk, depending on the analysis), we then performed three types of multivariate analysis, depending on the type of outcome variable: 1) binary logistic regression for outcome variables with two alternatives, such as either ceasing/not ceasing smoking or preterm/term birth; 2) multinomial logistic regression when the outcome of interest had more than two categories, such as weight gain in pregnancy (above, below or at recommended levels); and 3) generalized linear modeling for outcome variables that were measured on a continuous scale, such as breastfeeding duration (measured in weeks).

For the equity analysis, we conducted stratified analyses in order to investigate whether the impact of overall CPNP exposure on health behaviours and birth outcomes varied across social groups. Such analyses were conducted when we had obtained a final main effects model for each of the outcomes. At the end of the multivariate modeling process, the data set was split (or stratified) by the social “equity” variables (i.e., married/partnered vs. single/divorced; Aboriginal vs. non-Aboriginal; immigrants in Canada for less than 10 years, immigrants in Canada for 10 or more years vs. Canadian-born; women with less than high school education vs. high school or more; and reporting exposure to second-hand smoke (sometimes or daily).

**Table 2.** Effects of High CPNP Exposure on Health Behaviours Across Social Groups (Odds Ratios* and Confidence Intervals)

<table>
<thead>
<tr>
<th>Socio-demographic Characteristics</th>
<th>Maternal Weight Gain (More Than Recommended) OR</th>
<th>95% CI</th>
<th>Vitamin Use Change (Never to Daily) OR</th>
<th>95% CI</th>
<th>Smoking Reduction OR</th>
<th>95% CI</th>
<th>Drinking Cessation OR</th>
<th>95% CI</th>
<th>Breastfeeding Initiation OR</th>
<th>95% CI</th>
<th>Breastfeeding Duration OR</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marital Status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single/divorced</td>
<td>1.35 (1.21-1.51)</td>
<td></td>
<td>1.68 (1.32-2.12)</td>
<td></td>
<td>1.44 (1.24-1.67)</td>
<td></td>
<td>1.22 (1.09-1.37)</td>
<td></td>
<td>7.51 (2.32-24.30)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married/partnered</td>
<td>NS</td>
<td></td>
<td>2.69 (2.21-3.27)</td>
<td></td>
<td>1.41 (1.17-1.69)</td>
<td></td>
<td>1.42 (1.22-1.66)</td>
<td></td>
<td>3.20 (2.11-4.86)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aboriginal Status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aboriginal</td>
<td>1.09 (1.01-1.17)</td>
<td></td>
<td>3.34 (2.25-5.01)</td>
<td></td>
<td>1.44 (1.22-1.70)</td>
<td></td>
<td>1.27 (1.11-1.46)</td>
<td></td>
<td>2.97 (1.01-8.76)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Aboriginal</td>
<td>1.16 (1.01-1.33)</td>
<td></td>
<td>2.10 (1.79-2.83)</td>
<td></td>
<td>1.47 (1.24-1.74)</td>
<td></td>
<td>1.46 (1.27-1.68)</td>
<td></td>
<td>4.79 (2.90-7.89)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Immigrant Status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In Canada &lt;10 yrs</td>
<td>NS</td>
<td></td>
<td>3.75 (2.46-5.72)</td>
<td></td>
<td>4.56 (1.13-18.45)</td>
<td></td>
<td>2.23 (1.50-3.32)</td>
<td></td>
<td>7.92 (3.58-17.52)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In Canada ≥10 yrs</td>
<td>1.15 (1.07-1.24)</td>
<td></td>
<td>5.77 (1.96-16.69)</td>
<td></td>
<td>1.19 (1.04-1.35)</td>
<td></td>
<td>1.37 (1.23-1.53)</td>
<td></td>
<td>3.35 (1.93-5.81)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education Level</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than high school</td>
<td>1.15 (1.04-1.27)</td>
<td></td>
<td>2.16 (1.78-2.63)</td>
<td></td>
<td>1.30 (1.11-1.53)</td>
<td></td>
<td>1.53 (1.33-1.77)</td>
<td></td>
<td>1.21 (1.09-1.34)</td>
<td></td>
<td>1.19 (1.91-8.91)</td>
<td></td>
</tr>
<tr>
<td>High school</td>
<td>2.44 (1.76-3.78)</td>
<td></td>
<td>NS</td>
<td></td>
<td>1.25 (1.06-1.48)</td>
<td></td>
<td>NS</td>
<td></td>
<td>4.43 (2.49-7.91)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Household Income Level</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No income</td>
<td>NS</td>
<td></td>
<td>2.23 (1.04-4.76)</td>
<td></td>
<td>NS</td>
<td></td>
<td>NS</td>
<td></td>
<td>0.51 (0.28-0.93)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;$1,000/mo</td>
<td>1.83 (1.30-2.59)</td>
<td></td>
<td>1.49 (1.17-1.88)</td>
<td></td>
<td>NS</td>
<td></td>
<td>NS</td>
<td></td>
<td>4.38 (1.48-12.98)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$1,000-$1,900/mo</td>
<td>1.70 (1.72-2.48)</td>
<td></td>
<td>1.41 (1.06-1.88)</td>
<td></td>
<td>NS</td>
<td></td>
<td>NS</td>
<td></td>
<td>2.60 (1.08-6.24)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$&gt;1,900/mo</td>
<td>4.22 (2.07-8.57)</td>
<td></td>
<td>NS</td>
<td></td>
<td>NS</td>
<td></td>
<td>NS</td>
<td></td>
<td>1.41 (1.05-16.57)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age Group (years)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;19</td>
<td>1.37 (1.13-1.65)</td>
<td></td>
<td>1.95 (1.29-2.94)</td>
<td></td>
<td>0.70 (0.50-1.00)</td>
<td></td>
<td>1.93 (1.46-2.55)</td>
<td></td>
<td>1.28 (1.05-1.56)</td>
<td></td>
<td>NS</td>
<td></td>
</tr>
<tr>
<td>19-34</td>
<td>1.07 (1.00-1.15)</td>
<td></td>
<td>2.12 (1.79-2.51)</td>
<td></td>
<td>1.30 (1.12-1.50)</td>
<td></td>
<td>1.34 (1.19-1.51)</td>
<td></td>
<td>1.29 (1.05-1.56)</td>
<td></td>
<td>NS</td>
<td></td>
</tr>
<tr>
<td>≥34</td>
<td>NS</td>
<td></td>
<td>3.79 (2.19-6.85)</td>
<td></td>
<td>1.52 (1.01-2.32)</td>
<td></td>
<td>NS</td>
<td></td>
<td>3.46 (2.59-7.33)</td>
<td></td>
<td>NS</td>
<td></td>
</tr>
<tr>
<td>Food Security Status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food insecure</td>
<td>1.18 (1.07-1.31)</td>
<td></td>
<td>2.00 (1.59-2.52)</td>
<td></td>
<td>1.28 (1.07-1.54)</td>
<td></td>
<td>1.36 (1.17-1.58)</td>
<td></td>
<td>1.24 (1.10-1.39)</td>
<td></td>
<td>4.07 (1.95-8.50)</td>
<td></td>
</tr>
<tr>
<td>Moderately food insecure</td>
<td>2.50 (1.77-3.54)</td>
<td></td>
<td>1.79 (1.37-2.33)</td>
<td></td>
<td>1.33 (1.11-1.61)</td>
<td></td>
<td>NS</td>
<td></td>
<td>2.99 (1.52-5.89)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food secure</td>
<td>2.06 (1.68-2.77)</td>
<td></td>
<td>1.53 (1.11-2.06)</td>
<td></td>
<td>NS</td>
<td></td>
<td>NS</td>
<td></td>
<td>5.25 (2.39-11.52)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* All odds ratios except those labelled NS (non-significant) are significant at p<0.05. ORs are independent of the effects of CPNP services received and socio-demographic risk.
women with no income, less than $1000/month, $1000-1900/month vs. more than $1,900/month; women less than 19 years, 19-34 years vs. 34 years or older; and women with food insecurity, moderate food insecurity vs. food security), and the models were rerun in order to obtain multivariate models for the stratified groups.

The results of the multivariate and stratified analyses are presented in Tables 1 through 4 as odds ratios (ORs). We used the standard threshold of p≤0.05 for determining whether a result was statistically significant. We also present 95% confidence intervals (CIs) for each OR estimated.

OUTCOMES

Clients
The clients involved in this evaluation were socially, demographically and geographically diverse. Almost 12% were adolescents, and almost 10% were over 34 years of age. Nearly 15% were recent immigrants (in Canada <10 years), and close to one quarter were Aboriginal. Approximately one third were not married or living with a partner, and just less than half had not completed high school. Over 80% of clients had household monthly incomes of $1,900 or less, with 9% reporting no income at all. Also, more than half of the clients (57.9%) reported at least moderate food insecurity. This is consistent with the client profile presented by previous studies of the CPNP,2,12 which further supports the claim that the CPNP is reaching the women for whom it is intended.

As for program exposure, just over 40% of clients began attending the CPNP by the 20th week of their pregnancy, but another 30% did not initiate contact until after the 29th week. The number of contacts with CPNP staff varied widely, just over half of the clients having 11 or fewer contacts but about 10% having anywhere from 29 to 257 contacts. Finally, in terms of duration, about half of clients attended the program for over 20 weeks, and a small group remained involved for more than 37 weeks.

The proportion of clients who received each type of service varied considerably, almost all being provided with food supplements, four fifths receiving “other” services (which could include parenting or child care support, transportation assistance, housing assistance, and breastfeeding preparation and support), close to two thirds receiving one-on-one nutrition education and about half receiving dietary assessment, group nutrition counselling or lifestyle education.

Health behaviour change and variations across social groups
With regard to health practices, at their first contact with the program over one quarter of CPNP clients reported never using vitamin/mineral supplements, and just over half used them daily. Over three quarters of clients were smokers at program entry, most smoking fewer than 20 cigarettes a day. Slightly more than half were exposed to second-hand smoke during their pregnancy. More than 40% of clients indicated that they had consumed alcohol since becoming pregnant, over half of whom reported having at least five drinks in one day.

After adjustment for socio-demographic risk and variability in each type of CPNP service received, associations were found between overall high CPNP exposure and 1) weight gain of more than the recommended amount during pregnancy; 2) more frequent vitamin/mineral supplement use; 3) smoking reduction; 4) drinking cessation; 5) breastfeeding initiation; and 6) longer breastfeeding duration (Table 1). No association was found between overall high CPNP exposure and gaining less than the recommended amount of weight during pregnancy or between overall high CPNP exposure and smoking cessation.

The stratified analyses examining the relations between high CPNP exposure and health behaviours across different social groups produced very mixed results (Table 2). No consistent differences were found, with the exception possibly of maternal weight gain, smoking reduction and breastfeeding initiation. Exposure to the program was no less likely to be related to positive behaviour among higher risk groups, with the exception of clients reporting no income. These may represent a particularly disadvantaged group, and it is possible that even high CPNP exposure is not sufficient to help women in this group change their behaviour. However, it is also the case that this group is considerably smaller than the other income groups, which would reduce the likelihood of finding significant associations.

The relation between overall high CPNP exposure and the risk of gaining more than the recommended amount of weight was found only in certain social groups: single/divorced women (who showed a 35% higher risk of gaining more weight), Aboriginal women (8% higher risk), non-Aboriginal women (16%), immigrant women in Canada for 10 years or longer (15%), women with less than high school education (15%), women aged 34 years or less (37% for <19 years, 7% for 19-34 years) and women with food insecurity (18%). There was also an association between overall CPNP exposure and increased likelihood of breastfeeding initiation for single/divorced women (22%), Aboriginal women (27%), immigrant women in Canada for 10 years or longer (14%), women with less than high school education (21%), women younger than 19 years (28%) and women with food insecurity (24%).

There was an association between overall high CPNP exposure and the likelihood of smoking cessation for four social groups: Aboriginal women (45%), women with less than high school education (29%), women aged 19-34 years (21%) and women with food insecurity (26%). Also, there was an association between overall high CPNP exposure and smoking reduction for married/partnered women (41%), non-Aboriginal women (47%), immigrant women in Canada for less than 10 years (4.56 times more likely to reduce smoking), women with less than high school education (30%), women with no income or “middle” income (monthly income $1,000-$1,900) (2.23 times and 64%, respectively), women aged 19-34 years (30%) and women with food insecurity (28%).

Birth outcomes and variations across social groups
After accounting for CPNP services received, socio-demographic risk, behavioural risk, pregnancy-related risk and or diabetes, high

<table>
<thead>
<tr>
<th>Table 3. Results (Odds Ratios and Confidence Intervals) from Final Models Showing Effects of Overall High CPNP Exposure on Birth Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Outcome</strong></td>
</tr>
<tr>
<td>---------------------------------------------------------------</td>
</tr>
<tr>
<td>Preterm birth (n=22,766)</td>
</tr>
<tr>
<td>Low birth weight (n=30,613)</td>
</tr>
<tr>
<td>Small for gestational age (n=22,290)</td>
</tr>
<tr>
<td>Large for gestational age (n=22,290)</td>
</tr>
<tr>
<td>Poor neonatal health (n=28,592)</td>
</tr>
</tbody>
</table>

* Significant at p≤0.05; ORs are independent of the effects of CPNP services received, socio-demographic risk, behavioural risk, pregnancy-related risk and diabetes.
High overall CPNP exposure was associated with lower risk of preterm birth (26% less likelihood); 2) an LBW infant (34% less likelihood); 3) an SGA infant (11% less likelihood); and 4) an infant with poor neonatal health (17% less likelihood). Unexpectedly, however, overall high program exposure was associated with a higher risk of having an LGA infant (22% more risk) (Table 3).

The association between overall high CPNP exposure and lower risk of preterm birth and of an SGA infant varied by social group, whereas the associations between overall high CPNP exposure and lower risk of LBW and of poor neonatal health were virtually across all social groups (Table 4). The relation between overall high CPNP exposure and higher risk of an LGA infant differed across social groups.

High overall CPNP exposure was associated with lower risk of preterm birth for some social groups but not others, specifically married/partnered women (31% lower risk), immigrants in Canada for less than 10 years (36%), women aged 19-34 years (28%), low and middle income women (monthly income <1,000 or $1,000-$1,900) (33% and 31%, respectively) and women with food security (36%). Additionally, a stronger association was found between overall high CPNP exposure and lower risk of preterm birth for some social groups but not others, specifically married/partnered women (25% higher risk), Aboriginal women (27%), immigrant women in Canada for less than 10 years (33%), women with less than high school education (36%), women aged 19 or older (20% for 19-34 years and 34% for >34 years) and women with moderate food insecurity or food security (32% and 21%, respectively).

**DISCUSSION AND CONCLUSION**

Clients with overall high CPNP exposure tended to make more positive health behaviour changes and to have fewer negative birth outcomes than those with overall low exposure to the program. They were more likely to reduce the number of cigarettes they smoked and to cease drinking; to breastfeed their infants and, in particular, to breastfeed for longer; and to increase the use of vitamin/mineral supplements from never to daily. Furthermore, clients who had more exposure to the CPNP were consistently less likely to have a preterm birth or give birth to an infant who was LBW, SGA or otherwise in poor health.

A few findings, however, were contrary to expectations. Among clients in some social groups, overall high CPNP exposure was associated with a higher likelihood of gaining more than the recommended amount of weight during pregnancy and, in most social groups, of giving birth to an LGA infant. Further research is needed to determine whether, in fact, greater participation in the CPNP may contribute to excess weight gain, thereby increasing the likelihood of giving birth to an LGA infant among certain clients. (Surprisingly, bivariate analysis found that gaining more than the recommended amount of weight during pregnancy was not associated with a greater likelihood of LGA among CPNP clients.) It is important to note that these relations were found after statistical adjustment for maternal diabetes.

In general, the effects of CPNP exposure did not differ greatly across different social groups, with most subgroups showing posi-
tive relations between exposure and outcomes. However, in terms of health behaviours, slightly more and/or stronger relations were found between high CPNP exposure and healthy behaviour among single/divorced versus married/partnered clients; among recent immigrants versus women in Canada for 10 years or more; among those who had not completed high school versus those who had; and among clients reporting food insecurity versus those who were food secure. It is noteworthy that these are client groups that are at higher risk of adverse birth outcomes, and therefore the slightly stronger relations between high CPNP exposure and health behaviours seen among these clients are encouraging. With regard to birth outcomes, few differences were seen in terms of CPNP benefits across social groups. Married/partnered women, non-Aboriginal women, immigrant women in Canada for 10 years or longer, women between 19 and 34 years of age and women who were food secure had more and/or stronger relations between high CPNP exposure and reduced risk of adverse birth outcomes. Adding some complexity to these findings, women with less than high school education also showed consistently lower risk of adverse birth outcomes.

In conclusion, in the absence of a control group, this evaluation used an innovative approach to estimating the impact of the CPNP on clients’ behaviours and birth outcomes by comparing those who received a higher “dose” of CPNP services – by starting to attend earlier in pregnancy, having more contacts, and/or participating for a longer time – with those who received a lower “dose”. While this method does not take into account possible differences between these two groups other than CPNP exposure, the strong, generally consistent findings suggest that the CPNP is indeed meeting its intermediate and long-term objectives. Furthermore, our equity analysis found that the associations between higher CPNP exposure and healthy behaviour changes, and even more so, better birth outcomes, were generally present across many social groups.

REFERENCES


RÉSUMÉ

Objectifs : Nos objectifs étaient de déterminer si une exposition élevée au Programme canadien de nutrition prénatale (PCNP) améliorait 1) les habitudes de santé personnelles des participantes, comme le tabagisme et l’allaitement, et 2) les issues de la grossesse, comme l’insuffisance de poids à la naissance et la naissance avant terme.

Intervention : Le PCNP est une intervention sanitaire populationnelle qui vise à contribuer à l’amélioration des résultats sanitaires pour les femmes enceintes et leurs enfants nouveau-nés à risque. Le programme, géré conjointement par les gouvernements fédéral et provinciaux, sert plus de 45 000 Canadiennes par année.

Participants : Les participantes étaient des femmes inscrites au programme avant d’accoucher, en 2002-2006, et qui présentaient une diversité sur le plan social, démographique et géographique. Près de 12 % étaient adolescentes, et près des 10 % avaient plus de 34 ans; 5 % étaient des immigrantes récentes (au Canada depuis <10 ans), et près du quart étaient autochtones.

Lieu : L’étude englobait un vaste éventail de projets communautaires menés dans 2 000 collectivités.

Résultats : Des statistiques descriptives ont montré que le PCNP joint les femmes à qui il s’adresse. Les participantes très exposées au PCNP étaient plus susceptibles de réduire le nombre de cigarettes qu’elles fumaient, de cesser de consommer de l’alcool, d’allaiter leur nourrisson et d’allaiter plus longtemps, ainsi que d’accroître leur utilisation de suppléments de vitamines et minéraux (de jamais à quotidiennement). En outre, elles étaient moins susceptibles d’accoucher prématurément et d’accoucher d’un nourrisson de poids insuffisant à la naissance, petit pour son âge gestationnel ou en mauvaise santé néonatale. Nous avons observé un résultat inattendu : les participantes étaient plus susceptibles d’accoucher d’un nourrisson gros pour son âge gestationnel. Nos analyses stratifiées de « l’équité » montrent des écarts selon le groupe social, ce qui indique que les avantages obtenus n’étaient pas systématiquement partagés par toutes.

Conclusion : Une exposition élevée au PCNP améliorait les habitudes de santé et les issues de la grossesse chez les femmes et leurs enfants nouveau-nés à risque. De plus, notre analyse de l’équité a montré que les associations entre une exposition élevée au PCNP et l’adoption de comportements plus sains, et plus encore en ce qui a trait à l’amélioration de l’issue de la grossesse, ont en général été relevées à l’échelle de nombreux groupes sociaux. En l’absence d’un groupe témoin, l’étude a fait appel à une démarche novatrice pour estimer l’impact du CPNP en comparant les femmes ayant reçu une forte « dose » à celles ayant reçu une « dose » plus faible des services du PCNP.

Mots clés : développement de l’enfant; populations vulnérables; facteurs de risque; évaluation de programme; intervention précoce
Maturité scolaire et mobilisation communautaire : étude rétrospective dans un quartier Montréalais

Isabelle Laurin, Ph.D.1, Angèle Bilodeau, Ph.D.2, Sébastien Chartrand, Ph.D.3

RÉSUMÉ

Objectifs : Cet article présente une modélisation du processus décisionnel collectif par lequel une intervention populationnelle à base communautaire a transformé l’organisation des services en petite enfance dans une communauté Montréalaise de 2001 à 2006.

Participants : Les acteurs multisectoriels d’une table de concertation enfance-famille.

Lieu : Le territoire choisi se situe parmi les quartiers les plus multi-ethniques et les plus pauvres de Montréal.

Intervention : L’intervention à l’étude est Comprendre la petite enfance, une initiative pancanadienne visant à renforcer la capacité des communautés à utiliser des renseignements de qualité pour soutenir la réflexion sur l’organisation des services à la petite enfance. Douze régions du Canada y ont participé dont Montréal.


Conclusion : Les retombées de CPE-Montréal dans ce territoire se sont poursuivies au-delà de 2006. À l’égard des priorités actuelles d’action dans le champ de la petite enfance, ce territoire est un cas exemplaire de mobilisation à l’égard de la préparation pour l’école.

Mots clés : décision collective; intervention populationnelle; mobilisation communautaire; développement de l’enfant; maturité scolaire

The translation of the Abstract appears at the end of this article.
nelle des écoles de la Commission scolaire de Montréal ont été évalués à trois reprises par leurs enseignants à l’aide de l’IMDPE. L’initiative CPE-Montréal a été parrainée par le Centre 1,2,3 GO!, qui s’est aussi associé l’Agence de la santé et des services sociaux de Montréal, l’instance administrative des commissions scolaires de Montréal et le Groupe de recherche sur l’inadaptation psychosociale chez l’enfant. Dès la diffusion des premiers résultats de la recherche CPE, le chercheur principal s’est engagé avec les communautés dans une démarche de mobilisation ayant comme objectif de réfléchir à la préparation des enfants pour l’école. Sa principale stratégie a été d’établir des collaborations avec les tables de concertation enfance-famille°.

La présente étude vise à établir, dans ce territoire, les facteurs contextuels ayant influencé la mobilisation, et les événements les plus marquants du processus décisionnel collectif reflétant la mobilisation de la communauté et la réorganisation des services qui ont suivi la publication des résultats des enquêtes.

**CADRE THÉORIQUE ET MÉTHODE**

La conceptualisation du processus de décision collective à la base de la recherche prend appui sur la théorie de l’acteur stratégique et la théorie de l’acteur–réseau, où les interventions en milieu ouvert sont définies comme des systèmes d’action complexes, soit, des réseaux sociotechniques (RST) qui opèrent des processus de reproduction/ transformation du social en vertu de l’atteinte de finalités. Ces réseaux sociotechniques sont composés d’acteurs, de savoirs (scientifiques, expérientiels) et de biens (financements, équipements, technologies). Les acteurs mobilisés sont caractérisés par leur position sociale, leur identité, leurs intérêts et les stratégies qu’ils élaborent en rapport avec les enjeux soulevés par le changement. Dans de tels réseaux, la décision n’est pas le fait d’un seul acteur ni une réalité ponctuelle, mais plutôt une réalité processuelle façonnée, en contexte, par les actions et interactions des acteurs en position d’influence, à l’interne et à l’externe des systèmes d’action. Ces actions et interactions donnent lieu à différents événements (activités, incidents) qui sont des traces concrètes permettant d’observer ces processus. Le processus décisionnel est ainsi composé d’une chaîne d’événements moteurs qui sont le fait des acteurs stratégiques des systèmes d’action.

La méthode a consisté à reconstituer le chronogramme du processus décisionnel collectif. Les étapes sont 1) de répertorier et décrire les événements ayant une certaine importance et les acteurs qui les ont façonnés ; 2) de constituer une matrice chronologique des événements marquants selon les paliers (ex : central, régional, local) et les classes d’acteurs (ex : les secteurs) ; 3) de décrire les événements et construire leur enchaînement logique pour reconstituer le processus décisionnel en partant du répertoire des événements et de la matrice chronologique. Cette reconstitution est une interprétation des données par les chercheurs, eu égard au cadre conceptuel de l’étude, en suivant l’ordonnancement des événements selon le diagramme chronologique. Les données utilisées ont été les documents administratifs (comptes-rendus de réunions, documents de planification, bilans et plans d’action de programmes publics) couvrant la période de 2001 à 2006 et six entrevues semi-structurées

° Les CLSC sont des établissements publics qui ont la responsabilité de rendre accessibles à la population d’un territoire donné des services de santé, des services sociaux, des services de prévention et des services d’action communautaires. Ces établissements ont été fusionnés sur une base supra-locale, créant les centres de santé et de services sociaux (CSSS) en 2003.

**RÉSULTATS**

En 2001, les premiers résultats de CPE-Montréal ont été présentés à la Table de concertation enfance-famille. Lors de l’événement, le chercheur présente la recherche comme un outil d’évaluation des interventions dans le quartier, et lance une question qui aura beaucoup d’échos : « Comment un quartier s’oriente-t-il pour mieux préparer ses enfants pour l’école ? » Cette interrogation mettra la collectivité locale en mouvement autour d’une série d’événements conduisant à la réorganisation des services à la petite enfance. Le chronogramme du processus décisionnel de 2001-2006 comporte ainsi neuf événements ayant structuré la décision collective.

**La constitution d’un comité de travail intersectoriel (2001)**

Le premier événement suivant l’appel à la mobilisation du chercheur est la constitution d’un comité de travail intersectoriel au sein de la Table de concertation enfance-famille du quartier, qui est un vaste réseau d’acteurs déjà mobilisés. Ce comité, composé du chercheur et des principaux acteurs porteurs des interventions dans le champ de la petite enfance, a pour mandat de tenir un forum local afin de répondre à la question soulevée par la recherche. La dénomination de ce comité, Se comprendre en petite enfance (SCPE), reflète la volonté des acteurs de développer une vision globale des enfants du quartier à partir des résultats de la recherche. Le leadership de ce nouveau comité échoira au tandem CLSC – 1,2,3 GO!, qui assure déjà la coordination de la table de concertation enfance-famille et qui partage le même rôle de mobilisation au sein de la communauté. Ce tandem sera la locomotive du réseau en petite enfance de 2001-2006.

Des premières rencontres du comité, les acteurs se positionnent en défaveur de l’objectif de CPE-Montréal d’utiliser les données comme outil d’évaluation des interventions dans le quartier. Néanmoins, la question lancée par la recherche a pour conséquence d’orienter le travail sur les actions à prioriser en lien avec la préparation à l’école, introduisant ainsi une nouvelle conception de la planification des services en petite enfance, soit, en fonction d’un continuum allant de la grossesse à l’entrée à l’école. La planification existante ne s’inscrivait pas dans une telle optique alors qu’il y avait peu d’arrimage entre les services à la petite enfance et le milieu scolaire.

**La production d’un portrait de quartier et son utilisation (2001)**

Le premier produit auquel se consacre SCPE est un portrait de la population et des ressources du quartier sous une forme facile à utili-
sous la responsabilité du CLSC. Le projet qui en résulte comporte trois ren-

Tableau 1. Thèmes des ateliers du premier forum Se comprendre en petite enfance, novembre 2002

<table>
<thead>
<tr>
<th>Atelier</th>
<th>Thème</th>
<th>Objectif</th>
</tr>
</thead>
<tbody>
<tr>
<td>De la doudou au sac à dos : une course à relais ou à obstacles pour le parent?</td>
<td>« Comment harmoniser et développer nos interventions en stimulation précoce afin de mieux préparer l’enfant à son entrée à l’école et mieux accompagner le parent dans ce parcours? »</td>
<td>Cet atelier offrait l’occasion de voir graphiquement le continuum de services de la naissance à l’entrée à l’école et les moments clés du parcours. Où pouvait-on bonifier, intervenir, modifier, ajouter pour améliorer les compétences de l’enfant à son entrée à l’école?</td>
</tr>
<tr>
<td>Le démarchage à petits pas</td>
<td>« Une équipe de démarchage dans le quartier : un projet à bâtir pour mieux rejoindre les familles vulnérables et d’immigration récente »</td>
<td>Cet atelier visait à examiner comment une équipe de démarchage nous permettrait de rejoindre plus de parents et les amener à utiliser nos ressources. Comment arriver à créer des liens avec les nouveaux arrivants et les familles à risque? Comment les amener à participer en plus grand nombre aux activités du quartier et utiliser nos ressources? Comment leur faire connaître ce que l’école attend d’eux dans la préparation de leur enfant?</td>
</tr>
<tr>
<td>Le sac à dos des grands</td>
<td>« Le ressourcement des intervenants est important. Quelles sont les grandes préoccupations actuelles que peuvent vivre les intervenants quand les valeurs familiales sont si diversifiées? »</td>
<td>Cet atelier visait à réfléchir sur le besoin de ressourcement des intervenants. Le contexte de pauvreté et de multiculturalisme implique de repenser la pertinence des programmes appliqués.</td>
</tr>
</tbody>
</table>

Des transformations dans les services publics (2004)

Au cours de 2004, des transformations majeures dans les services sociaux et de santé ainsi que dans le contexte des programmes en place ont un impact sur SCPE. Ces changements entraînent le départ de plusieurs membres du comité et mènent à sa dissolution. Concomitamment, le soutien financier de CPE aux activités de mobilisation prend fin. Néanmoins, la mobilisation à l’égard de la préparation à l’école ne cesse pas pour autant, et la majorité des partenaires du comité dissout se côtoient dans d’autres lieux de concertation. Ainsi, ils continuent à travailler dans le sens des priorités établies au sein de SCPE.

Projet Femmes-Relais

En 2004, dans les suites des recommandations du forum SCPE de 2002, 1,2,3 GO! met sur pied le projet pilote Femmes-Relais, en partenariat avec le Centre local d’emploi (ministère de l’Emploi et de la Solidarité sociale), grâce à un programme d’insertion socioprofessionnelle. Il s’agit d’une équipe multiculturelle de femmes démarchueuses, provenant des différents pays d’origine des nouveaux arrivants du quartier, qui agissent comme agents multiprofessionnels. Une formation de plusieurs mois les habilite à expliquer la société québécoise au sein de leur communauté d’origine, notamment pour la rentrée à l’école et les moments clés du parcours. Les retombées positives du projet pilote conduisent le ministère de l’Immigration et des Communautés culturelles et la Ville de Montréal à contribuer à son financement jusqu’en 2006. Marqueur de la mobilisation aux différents services issus de SCPE, ces femmes-relais contribueront au projet Passage maison-école en agissant comme interprètes avec les familles lors des rencontres à l’école.

Les journées annuelles 1,2,3 GO! (2003 à 2006)

Ces événements annuels sont l’occasion de mesurer le chemin parcouru et les acquis de la démarche collective au regard des priorités.
étalons lors du premier forum. Cette construction de la mémoire collective assure une continuité et donne un sens aux actions qui sont priorisées par les différentes instances du quartier.

Les événements de 2005 et 2006 auront été les plus marquants quant à l’organisation des services liés à la préparation pour l’école. L’événement de 2005 donne la parole aux intervenants qui présentent les projets Femmes-Relais et Passage maison-école ayant été réalisés dans les suites des priorités du premier forum. La pertinence de ces développements est réaffirmée par le réseau d’acteurs. On dépose aussi la troisième édition de la carte des ressources en petite enfance du quartier, une mise à jour qui fait que ce type d’outil peut jouer son rôle dans la référence et l’intervention.


L’événement de 2006 marque la fin de l’initiative CPE-Montréal et le passage vers l’Enquête sur la maturité scolaire des enfants montréalais, réalisée dans l’ensemble du territoire montréalais et prise en charge par le système montréalais de santé publique qui assurera la continuité du soutien à la mobilisation de la communauté.

**Planification triennale de 1,2,3 GO! (2006)**

En février 2006, l’Initiative 1,2,3 GO! signe une entente importante avec la grande table de concertation du quartier qui stipule qu’elle assurera le leadership de la table de concertation enfance-famille. En continuité avec cette dernière entente, 1,2,3 GO! et la table de quartier développent conjointement un plan d’action commun triennal sur la petite enfance : la préparation des enfants à l’entrée à l’école, produit en plusieurs langues et destiné aux parents d’enfants de trois à cinq ans.

L’événement de 2006 marque la fin de l’initiative CPE-Montréal et le passage vers l’Enquête sur la maturité scolaire des enfants montréalais, réalisée dans l’ensemble du territoire montréalais et prise en charge par le système montréalais de santé publique qui assurera la continuité du soutien à la mobilisation de la communauté.

**DISCUSSION**

À l’échelle pan canadienne, CPE a eu un “effet catalyseur” dans les milieux qui partageaient déjà des préoccupations à propos du développement des enfants, comme c’est le cas du territoire étudié. Parce que ce territoire présente des indices de défavorisation et de pluralité culturelle élevés, il est fréquemment ciblé pour y implanter des projets. Ce territoire présente des indices de défavorisation et de pluralité culturelle élevés, il est fréquemment ciblé pour y implanter des projets. Ce territoire présente des indices de défavorisation et de pluralité culturelle élevés, il est fréquemment ciblé pour y implanter des projets.

Plusieurs des attributs de qualité des processus d’action et de décision collectives s’observent dans le cas étudié. La mobilisation s’est réalisée au sein d’un réseau dense et multitiercé aux pratiques de concertation historiques. Ce réseau a montré sa capacité à s’auto-réguler et à négocier la place et le rôle des nouveaux partenaires. Ainsi, le réseau a-t-il intégré une problématique nouvelle portée par un acteur extérieur, le projet CPE, en négociant et en attribuant au chercheur un rôle de facilitateur dans la démarche de planification collective, en remplacement du rôle d’évaluation des interventions du quartier qu’il s’était auto-attribué. L’action intersectorielle n’a donc pas été régie de l’extérieur selon un mode “prescrit” même si CPE-Montréal offrait un soutien financier. Une telle négociation des rôles peut s’exercer dans un contexte où les parties prenantes disposent d’autous qu’elles mobilisent pour se positionner. En outre, il est connu qu’une tète de réseau légitime et crédible est nécessaire pour qu’un réseau soit productif. Cette légitimité est donnée par la position sociale de l’acteur dans ce rôle de leadership alors que sa crédibilité lui est reconnue par les autres acteurs. Dans le cas étudié, les acteurs CLSC et 1,2,3 GO!, réunis en tandem à la gouverne, ont assuré le leadership nécessaire pour insuffler les orientations et faire converger l’action. Ces deux acteurs étaient à la fois crédibles et légitimes dans ce rôle puisqu’ils occupaient déjà des rôles semblables et entretenaient des liens avec l’ensemble des acteurs du réseau. Plutôt que de se faire concurrence, ils se sont partagés ce rôle et se sont attardés à canaliser les ressources collectives vers l’intérêt des populations à servir en commun. Un tel ralliement des intérêts des acteurs au-delà de leurs intérêts sectoriels, vers celui des populations, est aussi un trait de qualité des processus décisionnels collectifs, dans le contexte des services publics.

Les dispositifs de traduction des différents langages, expertise scientifique et expériente, savoirs sectoriels spécialisés, en des formes intelligibles pour tous et aptes à représenter de façon simplifiée les situations complexes sont aussi des investissements centraux dans la mobilisation des collectifs d’action. Ces dispositifs agissent en intermédiaires parmi des acteurs parfois fortement différenciés, favorisant la convergence vers la décision collective. Dans le cas étudié, des dispositifs de ce type ont été introduits de sorte que les acteurs puissent se construire une représentation partagée des problèmes et solutions. Le Zoom et la vidéo en sont des exemples. Ces produits ont permis, entre autres, de structurer la première journée de forum, de jeter les bases d’un premier plan d’action, d’orienter le deuxième mandat du comité SCPE et de forger, dans les actions mises en place, une cohérence qui s’est consolidee au travers des journées annuelles, de 2001 à 2006. L’inscription de la préparation pour l’école comme axe prioritaire du plan triennal de 2006 de la table de quartier est l’ultime aboutissement de cette recherche de cohérence.

Retenons enfin qu’un processus décisionnel collectif entraîne des changements dans un système d’action s’il parvient à mobiliser des nouveaux savoirs et de nouvelles ressources. Dans le cas étudié, les journées annuelles, de 2001 à 2006, des chercheurs et autres intervenants ont contribué, figurent parmi les savoirs nouveaux ayant soutenu le processus décisionnel collectif vers la création des nouveaux services. Du côté des ressources, il est connu que les jeux à somme nulle ne produisent généralement pas de déplacements chez les acteurs qui tendent alors à reproduire ce qu’ils font déjà. Plutôt, les jeux à somme positive affirment que la taille des ressources peut s’accroître, favorisant du même coup la collaboration entre les acteurs. Ce modèle se réalise lorsque les participants au jeu interagissent, se coalisent dans des actions qui génèrent des ressources supplémentaires. Dans le cas étudié, il illustre bien cet apport de ressources nouvelles mobilisées par le collectif, provenant notamment du Centre local d’emploi, du ministère de l’Immigration et des Communautés culturelles et de la Ville, qui se sont ajoutées au financement de CPE-Montréal.

**CONCLUSION**

Les retombées de CPE-Montréal existent encore en 2011, et la continuité de la mobilisation s’illustre par les interventions...
MATURITÉ SCOLAIRE ET MOBILISATION COMMUNAUTAIRE

Relais, Passage maison-école et ÉLÉ, toujours en place dans le quarter20. Celles-ci ont acquis une légitimité au travers du processus de mobilisation, et ont pu être maintenues parce que les partenaires du comité SCPE dissout les ont soutenus dans leur réseau respectif. Au moment de la publication des résultats de l’Enquête sur la matutité scolaire des enfants montréalais (DSP, 2008)19, plusieurs acteurs du réseau ont été surpris par le résultat favorable obtenu dans le territoire à l’étude : 35,3 % des enfants sont vulnérables à au moins un domaine de maturité scolaire alors que dans d’autres territoires comparables sur le plan socioéconomique (défavorisation et pluralité ethnique), cette proportion est supérieure à 42 %. Bien que les résultats de l’Enquête ne peuvent être interprétés comme une évaluation des interventions, des acteurs du quartier comme de l’extérieur les ont imputés à la mobilisation engendrée par l’initiative CPE-Montréal. Néanmoins, nous pouvons affirmer que le quartier a mis en place des initiatives qui vont dans le sens des priorités identifiées régionalement dans les suites de l’Enquête de 200820 et, en ce sens, le territoire est un cas exemplaire de mobilisation à l’égard de la préparation pour l’école.

RÉFÉRENCES


ABSTRACT

Objectives: This article presents a modelling of the collective decision-making process by which a community-based population-level intervention transformed the organization of early childhood services in a Montréal community from 2001 to 2006.

Participants: Multisectorial players from a childhood/family issue table.

Location: The chosen territory is one of the most multi-ethnic and poorest neighbourhoods of Montréal.

Intervention: The intervention being examined is Understanding the Early Years (UEY), a Canada-wide initiative aiming to strengthen communities’ capacity to use quality information to support the thought process relating to the organization of early childhood services. Twelve Canadian regions took part, including Montréal.

Results: The time chart for the collective decision-making process presents the events that significantly influenced the procedure: establishment of an intersectoral working committee, production of a portrait of the neighbourhood, think tank, development and implementation of the Passage maison-école [home-to-school] and Femmes-Relais [relay women] projects, retreats, and inclusion of school readiness as a priority focus area in the neighbourhood’s three-year action plan. Also presented are the contextual factors that influenced decision making: the neighbourhood’s cooperation and coordination history, the researcher’s involvement, financial support and shared leadership.

Conclusion: The benefits of UEY-Montréal in this territory extended beyond 2006. With respect to current priorities for action in early childhood, this territory is a good example of mobilization for school readiness.

Key words: Collective decision making; population-level intervention; community mobilization; child development; school readiness.
Coverage for the Entire Population: Tackling Immunization Rates and Disparities in Saskatoon Health Region

Jennifer A. Cushon, PhD,1 Cory O. Neudorf, MD, MHSc, FRCPC,2 Tanis M. Kershaw, MPH,1 Terry G. Dunlop, BA, BSc,1 Nazeem Muhajarine, PhD3

ABSTRACT

Objective: Our objective was to determine the effectiveness of an intervention, the Immunization Reminders Project, in terms of a) improving vaccination coverage rates for measles, mumps and rubella (MMR) among 2-year-olds and b) ameliorating geographical disparities in early childhood immunization coverage.

Target Population: All 14-month-old and 20-month-old children in Saskatoon Health Region who were overdue for their immunizations.

Setting: Saskatoon Health Region (SHR).

Intervention: The intervention involved calling the parents/caregivers of the children in the target population with a reminder about immunizations. After five telephone calls and if the parent/caregiver could not be reached, a letter was mailed to the last known address. If there was no response to the letter, a reminder home visit was attempted for families residing in the low-income neighbourhoods in Saskatoon. Since January 2009, all reminders for families not residing in the low-income neighbourhoods in Saskatoon are made through mailed letters.

Outcomes: After the introduction of the Immunization Reminders Project, coverage rates among 2-year-olds for MMR increased significantly overall and in most geographical areas examined. Disparities between geographical subgroups appeared to be declining, but not significantly.

Conclusion: A universal approach to early childhood immunization can likely contribute to increases in coverage rates, but there is still room for improvement in SHR. These findings have prompted additional practice and policy changes.

Key words: Immunization; child; intervention studies

Immunization is considered one of the most successful public health interventions in history, often providing the opportunity for disease prevention at a population level. Therefore, it was quite troubling when Saskatoon Health Region (SHR) discovered statistically significant geographical disparities in immunization coverage rates among young children in Saskatoon, Saskatchewan. For instance, the average complete measles, mumps and rubella (MMR) immunization coverage rate, defined in Saskatchewan as two doses of MMR per 2 years of age, was 43.7% in the city’s low-income neighbourhoods (commonly termed the “core neighbourhoods”) as compared with 90.6% in the affluent neighbourhoods and 69.1% in the rest of the city for the period 2001-2005 (Figure 1).2

Although disparities in immunization coverage rates in Saskatoon were of great concern in and of themselves, overall coverage rates also garnered concern since in most areas of the city coverage rates were not high enough to offer herd immunity. Herd immunity affords disease resistance among unvaccinated individuals as a result of the protective immunity that exists if the majority of individuals in a population are vaccinated. Coverage rates for herd immunity vary by disease; for example, measles is highly contagious, so it is estimated that measles vaccination rates must be in the range of 94% for herd immunity to occur.1 If immunization coverage rates drop to too low a level in a population, outbreaks can occur and/or previously eliminated diseases can re-emerge.1 Lower-than-expected coverage rates and geographical disparities in Saskatoon prompted further study and the implementation of a universal intervention, the Immunization Reminders Project. The effectiveness of the project is the focus of this article.

We sought to understand why coverage rates were lagging in a number of neighbourhoods and also why disparities existed. Previous studies have consistently identified low income, at both an area and/or an individual level, as a predictor of incomplete immunization.3-7 For example, a 2011 comprehensive review of immunization in Manitoba found low income at an area level had the strongest association with incomplete coverage for measles vaccination among children.8 It should be noted that low income is not necessarily the cause of incomplete coverage, since most routine childhood immunizations are provided at no expense to families in Canada, but it is likely a confounder for other factors that inhibit access to immunization services.9 For instance, access to transportation can often be a barrier to immunization.10 Previous stud-
ies have also uncovered other associations with incomplete immunization coverage at an area and/or an individual level, including residence in a city, low education levels, single parent status, mobility, vehicle registrations per neighbourhood and minority cultural status.2,11,12

To determine whether the aforementioned associations also existed in Saskatoon and whether these factors were contributing to disparities, we conducted a telephone survey with 689 parents in 2006. We surveyed two groups of parents with a child who had turned 2 in 2004 or 2005: 1) those parents with a child who was at least 6 months overdue for immunizations (n=271) and 2) those parents with a child who was up to date for immunizations (n=418). In multivariate logistic regression analysis, our telephone survey revealed that at an individual level, low income, single parent status and other cultural status (i.e., not Caucasian or Aboriginal) were significantly associated with incomplete coverage.2

When we conducted the telephone survey, we also asked parents about their preferred options for keeping their child up to date with immunizations. We found the two most popular options among all parents surveyed were a reminder telephone call and/or letter. It is interesting that in the survey, 63.9% of parents with a child whose coverage was incomplete actually thought their child was up to date.2 This is not too surprising, given that immunization schedules for children are increasingly complex.8

Immunization reminder systems are a proven means of increasing immunization coverage rates among children.15–16 The United States Task Force on Community Preventive Services has strongly recommended the use of reminder systems on the basis of robust evidence that they improve vaccination coverage in children and adults in a range of settings/populations, both when applied in a targeted or universal fashion and when used alone or as part of multi-component interventions.17 Additionally, a Cochrane review found that for childhood vaccinations, reminder systems significantly increased the likelihood of being vaccinated (odds ratio=1.47, 95% confidence interval [CI]=1.28-1.68).18

Given the results of the telephone survey, along with the best practices detailed in the literature, designing and implementing a reminder intervention, termed the Immunization Reminders Project, was the logical next step for SHR.

**OBJECTIVE**

The objective of our study was to determine the effectiveness of the Immunization Reminders Project in terms of a) improving early childhood complete coverage rates for MMR and b) ameliorating geographical disparities related to MMR.

**PARTICIPANTS, SETTING AND INTERVENTION**

The intervention was designed by Public Health Services, SHR. It began in October 2007 and involved calling the parents/caregivers of children 14 months and 20 months old in SHR who were behind on their immunizations. After five telephone calls and if the parent/caregiver could not be reached, a letter was mailed to the last known address. If there was no response to the letter, a reminder home visit was attempted for families residing in the core neighbourhoods in Saskatoon. Because of staffing changes, the intervention protocol changed in January 2009 and all reminders for families not residing in the core neighbourhoods were made through mailed letters.
To determine the effectiveness of the Immunization Reminders Project, coverage rates for MMR were extracted in 2010 from the Saskatchewan Immunization Management System (SIMS) for all children who a) resided in SHR at the time of turning 2 and b) were born in 2001 or later. Details on all children who do not live on-reserve are entered in SIMS at birth or when they begin to reside in Saskatchewan.

SHR considers complete coverage for MMR to be two doses of MMR by 2 years of age. Incomplete coverage in this study is defined as more than 6 months behind schedule. Complete coverage rates were calculated by determining the number of children in SIMS considered up to date in the month they turned 2 divided by the number of children who were in SIMS and born 2 years previously.

We assessed MMR complete coverage rates from 2003 to 2009 for SHR overall and also among three geographical subgroups: core neighbourhoods in Saskatoon, non-core neighbourhoods in Saskatchewan and rural SHR. Foster children were included in the SHR overall numbers, but they are not captured in any of the geographical subgroups since their residential address is not recorded in SIMS. This is because the Ministry of Social Services restricts access to the addresses of foster children in Saskatchewan for confidentiality purposes.

Early childhood complete coverage rates for MMR in SHR overall and in each subgroup were assessed for significant differences over time using CIs. If the CIs between years were not overlapping, they were considered statistically different. We also constructed moving average trend lines for complete coverage rates in each geographical subgroup using Excel 2003. A moving average uses a specific number of data points, averages the specified number of data points and uses the average value as a point in the line. In this study, the number of data points specified for the moving average was 12. Significant differences between the complete coverage rates of subgroups were assessed using rate ratios. If the CI for the rate ratio did not include 1, the rate ratio was considered statistically significant. If the CIs between the rate ratios from one year to the next did not overlap, the difference between years was considered statistically different. In this study, the significance level was set at 0.05 (two-sided).

The study was approved by the University of Saskatchewan’s Behavioural Research Ethics Board (Beh #06-213).

**OUTCOMES**

In total, 24,540 children were included in the study (Figure 2). Table 1 presents the number of children who were included in each subgroup, as well as the number of foster children who were included in the SHR overall numbers.

Table 2 shows that, overall, MMR complete coverage rates among 2-year-olds significantly increased in SHR from 2007 to 2009. They also increased significantly from 2007 to 2009 in the non-core neighbourhoods and rural SHR. There was more than a 10% increase in the core neighbourhoods from 2007 to 2009, although this increase was not statistically significant.

Figure 3 illustrates coverage rates over time and the 12-month moving averages in the geographical subgroups. The coverage rates in the subgroups varied from month to month, especially in the core neighbourhoods. Large variation in the core neighbourhoods...
was likely due to small samples. However, Figure 3 also shows that the general trend is of an increase in coverage rates across all subgroups. As noted earlier, 12 data points were used per moving average.

Table 3 shows the results of our assessment of complete coverage rate disparities among the subgroups over time. Significant differences between core and non-core neighbourhood children were found for all years (2003-2009). In 2007, when the intervention was implemented, the rate ratio between core and non-core neighbourhood children was 0.65, indicating that core neighbourhood children were 35% less likely to be completely immunized; in 2009, this rate ratio was 0.73, indicating that core neighbourhood children were 27% less likely to be completely immunized than non-core neighbourhood children. Although there appeared to be a trend in the reduction of differences between core and non-core neighbourhood children from 2007 to 2009, this trend was not significant, since confidence intervals continued to overlap over time. Significant differences between Saskatoon and rural SHR children were also found, with the exception of 2006, 2007 and 2009. Comparison of the rate ratios from 2007 to 2009 between Saskatoon and rural SHR children shows that the confidence intervals also overlapped, indicating no significant reduction in disparity over time.

**DISCUSSION**

The Immunization Reminders Project has likely contributed to increased complete coverage rates for MMR in SHR overall and in subgroups. Since 2007, when the intervention was introduced, complete coverage rates have significantly increased in SHR and in all subgroups except the core neighbourhoods. Yet even in the core neighbourhoods, where the increase in complete coverage rates was not statistically significant, there was more than a 10% increase. Moreover, there appears to be a general trend towards disparity reductions for both core neighbourhoods versus non-core neighbourhoods and for Saskatoon versus rural SHR, although these reductions were not statistically significant. Our findings are similar to those of US studies that have assessed the effectiveness of childhood immunization reminder systems in terms of both increasing coverage and decreasing disparities.5,13-16

Although the Immunization Reminders Project has not yet significantly decreased the disparity between the core and non-core neighbourhoods in Saskatoon, it is anticipated that targeted interventions will serve this purpose. For example, the Building Health Equity (BHE) Database was implemented by SHR in June 2008 and targets only the core neighbourhoods in Saskatoon. The BHE Database alerts staff when a child is 2 weeks overdue for its 2-, 4- or 6-month-old immunizations. The parent is first contacted through a telephone call. If the child has not been immunized within 2 weeks or the family is not reached by telephone, subsequent reminder calls, letters and/or home visits are made. The results regarding the effectiveness of the BHE Database in terms of increasing MMR complete coverage rates are still too preliminary to present, since the full effects of the BHE Database did not begin to emerge until June 2010, when the first children targeted reached the age of 2.

There are some limitations associated with this study that deserve mention. First, it is difficult to attribute increases in immunization rates solely to the Immunization Reminders Project, as there could be other explanations for the increase. For example, more clinic locations, increased awareness about immunization coverage among providers or increased awareness about immunization coverage among those families reached by the BHE Database also could have positively affected coverage rates. Attribution is a limitation from a research perspective, although from a public health perspective an increase in immunization rates regardless of cause is extremely positive. Where feasible and ethical, control groups will be used in future studies to overcome the challenge of attribution.

Another limitation is that contact information on health cards is often not up to date. It is often not clear whether a child has remained in SHR or moved to another region/province. There may be children whose details remain in SIMS even though they no longer reside in SHR, and this could potentially decrease coverage rates.

Another issue is how to contact people from vulnerable populations. Challenges include lack of telephone, lack of a permanent residence, as well as high mobility rates. Some families have not been located through our intervention, and their current location of residence remains unknown. The children who were not located could, in fact, have been fully immunized in another region or province and be falsely pulling SHR immunization coverage rates down.

A further limitation of note is that First Nations health organizations do not have access to SIMS. While these organizations immunize a significant number of children, regional health authorities do not routinely have access to the immunization records. To retrospectively minimize this limitation, when a child presents to a regional health authority public health clinic and has been immunized through a First Nations health organization in the past, the clinic obtains the individual’s consent, contacts the other provider and records previous immunizations in SIMS.

A final limitation is that when children from another province relocate to Saskatchewan, their records – which are entered into SIMS – may not be an accurate reflection of their immunization history because of different recording practices in other jurisdictions. As a result, SIMS may not be a completely accurate reflection of the number of children immunized. Additionally, children who come from another province or country do not always follow the same immunization schedule as in Saskatchewan. These children can then lower the immunization rates, both current and historical, if they are not up to date with the Saskatchewan schedule.

**CONCLUSION**

A universal intervention, such as the Immunization Reminders Project, can likely contribute to increasing coverage rates overall. However, there is still room for improvement in SHR since overall coverage rates are still below the rates required for herd immunity, and the disparities among subgroups have not significantly decreased over time. On the basis of feedback from SHR staff and clients, there are a number of next steps that will be pursued in order to further improve coverage rates and decrease disparities: extending hours in immunization clinics, exploring other means of connecting with young families (e.g., social media, texting, e-mails), addressing the issues with SIMS mentioned previously and expanding the BHE Database to cover other areas in SHR with low immunization coverage rates. In terms of research, next steps will include evaluating the effects of the targeted intervention (i.e., the BHE Database), further cleaning SIMS to ensure that it is accurate, and evaluating the cost-effectiveness of our whole suite of interventions.
REFERENCES


RÉSUMÉ

Objectif : Déterminer l’efficacité d’un projet appelé Immunization Reminders pour ce qui est : a) d’améliorer les taux de couverture vaccinale de la rougeole, de la rubéole et des oreillons (RRO) chez les enfants de 2 ans et b) de réduire les disparités géographiques dans la couverture vaccinale des jeunes enfants.

Population cible : Les enfants de 14 mois et de 20 mois de la Région sanitaire de Saskatoon qui n’avaient pas encore reçu leurs vaccins.

Lieu : La Région sanitaire de Saskatoon (RSS).

Intervention : L’intervention a consisté à téléphoner aux parents/aidants des enfants de la population cible pour leur rappeler que leurs enfants avaient besoin d’être vaccinés. Si l’on n’arrivait pas à joindre le parent/aidant après cinq appels, on postait une lettre à la dernière adresse connue. Si l’on ne recevait pas de réponse à la lettre, on essayait de faire une visite au domicile des familles habitant les quartiers à faible revenu de Saskatoon. Depuis janvier 2009, tous les rappels aux familles n’habitant pas dans les quartiers à faible revenu de Saskatoon se font par la poste.

Résultats : Après le lancement du projet Immunization Reminders, les taux de couverture du vaccin RRO chez les enfants de 2 ans ont significativement augmenté dans l’ensemble et dans la plupart des zones géographiques examinées. Les disparités entre les sous-groupes géographiques ont semblé diminuer, mais pas de façon significative.

Conclusion : Une approche universelle à la vaccination des jeunes enfants peut probablement contribuer à accroître les taux de couverture, mais il y a encore matière à amélioration dans la RSS. Les constatations de l’étude ont entraîné des changements dans les pratiques et dans les politiques.

Mots clés : immunisation; enfant; études d’intervention
Adaptation and Implementation of the Nurse-Family Partnership in Canada

Susan M. Jack, RN, PhD,1,2 L. Dianne Busser, RN, MA,3 Debbie Sheehan, RN, MSW,3 Andrea Gonzalez, PhD,2 Emily J. Zwygers, BSc, BPHE,1 Harriet L. MacMillan, MD, MSc, FRCP©2

ABSTRACT

Objectives: International agencies are required to adapt, pilot and then evaluate the effectiveness of the Nurse-Family Partnership (NFP) prior to broad implementation of this public health intervention. The objectives of this qualitative case study were to: 1) determine whether the NFP can be implemented in Canada with fidelity to the US model, and 2) identify the adaptations required to increase the acceptability of the intervention for service providers and families.

Participants: 108 low-income, first-time mothers in Hamilton, Ontario, received the NFP intervention. In-depth interviews were conducted with NFP clients (n=38), family members (n=14) and community professionals (n=24).

Setting: Hamilton, Ontario.

Intervention and Data Collection: An intensive nurse home visitation program delivered to women starting early in pregnancy and continuing until the child was two years old. Processes to adapt and implement the NFP were explored across seven focus groups with public health nurses and managers. Eighty documents were reviewed to identify implementation challenges. Data were analyzed using directed content analysis.

Outcomes: The NFP model elements are acceptable to Canadian health care providers, public health nurses and families receiving the intervention. The primary adaptation required was to reduce nurse caseloads from 25 to 20 active clients. Recommendations for adapting and implementing all model elements are described.

Conclusion: The NFP model requires minor adaptations to increase the acceptability of the intervention to Canadian stakeholders. A consistent approach to adapting the NFP program in Canada is necessary as provincial jurisdictions commit themselves to supporting an experimental evaluation of the effectiveness of the NFP.

Key words: Home visits; public health nurses; qualitative research; intervention research

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

The association of young maternal age and adverse maternal and infant health outcomes is a significant public health concern. Pregnancy at a younger age is associated with increased risk of poor maternal mental health,1,2 poor educational outcomes3,4 and economic difficulties.5 Many risk factors associated with poverty and adolescent pregnancy, such as poor antenatal care, substance abuse, lower educational attainment and residence with a single parent, co-occur,6 thereby creating a pervasive environment of extreme risk for children of young mothers. Infants born into poverty are more likely to be premature or have low birth weights and are at an increased risk of mortality in the perinatal period through to adolescence.7 They are also at increased risk of lower cognitive development and educational and social outcomes, increased risk of developmental delay8,9 and poorer physical and mental health.8,10 Young maternal age is also associated with increased risk of child maltreatment11,12 and later effects such as substance abuse and risky behaviours. The infants also have a higher likelihood of growing up to become teenage parents themselves, thus perpetuating the cycle of risk.10,11

INTERVENTION

The Nurse-Family Partnership (NFP) is an evidence-based preventive intervention with demonstrated effectiveness in improving maternal and child health outcomes in targeted populations of young, low-income, first-time mothers and their families. Over three decades, the NFP has been tested in three large US-based randomized controlled trials (RCTs).14,15 NFP goals include improvement in: 1) pregnancy outcomes, by promoting healthy prenatal care; 2) child health and development, by promoting parents’ competent care of their children; and 3) parents’ life-course development. Nurses visit clients at home starting early in the preg-
nancy and continuing until the child’s second birthday. Through the establishment of a therapeutic relationship, nurses provide support and life coaching, review preventive health and prenatal practices, guide clients with system navigation, and engage in health education and discussions of child development and parenting. Additionally, the NFP provides governments with a significant return on investment and has a higher benefit-to-cost ratio than other prevention programs targeted to families with infants and young children. It has been estimated that for every dollar invested in implementing the NFP with the highest risk families, the US government receives a $5.70 return on investment. The benefits of this cost-effective program for mothers and children are long-lasting, with improved outcomes now demonstrated up to 19 years post-intervention in nurse-visited families compared with controls.

The NFP can be conceptualized as a population health intervention, since the program seeks to influence a broad range of health, social and economic outcomes among disadvantaged families. Furthermore, only first-time mothers are enrolled in the program on the premise that their engagement will produce knowledge and behaviour changes that will positively influence their parenting capacity with subsequent children. Finally, there is strong evidence that the program has an impact on families’ lives across generations.

While the NFP has been evaluated and implemented in the US, its effectiveness in Canada is still unknown. There are many existing home visitation programs in Canada; however, none have been evaluated with the rigour of the NFP US trials. No Canadian home-visiting programs include the components of the NFP.

In response to international interest in the NFP, the Prevention Research Center for Family and Child Health (PRC) at the University of Colorado, Denver, has developed a four-phase model for implementing the program in countries outside the US. Based on the Institute of Medicine’s stages of intervention development and formative evaluation, the model includes several stages: 1) identifying program adaptations for the local context; 2) conducting feasibility and acceptability pilot studies; 3) testing the program in an RCT; and 4) implementing the adapted program. International feasibility and acceptability pilot studies; 3) testing the program in a pilot study in this country.

This article presents qualitative data from a larger concurrent parallel mixed methods study conducted to evaluate the feasibility of implementing the NFP in Canada and the acceptability of the NFP to socially disadvantaged, first-time mothers and their families, public health nurses (PHNs) and managers, and community professionals. Acceptability studies are often conducted as part of formative program evaluations and typically use qualitative methods to explore stakeholders’ opinions, values and beliefs about program activities, structure and content. This type of study also facilitates the exploration of individual, organizational and contextual factors that influence intervention delivery and uptake. The research questions specifically addressed in this article are as follows:

1) Can the NFP intervention be implemented in Canada with fidelity to the model successfully evaluated in the US?

2) What adaptations are required to increase the acceptability of the intervention to health service providers and to meet the needs of Canadian families?

The findings from this study will be highly relevant to provincial jurisdictions that plan to participate in an RCT to evaluate the NFP, as well as to other countries with health systems similar to that of Canada that are in the process of adapting the intervention. The conduct of a descriptive qualitative case study guided the evaluation of the NFP’s acceptability to stakeholders and the responsiveness of the public health agency to adapt the intervention to facilitate implementation. Case study involves the description and exploration of a contemporary phenomenon within its real-life context. It is particularly useful when the phenomenon of interest involves complex social interactions, when investigators have minimal control over variables and when boundaries between the phenomenon under study and the context in which it occurs are not clearly delineated.

The Hamilton Health Sciences/McMaster University Faculty of Health Sciences Research Ethics Board approved this study.

**PARTICIPANTS AND SETTING**

For the pilot study, the NFP intervention was delivered through the Family Health Division, HPHS, Hamilton, Ontario. Recruitment into the pilot study occurred between June 2008 and September 2009. A total of 424 prenatal referrals to HPHS were assessed for NFP eligibility criteria: ≤21 years of age, low income, referred before the end of the 28th week of pregnancy and first-time birth. Referrals were received from physicians and from nurse practitioners and community-based agencies providing prenatal services to socially disadvantaged women. Of these referrals, 135 pregnant women were eligible (32% of all prenatal referrals), and 108 (80% of those who were eligible) consented to participate in the pilot study. All women who consented to participate were eligible to receive the full dose of the intervention: a maximum of 64 home visits conducted over the course of 27-30 months. Case study participants included purposeful samples of: women enrolled in the NFP pilot study (n=38); partners or mothers of NFP clients (n=14); community professionals responsible for program referrals or for providing auxiliary services to NFP clients (n=24); PHNs and managers with experience of home visiting as part of the provincial Healthy Babies, Healthy Children (HBHC) program (n=12); and the PHNs responsible for delivering the NFP intervention (n=6). The informed consent of each participant was obtained.

* Individuals identified as being able to richly describe the experience of collaborating with or receiving services from the NFP.
NURSE-FAMILY PARTNERSHIP IMPLEMENTATION

Table 1. NFP Client Characteristics to Establish Eligibility

<table>
<thead>
<tr>
<th>Maternal Characteristic</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gestation at time of referral (n=135)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trimester 1 (0-13 weeks)</td>
<td>39</td>
<td>29%</td>
</tr>
<tr>
<td>Trimester 2 (14-25 weeks)</td>
<td>79</td>
<td>59%</td>
</tr>
<tr>
<td>Trimester 3 (26-29 weeks)</td>
<td>17</td>
<td>12%</td>
</tr>
<tr>
<td>Gestation at time of enrolment (n=108)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trimester 1 (0-13 weeks)</td>
<td>33</td>
<td>30%</td>
</tr>
<tr>
<td>Trimester 2 (14-25 weeks)</td>
<td>61</td>
<td>57%</td>
</tr>
<tr>
<td>Trimester 3 (26-29 weeks)</td>
<td>14</td>
<td>13%</td>
</tr>
<tr>
<td>Maternal age at time of enrolment (n=108)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;15 years</td>
<td>3</td>
<td>3%</td>
</tr>
<tr>
<td>16-17 years</td>
<td>38</td>
<td>35%</td>
</tr>
<tr>
<td>18-19 years</td>
<td>45</td>
<td>42%</td>
</tr>
<tr>
<td>20-21 years</td>
<td>22</td>
<td>20%</td>
</tr>
</tbody>
</table>

DATA COLLECTION

Individual, in-depth, semi-structured interviews were conducted with NFP clients, their family members and community professionals. Unique interview guides were developed for each subsample to explore issues relevant to the experiences of that group in referring to, collaborating with or receiving services from the NFP. Interviews were conducted in a private location and lasted approximately 30-60 minutes. Permission to record each interview was obtained. Processes of adapting and implementing the NFP into existing public health services were explored through a series of focus groups: four with NFP PHNs, two with HBHC PHNs and one with HBHC managers. NFP PHNs were also asked to specifically reflect on the acceptability of each of the 18 NFP model elements. Each participant interviewed received a $25.00 gift card as an honorarium; a catered meal was provided to focus group participants. Documents were collected to identify issues and strategies for resolving challenges that arose during the implementation of the NFP intervention. The minutes of 65 NFP team meetings (from June 2008 to June 2010) and 15 NFP research team meetings (from January 2008 to April 2010) were collected. Demographic data were gathered from all participants. Program implementation data were reviewed to explore referral patterns. Field notes were completed after each interview and focus group meeting. An audit trail documenting all methodological decisions was maintained.

DATA ANALYSIS

Interview and focus group data were transcribed verbatim and then imported into NVivo 8.0 software, which was used to store, manage and code these data. Using the NFP model elements a structured codebook was developed to facilitate line-by-line coding of the interviews, focus group transcripts and the meeting minutes. Data coded to each element were then synthesized and summarized using directed content analysis.28 comparisons across data sources were also conducted at this stage.

OUTCOMES

Community-based health care providers in Hamilton identified and referred to HPHS the pregnant women who met NFP eligibility criteria (Table 1). Of the 108 women who consented to receive the NFP, all were first-time mothers and found to be of low-income status. The majority (87%) were enrolled in the program before or at 25 weeks’ gestation. The cut-off age for the pilot study was ≤21 years, and most of the participating women were between 16 and 19 years (77%).

In this pilot study, the intervention was implemented with fidelity to 16 of the 18 NFP model elements. Table 2 provides an overview of the clinical practices that PHNs and other community stakeholders implemented to increase the acceptability and responsiveness of the model in meeting the needs of clients and their families, nurses and other community professionals. Participant recommendations for future NFP implementations in Canada are also summarized in Table 2.

Participants’ perceptions of key factors influencing implementation of the NFP model will be summarized under four headings: client-related elements, intervention context, expectations of the nurse home visitors, and application of the intervention.

Client-related elements

To support professionals in making appropriate referrals, the NFP PHNs explained that they developed promotional materials outlining program eligibility, goals and anticipated outcomes. PHNs invested significant time during the early stages of implementation in distributing NFP information packages, presenting information to targeted potential sources of referrals and engaging one on one with physicians, nurses and nurse practitioners.

The results confirmed that while it was possible for community providers to identify and refer pregnant women who met the NFP eligibility criteria, they often experienced difficulties in interpreting those criteria, particularly the definitions of “first-time mother” and “low-income status”. Confusion arose in determining “first-time” maternal history in the context of miscarriages, therapeutic abortions and early postpartum placement of a previous infant. Use of low-income cut-off tables did not accurately identify all eligible low-income women because a client’s eligibility might change with the birth of an infant or be related to changes in living arrangements. One PHN explained, “The reality is that a lot of our clients start off as not low-income because they live with mom or dad, end up moving out on their own and then definitely into what would be a low-income situation.” It was suggested that PHNs determine low-income status using multiple criteria.

Community professionals expressed frustration about the program eligibility criteria not extending to women >21 years, those already parenting a child, or women beyond 28 weeks’ gestation. NFP PHNs stressed the importance of having clients referred before the beginning of the 27th week of gestation for two reasons: 1) it often took multiple days to locate and conduct a consent visit with a potential client, and 2) initiating the program early in pregnancy allows for the development of the therapeutic nurse-client relationship required to promote behaviour changes. NFP PHNs confirmed that enrolling women who are early in the second trimester of pregnancy is an ideal time for engaging them in home visiting and the range of content offered in the NFP curriculum; first trimester referrals can be challenging if the client experiences a miscarriage or if the client does not yet perceive the pregnancy as real.

Intervention context

The primary elements of the NFP intervention were acceptable to all study participants, particularly the elements that the intervention should be led by a nurse, that the prenatal and postpartum services were delivered in the home, and that clients were visited regularly and frequently. The PHNs invested significant time in contacting and locating clients to ensure that home visits were completed. As one PHN explained:

*We are working with very high-risk moms that are hard to engage. Look at how many clients we have to chase, the ones we are trying to*
Table 2. Recommended Canadian Adaptations to the NFP Model Elements

<table>
<thead>
<tr>
<th>Description of NFP Model Elements</th>
<th>Clinical Practices Implemented During the NFP Model of Home Visiting</th>
<th>Recommendations for Future NFP Implementations in Canada</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Clients</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Element 1: Client participates voluntarily in the NFP program.</td>
<td><strong>✓</strong> Emphasize voluntary nature of NFP program during information sessions to health care providers or agencies referring clients.</td>
<td><strong>✓</strong> Recommend developing a definition of, and clear criteria to identify, “first-time mothers” on the program referral form.</td>
</tr>
<tr>
<td>Element 2: Client is a first-time mother.</td>
<td><strong>✓</strong> PHN to conduct short “consent” home visit before enrolment to provide an overview of the program goals, home visiting schedule and length and content, and to discuss nurse and client responsibilities in the program.</td>
<td><strong>✓</strong> Use multiple criteria, combined with critical nursing judgement and the assessment of the referring professional, to determine low-income status. Clients receiving social assistance are automatically deemed eligible to participate.</td>
</tr>
<tr>
<td>Element 3: Client meets low-income criteria at intake.</td>
<td><strong>✓</strong> Recommend that, in addition to domain-focused content, PHNs build time into each visit to address a priority issue or crisis identified by the client.</td>
<td><strong>✓</strong> Recommend development of a definition of “low income” and refine criteria to include such social risk factors as young age, enrolled in school, incomplete high school, absence of regular income, socially isolated with no financial support from partner or extended family, unemployed partner, indication of financial stress within the household, or expressed plans to move into independent living situation.</td>
</tr>
<tr>
<td>Element 4: Client is enrolled in the program early in her pregnancy and receives her first home visit no later than the end of the 28th week of pregnancy.</td>
<td><strong>✓</strong> Client participation in a group activity is not counted as a home visit.</td>
<td><strong>✓</strong> Referring professionals or agencies to submit client referral form to public health by the beginning of the client’s 27th week of gestation.</td>
</tr>
<tr>
<td><strong>Intervention context</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Element 5: Client is visited one-to-one; one nurse home visitor to one first-time mother or family.</td>
<td><strong>✓</strong> Encourage client and partner to actively participate in visits; provide homework for both client and partner to complete between visits.</td>
<td><strong>✓</strong> Client’s home is defined by the location in which she and her child currently reside, which may include a private residence, maternity home, or shelter.</td>
</tr>
<tr>
<td>Element 6: Client is visited in her home.</td>
<td><strong>✓</strong> If the father assumes the primary parenting role in the absence of a mother and has developed a relationship with the PHN through active participation in the program, he may complete the program with his child.</td>
<td><strong>✓</strong> A client’s home is defined by the location in which she and her child currently reside, which may include a private residence, maternity home, or shelter.</td>
</tr>
<tr>
<td>Element 7: Client is visited throughout her pregnancy and the first two years of her child’s life in accordance with the NFP schedule of visits.</td>
<td><strong>✓</strong> A single nurse is assigned to work with a family; this is essential for maintaining the therapeutic relationship and encouraging client retention.</td>
<td><strong>✓</strong> A client’s home is defined by the location in which she and her child currently reside, which may include a private residence, maternity home, or shelter.</td>
</tr>
<tr>
<td><strong>Expectations of the nurses and supervisors</strong></td>
<td><strong>✓</strong> To address nurse turnover, vacations or leaves of absence, it is important for NFP clients to have opportunities to meet and engage with other nurses through group activities, occasional joint home visits or use of promotional items (e.g., annual calendar) with pictures of each PHN included.</td>
<td><strong>✓</strong> Public health agency to recognize and allot PHNs sufficient time to locate clients, many of whom are mobile and difficult to contact on a regular basis.</td>
</tr>
<tr>
<td>Element 8: Nurse home visitors and nurse supervisors are registered professional nurses with a minimum of a baccalaureate degree in nursing.</td>
<td><strong>✓</strong> PHN to adhere to program guidelines but remain responsive to client needs and availability. May decide to increase or decrease visits during client’s crises.</td>
<td><strong>✓</strong> Recommend partnering with community agencies to provide participation incentives to clients to commemorate milestones such as baby’s birth and first birthday, or maternal graduation from program.</td>
</tr>
<tr>
<td>Element 9: Nurse home visitors and nurse supervisors complete core educational sessions required by the NFP National Service Office and deliver the intervention with fidelity to the NFP model.</td>
<td><strong>✓</strong> Some clients may benefit from taking a short-term “holiday” from the program. Use of mailed cards on special occasions, as well as visits outside of core office hours, have improved retention.</td>
<td><strong>✓</strong> Recommend engaging with local school board(s) to offer high school parenting credit for time spent in NFP program.</td>
</tr>
<tr>
<td><strong>Application of the intervention</strong></td>
<td><strong>✓</strong> Nurse supervisor with a baccalaureate degree in nursing and a Masters degree required.</td>
<td><strong>✓</strong> Recommend that PHNs hired to work in the NFP have experience home visiting or working with socially disadvantaged families and possess skills in mental health or maternal-child health nursing.</td>
</tr>
<tr>
<td>Element 10: Nurse home visitors, using professional knowledge, judgement and skill, apply the NFP visit guidelines, individualizing them to the strengths and challenges of each family and apportioning time across defined program domains.</td>
<td><strong>✓</strong> During program implementation, agencies to build in time for PHNs to complete initial training, review and organize program materials, create local promotional materials and establish relationships with potential referral sources prior to enrolling initial clients.</td>
<td><strong>✓</strong> Recommend creating a provincial senior nurse position to assist, coach, and mentor supervisors in the NFP model of home visiting and to ensure that the intervention is implemented well.</td>
</tr>
</tbody>
</table>

...continues/
NURSE-FAMILY PARTNERSHIP IMPLEMENTATION

Table 2. Continued

Description of NFP Model Elements

Element 11: Nurse home visitors apply the theoretical framework that underpins the program, emphasizing self-efficacy, human ecology and attachment theories, through current clinical methods.

Element 12: A full-time nurse home visitor carries a caseload of no more than 25 active clients.

Reflection and clinical supervision

Element 13: A full-time nurse supervisor provides supervision to no more than eight individual nurse home visitors.

Element 14: Nurse supervisors provide nurse home visitors clinical supervision with reflection, demonstrate integration of the theories and facilitate professional development essential to the nurse home visitor role through specific supervisory activities, including one-to-one clinical supervision, case conferences, team meetings and field supervision.

Program monitoring and use of data

Element 15: Nurse home visitors and nurse supervisors collect data as specified by the NFP National Service Office and use NFP reports to guide their practice, assess and guide program implementation, inform clinical supervision, enhance program quality and demonstrate program fidelity.

Element 16: An NFP-implementing agency is located in and operated by an organization known in the community to be a successful provider of prevention services to low-income families.

Element 17: An NFP-implementing agency convenes a long-term community advisory board that meets at least quarterly to promote a community support system to the program and to promote program quality and sustainability.

Element 18: Adequate support and structure shall be in place to support nurse home visitors and nurse supervisors to implement the program and to ensure that data are accurately entered into the database in a timely manner.

Clinical Practices Implemented During the Pilot Study

Recommend integrating NFP data requirements into established provincial databases to minimize duplication and time required for data entry.

Recommend developing electronic, mobile systems for documentation and data entry.

Recommend that agency-specific information be shared through alternate formats.

Recommend that delivery of the NFP program should be the sole workload assignment given to a PHN.

Recommend that agency-specific information be shared through alternate formats.

Recommend scheduling bi-weekly two-hour team meetings on a consistent day to review NFP-specific operational issues, program implementation strategies, curriculum materials and activities, vacation/leave coverage, health and safety issues, and research updates. PHNs recommend that agency-specific information be shared through alternate formats.

Recommend that delivery of the NFP program should be the sole workload assignment given to a PHN.

Expectations of the nurse home visitors

There was consensus across study participants that PHNs have the knowledge and experience to work with socially disadvantaged mothers and their infants, particularly about issues such as health promotion, breastfeeding, mental health, intimate partner violence, child maltreatment, safety, parenting and infant care. The use of PHNs versus paraprofessionals was identified as providing increased credibility, and nurses rather than social workers were perceived to be less threatening to clients. As one social worker from a local Children’s Aid Society explained:

People often get their anxieties heightened when they know it’s a social worker. I can sell a program easier if I say it is voluntary and that it is a nurse who visits. It's not somebody coming to “check up on you”. Which is how people feel if it’s a Children’s Aid worker or parent support worker coming.
Application of the intervention

PHNs, clients and family members confirmed that NFP home visit content was acceptable and met their needs. PHNs explained that the content is primarily determined by client needs or her “heart’s desire”; some content is prioritized and introduced by the nurse to address particular maternal or child health concerns. The NFP PHNs indicated that the principles of the theories underpinning the NFP intervention “have become ingrained in us” and that the application of these theories in practice has been a transformative experience.

It was not possible for PHNs to maintain a caseload of 25 active clients. One stakeholder explained that, compared with US colleagues, the study PHNs work fewer hours per week and have more vacation days. Extensive time was required to locate clients, travel across a large geographical area serving both rural and urban clients, complete training, prepare for and participate in case conferences, prepare curriculum materials, attend meetings and document clinical activities. During the first year of implementation, PHNs were able to manage 12 to 15 clients; over time, as caseloads increased towards 20 clients, they found this challenging. Furthermore, while the team achieved success in terms of regular team meetings, case conferences and weekly supervision, an optimal number of field supervisions were not completed.

DISCUSSION

This study presents the results of the first pilot study of the NFP in Canada and confirms that the NFP intervention can be implemented here with fidelity to 16 of the 18 model elements. This is a key step in intervention research, as many evidence-based prevention programs are implemented with poor fidelity or quality.30 The most significant change to the model was that in Canada a full-time nurse home visitor is only able to carry a caseload of no more than 20 active clients, compared with 25 active clients as recommended in the US model. For the pilot study, the resources were not available to build and maintain the database required to evaluate the acceptability of Element 15. This study also identified important clinical practices and recommendations for intervention implementation that will be essential for other Canadian public health agencies that are participating in the NFP trial to consider.

Health care and social service providers expressed frustration about the limited eligibility criteria of the NFP. Within Canada’s context of providing universal health services, if the NFP is shown to be effective and is disseminated more widely, agencies will need to develop clear messages about the targeted nature of the program. PHNs will have a responsibility to explain the theoretical and empirical rationales underlying this program. The success of the pilot study appeared largely due to the time invested by the public health agency and PHNs in developing relationships with clients and their families, referral sources, professionals providing auxiliary services, and members of the Advisory Committee (Element 17). NFP nurses in the US also identify that relationships are at the heart of the NFP program and a core aspect of their work.31 The development of these relationships, as well as PHN activity to locate and engage hard-to-reach clients, is time intensive and must be taken into consideration when agencies are assigning workload.

The most significant Canadian adaptation to the model was the caseload reduction of active clients carried by each nurse, from the US standard of 25 clients to the revised number of 20 clients. This finding is consistent with the experience in England, where implementation of the NFP model involved caseloads ranging from 14 to 21 clients.32 Given the reduction in families served by each PHN, it will be important for researchers to evaluate the cost-benefit ratio of this intervention in Canada.

Study strengths included data type and source triangulation, member checking with PHNs, and peer debriefing to enhance overall data credibility. Data dependability and auditability were promoted through maintenance of an audit trail and code-recoding procedures. However, the findings may be limited in transferability to medium to large public health agencies serving urban or a mix of rural and urban populations. Further pilot testing and adaptations to the NFP model are necessary before implementation in unique communities, such as those in remote geographical locations or Aboriginal communities.

CONCLUSION

With minor adaptations, the NFP intervention elements are acceptable to Canadian service providers and families eligible to participate in the program. A consistent approach to adapting the NFP program in Canada is necessary as provincial jurisdictions commit themselves to supporting an RCT to evaluate the effectiveness of this important public health intervention. There are many models of home visiting – which may vary by type of provider, length of program or frequency of home visits – yet the NFP model of home visitation is consistently identified as having the strongest evidence of improved maternal-child health and prevention of child abuse and neglect. Therefore, it is imperative that implementing agencies do not dilute any of the program model elements.

REFERENCES


Study participant is asked to confirm or refute whether researcher’s interpretation of participant’s experience is an accurate description.
RÉSUMÉ

Objectifs : Avant d’appliquer le programme de santé publique Nurse-Family Partnership (NFP), les organismes internationaux sont tenus de l’adapter, de le mettre à l’essai, puis d’en évaluer l’efficacité. Notre étude de cas qualitative avait deux objectifs : 1) déterminer si le NFP peut être appliqué au Canada en restant fidèle au modèle des États-Unis, et 2) cerner les mesures d’adaptation nécessaires pour accroître l’acceptabilité de NFP auprès des dispensatrices de services et des familles.

Participants : 108 nouvelles mères à faible revenu vivant à Hamilton, en Ontario, ont bénéficié du programme NFP. Des entretiens en profondeur ont été menés avec des clientes du NFP (n=38), des membres de leurs familles (n=14) et des professionnels locaux (n=24).

Lieu : Hamilton (Ontario).

Intervention et collecte de données : Il s’agit d’un programme intensif de visites à domicile par des infirmières auprès de femmes enceintes dès le début de leur grossesse et jusqu’à ce que leur enfant atteigne l’âge de deux ans. Des processus d’adaptation et d’application du NFP ont été étudiés à la faveur de sept groupes de discussion avec des infirmières et des gestionnaires de santé publique. Nous avons examiné 80 documents pour repérer les difficultés d’application du programme. Les données ont été analysées au moyen d’analyses de contenu dirigées.

Résultats : Les éléments du modèle NFP sont acceptables pour les dispensatrices de soins de santé, les infirmières de santé publique et les familles ayant reçu l’intervention au Canada. La principale mesure d’adaptation nécessaire a été de réduire la charge de travail des infirmières par client. Le modèle NFP a été adapté pour tenir compte de la culture locale.

Conclusion : Le modèle NFP nécessite des adaptations mineures pour accroître son acceptabilité auprès des acteurs du milieu au Canada. Il faut procéder de façon systématique pour adapter le NFP au Canada à mesure que les autorités provinciales s’engageront à appuyer une évaluation expérimentale de l’efficacité du programme.

Mots clés : visite à domicile; infirmières et infirmiers de santé publique; recherche qualitative; études d’intervention
Drinking Water Fluoridation and Oral Health Inequities in Canadian Children

Lindsay McLaren, PhD,1 J.C. Herbert Emery, PhD1,2

ABSTRACT

Objectives: One argument made in favour of drinking water fluoridation is that it is equitable in its impact on oral health. We examined the association between exposure to fluoridation and oral health inequities among Canadian children.

Participants, setting and intervention: We analyzed data from 1,017 children aged 6-11 from Cycle 1 of the Canadian Health Measures Survey, a cross-sectional, nationally representative survey that included a clinic oral health examination and a household interview. The outcome measure was the count of the number of decayed, missing (because of caries or periodontal disease) or filled teeth, either deciduous or permanent (dmftDMFT). Data were analyzed using linear (ordinary least squares) and multinomial logistic regression; we also computed the concentration index for education-related inequity in oral health. Water fluoridation status (the intervention) was assigned on the basis of the site location of data collection.

Outcomes: Fluoridation was associated with better oral health (fewer dmftDMFT), adjusting for socio-economic and behavioural variables, and the effect was particularly strong for more severe oral health problems (three or more dmftDMFT). The effect of fluoridation on dmftDMFT was observed across income and education categories but appeared especially pronounced in lower education and higher income adequacy households. dmftDMFT were found to be disproportionately concentrated in lower-education households, though this did not vary by fluoridation status.

Conclusions: The robust main effect of fluoridation on dmftDMFT and the beneficial effect across socio-economic groups support fluoridation as a beneficial and justifiable population health intervention. Fluoridation was equitable in the sense that its benefits were particularly apparent in those groups with the poorest oral health profiles, though the nature of the findings prompts consideration of the values underlying the judgement of health equity.

Key words: Canada; fluoridation; oral health; socio-economic factors

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

© Canadian Public Health Association, 2012. All rights reserved.

Conflict of Interest: None to declare.

Author Affiliations
1. Department of Community Health Sciences, University of Calgary, Calgary, AB
2. Department of Economics, University of Calgary, Calgary, AB

Correspondence: Lindsay McLaren, PhD, Department of Community Health Sciences, University of Calgary, 3280 Hospital Dr. NW, Calgary, AB T2N 4Z6, Tel: 403-210-9424, Fax: 403-270-7307, E-mail: lmclaren@ucalgary.ca

Acknowledgements: L. McLaren is supported by a Population Health Investigator Award from Alberta Innovates – Health Solutions. J.C.H. Emery is the Svare Professor in Health Economics at the University of Calgary.
Available Canadian data indicate dramatic improvements in oral health during recent decades. However, problems remain. Of children aged 6-11 years in the Canadian Health Measures Survey (CHMS) 2007-2009, nearly 57% were affected by dental caries. Further, socio-economic inequities in oral health outcomes exist: caries prevalence and severity were higher (worse) among children from families with lower parental education and without private dental insurance. In Canada, dental services are not part of the national health system; rather, they are financed primarily through private insurance (including employment coverage) and out-of-pocket spending, a fact that arguably increases the importance of population/public health measures such as drinking water fluoridation. Fluoridation has been implemented differentially across Canadian municipalities at the decision of local government. In a 2007 report, it was estimated that 45.1% of the Canadian population received fluoridated drinking water, but this varied provincially from a low of 1.5% in Newfoundland and Labrador to a high of 75.9% in Ontario.

Our objective was to examine the association between exposure to drinking water fluoridation and oral health inequities among Canadian children. As with some other population/public health interventions, drinking water fluoridation is controversial, with proponents and opponents disagreeing over whether this government intervention is justified, given that it restricts individual choice. Highly polarized debate has led to decisions in many Canadian communities (by plebiscite and/or local council vote) to discontinue the practice. With the recent availability of national oral health data from the CHMS, there is both opportunity and impetus to examine this important population/public health question.

**Participants, Setting and Intervention**

**Data source and variables**

The data source is Cycle 1 of the CHMS, details of which are available at www.statcan.gc.ca. Briefly, the CHMS is a national, cross-sectional survey undertaken during 2007-2009. Data were collected through household interview as well as direct physical measurements within mobile examination clinics. The target population was individuals aged 6-79 years living in privately occupied dwellings across all provinces and territories. Target population exclusions, similar to other Statistics Canada surveys, were “persons living on Indian Reserves or Crown lands, residents of institutions, full-time members of the Canadian Forces and residents of certain remote regions”, such that approximately 97% of the Canadian population was represented. A probability sampling strategy was used, incorporating aspects of stratification and cluster sampling. Specifically, a list of 257 potential data collection sites was created, based on Statistics Canada’s Labour Force Survey area frame. From the 257 sites, 15 were selected, stratified by region, proportional to the Canadian population: Atlantic (one site), Quebec (four sites), Ontario (six sites), Prairies (two sites) and British Columbia (two sites). Within each site, approximately 350 respondents were sampled, stratified by age group (five age groups: 6-11, 12-19, 20-39, 40-59, 60-79). Of individuals selected for the survey, the response rate for the household interview was 88.3%, of whom 84.9% further agreed to undergo the clinic examination. We focused on children aged 6 to 11 years old.

The clinic visit included a 20-minute oral health examination by a Canadian Forces dentist, during which each tooth was examined and its condition recorded using one of 20 possible codes (the number of potentially applicable codes varied by tooth). The on-the-spot information, we created our outcome variable: a count of the number of decayed, missing (because of caries or periodontal disease) or filled teeth, either deciduous or permanent (DMFT). This is a commonly used index of oral health status for the middle-childhood age period.

Other variables came from data collected during the household interview. Socio-economic variables were: household education (highest attained education in the household, four categories: high school graduate; certificate or diploma; Bachelor’s degree; degree beyond Bachelor’s degree); household income adequacy (a standard Statistics Canada classification based on income and household size, three categories: high, middle and low); dental insurance (yes [private or public]/no); and home ownership (versus rent) (yes/no). Oral health variables were tooth brushing (at least twice/day; yes/no), flossing (at least five times/week; yes/no), dental visits (visited the dentist once or more in the past year for treatment or prevention; yes/no); and sugary drink consumption (consumed sugary beverage – such as pop, fruit drink, sports drink – once/day or more during past year; yes/no).

**Exposure to drinking water fluoridation**

As noted, CHMS respondents were selected from 15 data collection sites across five provinces. According to information from various sources, we classified each site as fluoridated, not fluoridated or mixed. This classification was not always straightforward, but because study conclusions hinge on this classification, we have outlined our rationale in Table 1. Although sampling occurred within a 50 km (urban) or 100 km (rural) radius of the clinic site, the majority of respondents were concentrated close to the site (www.statcan.gc.ca), which increased our confidence in our classification of individuals based on site. Ultimately, we combined the non-fluoridated and the mixed sites, for two reasons: a) with few exceptions (e.g., Vancouver), the sites classified as non-fluoridated were often located geographically close to fluoridated regions, making truly non-fluoridated status unlikely, and b) the small sample in the two sites classified as mixed presented potential data disclosure and reliability issues. We thus ended up with two categories: fluoridated (Moncton NB, Quebec City QC, Toronto ON, Toronto East ON, Edmonton AB and Red Deer AB), and non- or mixed-fluoridation status (Montreal Centre-Ville QC, Montreal Rive-Sud QC, Maurice QC (Shawinigan), Clarington ON, Northumberland County ON (Cobourg), St. Catharines ON, Vancouver BC, Kitchener-Waterloo ON and Williams Lake-Quesnel BC). By way of further improving the exposure variable, we considered two additional variables: whether the respondents reported usually drinking tap water (yes/no) and whether they had lived in their current home for at least 2 years (yes/no).
## Table 1. Rationale for Classification of Fluoridation Status for Each Data Collection Site in the Canadian Health Measures Survey

<table>
<thead>
<tr>
<th>Site*</th>
<th>Fluoridation Status</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moncton, NB</td>
<td>Fluoridated</td>
<td>Moncton began fluoridating its drinking water on September 20, 1970, making it the first municipality in New Brunswick to voluntarily add fluoride to its drinking water (“voluntarily”). Because communities drawing their water from military bases also drink fluoridated water, due to a 1968 order from the federal defense department that all bases adopt the treatment.</td>
</tr>
<tr>
<td>Quebec City, QC</td>
<td>Fluoridated</td>
<td>Quebec City began fluoridating its drinking water in 1978. Although the city voted to discontinue fluoridation in 2008, it is classified as fluoridated based on its lengthy history of fluoridation and its fluoridated status at the time of CHMS data collection (which bore in 2007).</td>
</tr>
<tr>
<td>Toronto, ON (York University)</td>
<td>Fluoridated</td>
<td>The drinking water of Metropolitan Toronto has been fluoridated since 1963. The administrative region of Metropolitan Toronto was created in 1953 and included the City of Toronto, Etobicoke, North York, Scarborough, and other small municipalities, including Forest Hill. The Toronto site location falls just within the north boundaries of North York.</td>
</tr>
<tr>
<td>Toronto East, ON (Exhibition Place)</td>
<td>Fluoridated</td>
<td>The drinking water of Metropolitan Toronto has been fluoridated since 1963. The administrative region of Metropolitan Toronto was created in 1953 and included the City of Toronto, Etobicoke, North York, Scarborough, and other small municipalities, including Forest Hill. The Toronto East site location is within the City of Toronto.</td>
</tr>
<tr>
<td>Edmonton, AB</td>
<td>Fluoridated</td>
<td>Edmonton has fluoridated its water since 1967.</td>
</tr>
<tr>
<td>Red Deer, AB</td>
<td>Fluoridated</td>
<td>Red Deer has fluoridated its water since 1957.</td>
</tr>
<tr>
<td>Montreal Centre-Ville, QC</td>
<td>Not fluoridated</td>
<td>Along with Vancouver, Montreal is noteworthy for being one of the large Canadian cities that has never fluoridated its water. The Montreal Centre-Ville site location is in the eastern portion of the island of Montreal / Montreal provincial administrative region, and is therefore classified as non-fluoridated. We acknowledge that some communities within the provincial administrative region of Montreal in the past fluoridated their water or do so currently, however these appear to be limited to the western portion of Montreal. For example, Dorval has fluoridated its drinking water since 1957 aside from a 5-year hiatus. Pointe-Claire began fluoridating its water in 1955, and Pointe-Claire’s water filtration plant serves other Montreal communities, including Beaconsfield, Kirkland, and Baie-d’Urfé, in addition to parts of Sainte-Anne-de-Bellevue and Dollard-des-Ormeaux (<a href="http://www.h2opointe-claire.qc.ca/index_en.php">http://www.h2opointe-claire.qc.ca/index_en.php</a> (accessed June 4, 2012). Pierrefonds began fluoridating its water in 1978; the treated water also serves Dollard-des-Ormeaux, Roxboro, Ste-Genevieve, and Ile-Bizard. Neighbouring Laval (to the north of Montreal) has fluoridated its drinking water since 1958; however Laval 1958 is a lot of fluoride in Quebec waters because of the aluminum industry” and pointed to Shawinigan as one of the largest city is Longueuil) is or has been fluoridated. This assignment makes sense considering that only 6.4% (489,420 people) of the population in the province of Quebec meet this criterion to the 2007 provincial estimates compiled by the Chief Dental Health Officer of Canada and this number is approximately equivalent to the population of Quebec City, which fluoridated its water until at least 2008 (491,140 according to the 2006 census).</td>
</tr>
<tr>
<td>Montreal Rive-Sud, QC</td>
<td>Not fluoridated</td>
<td>We found no indication that drinking water in Montreal Rive-Sud (Montreal’s South Shore, within which the largest city is Longueuil) is or has been fluoridated. This assignment makes sense considering that only 6.4% (489,420 people) of the population in the province of Quebec meet this criterion to the 2007 provincial estimates compiled by the Chief Dental Health Officer of Canada and this number is approximately equivalent to the population of Quebec City, which fluoridated its water until at least 2008 (491,140 according to the 2006 census).</td>
</tr>
<tr>
<td>Mauricie, QC (Shawinigan)</td>
<td>Not fluoridated</td>
<td>We found no indication that drinking water in Mauricie-Shawinigan, QC was fluoridated; however, Shawinigan is the location of one of Canada’s main aluminum-producing companies, which merits comment with respect to fluoridation and oral health. One of the earliest events in the history of fluoridation was the observation of tooth mottling (now called fluorosis) among dental patients in Bauxite, Arkansas, a town owned by the Aluminum Company of America (ALCOA). A chemist with ALCOA identified high concentrations of fluoride in the water supply in Bauxite (a function of the aluminum processing), and it was subsequently determined that the fluoride was not only the etiological agent of mottled enamel but of protection from tooth decay. The idea of artificially fluoridating drinking water to improve oral health followed. Also of note: the link between aluminum processing and fluoridation has endured in the form of an anti-fluoridation assertion that fluoridation is a “conspiracy” of aluminum companies which need to find some way to get rid of fluoride byproduct, which is difficult and expensive to dispose of properly. A quotation posted on the website of the Fluoride Action Network, an anti-fluoride organization, stated “there is a lot of fluoride in Quebec waters because of the aluminum industry” and pointed to Shawinigan as one example. We have not been able to locate Shawinigan’s water supply system, but it is obvious that there is a lot of fluoride in the water system. The community of Clarington does not fluoridate its water. However, Clarington is located within the provincial region of Durham, and several Durham communities (located close to Clarington) do add fluoride to their water systems (specifically: Ajax, Brooklin, Oshawa [which supplies water to some residents of Courtice, Pickering, and Whitby], <a href="http://www.h2opointe-claire.qc.ca/index_en.php">http://www.h2opointe-claire.qc.ca/index_en.php</a> (accessed June 4, 2012).</td>
</tr>
<tr>
<td>Clarington, ON</td>
<td>Not fluoridated</td>
<td>Clarington, ON does not fluoridate its water. However, Clarington is located within the provincial region of Durham, and several Durham communities (located close to Clarington) do add fluoride to their water systems (specifically: Ajax, Brooklin, Oshawa [which supplies water to some residents of Courtice, Pickering, and Whitby], <a href="http://www.durham.ca/departments/health/facts_about/pdf/fluoride.pdf">http://www.durham.ca/departments/health/facts_about/pdf/fluoride.pdf</a> (accessed June 4, 2012)</td>
</tr>
<tr>
<td>Northumberland County, ON (Cobourg)</td>
<td>Not fluoridated</td>
<td>Cobourg (Northumberland County) does not appear to fluoridate its drinking water, though there may be small amounts of naturally-occurring fluoride in the water. <a href="http://www.hamiltonregion.ca/UserFiles/files/Cobourg%202010%20Annual%20Repor%202_2.pdf">http://www.hamiltonregion.ca/UserFiles/files/Cobourg%202010%20Annual%20Repor%202_2.pdf</a> (accessed June 4, 2012)</td>
</tr>
<tr>
<td>St. Catharines, ON</td>
<td>Not fluoridated</td>
<td>The Niagara Region, which includes St. Catharines, has not fluoridated its water since 1999 (<a href="http://www.niagararegion.ca/living/health_wellness/dental/fluoride-recommendations.aspx">http://www.niagararegion.ca/living/health_wellness/dental/fluoride-recommendations.aspx</a> (accessed June 4, 2012), though the drinking water that serves St. Catharines contains naturally-occurring fluoride at 0.14 ppm (not enough for health benefits). The 1999 date means that children in our sample (age 6-11 in 2007-2009) for the most part would not have been exposed.</td>
</tr>
<tr>
<td>Vancouver, BC</td>
<td>Not fluoridated</td>
<td>Vancouver has never fluoridated its water. Along with Montreal, Vancouver is one of the only large Canadian cities never to have done so.</td>
</tr>
<tr>
<td>Kitchener-Waterloo, ON</td>
<td>Mixed</td>
<td>The actual site location is in Kitchener, which does not fluoridate its water (its water contains a small amount [0.1 ppm] of naturally-occurring fluoride). However, neighbouring (adjacent) Waterloo began fluoridating its water in 1967, though it voted to discontinue in 2010.</td>
</tr>
<tr>
<td>Williams Lake/Quesnel, BC</td>
<td>Mixed</td>
<td>According to a May 6, 2011 announcement (<a href="http://www.activewilliamslake.com/index.asp?p=1043">http://www.activewilliamslake.com/index.asp?p=1043</a>) (accessed June 4, 2012), Williams Lake began fluoridating its water in 1969. Fluoridation appears to have been stopped in 2005 due to issues associated with upgrading equipment, and the 2011 announcement stated that public consultation would be initiated shortly re: whether to continue fluoridation once infrastructure is ready. This fluoridation hiatus means variable exposure for the children in our sample, who were age 6-11 in 2007-2009. Also, Quesnel does not appear to fluoridate its water (<a href="http://www.quesnel.ca/DocumentBank/Reports/2009/2009_DrinkingWaterAnnualReport.pdf">http://www.quesnel.ca/DocumentBank/Reports/2009/2009_DrinkingWaterAnnualReport.pdf</a> (accessed June 4, 2012). Although the data collection site location was in Williams Lake, we assumed based on the site label that participants were also drawn from Quesnel, making the overall fluoridation status mixed.</td>
</tr>
</tbody>
</table>

Note: Exact location of the clinic at each data collection site was obtained from Statistics Canada.
**Analysis**

Data were accessed and analyzed within the Prairie Regional Research Data Centre at the University of Calgary. Stata software was used, and all analyses incorporated a sample weight as directed by Statistics Canada.

We first examined the association between fluoridation status and oral health, adjusting for covariates. Specifically, using ordinary least squares (OLS) regression, we regressed dmftDMFT on fluoridation status (yes/no), socio-economic variables (income, education, home ownership, dental insurance) and then further on additional covariates (tooth brushing, flossing, dental visit and sugary drink consumption). We next examined whether the association between fluoridation status and oral health varied by socio-economic position (in this case, education), thus complementing OLS and related techniques, which elucidate average effects.

### OUTCOMES

There were a total of 1,081 children aged 6-11 in the CHMS. Other than the subsample analysis (for which \( n = 525 \)), our analyses are based on 1,017 children with complete data on all variables (94.1% of the full sample). Descriptive statistics for the study sample are provided in Table 2. Estimates for the full sample (column 1) illustrate a relatively high socio-economic status overall: for example, nearly half of respondents lived in households that fell into the highest income adequacy category, and nearly three quarters lived in households where the home was owned (versus rented).

Table 3 shows the results of the OLS regression, main effects models (unadjusted [Model A] and adjusted for covariates [Model B]) and models containing interaction terms (unadjusted [Model C] and adjusted for covariates [Model D]). The main effects models show a marginal effect of fluoridation whereby fluoridation was associated with fewer dmftDMFT. Higher household education and brushing one’s teeth at least twice/day were also associated with fewer dmftDMFT. Having visited the dentist at least once in the past year was associated with increased dmftDMFT, which probably reflects oral health problems prompting a visit to the dentist. Marginal effects were observed for the middle income adequacy category (associated with higher dmftDMFT compared with the low income adequacy category) and home ownership (associated with fewer dmftDMFT compared with renting one’s home).

---

**Table 2.** Descriptive Statistics for Study Sample (Children Aged 6-11 Years, \( n = 1,017 \)) from the Canadian Health Measures Survey (Weighted Data Shown), Overall and by Fluoridation Status

<table>
<thead>
<tr>
<th>Variable</th>
<th>Full Sample (( n = 1,017 ))</th>
<th>Fluoridation: No/Mixed (( n = 628 ))</th>
<th>Fluoridation: Yes (( n = 389 ))</th>
</tr>
</thead>
<tbody>
<tr>
<td>dmftDMFT,* mean</td>
<td>2.42 (SD 3.1)</td>
<td>2.6 (SD 3.2)</td>
<td>2.2 (SD 3.0)</td>
</tr>
<tr>
<td>dmftDMFT, score</td>
<td>0</td>
<td>443 (43.6)</td>
<td>255 (40.6)</td>
</tr>
<tr>
<td></td>
<td>1-2</td>
<td>219 (21.6)</td>
<td>136 (21.7)</td>
</tr>
<tr>
<td></td>
<td>3+</td>
<td>354 (34.8)</td>
<td>237 (37.7)</td>
</tr>
<tr>
<td>Brush teeth at least twice/day</td>
<td>No</td>
<td>294 (28.9)</td>
<td>154 (24.5)</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>723 (71.1)</td>
<td>474 (75.5)</td>
</tr>
<tr>
<td>Floss at least five times/week</td>
<td>No</td>
<td>896 (88)</td>
<td>545 (86.8)</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>121 (11.9)</td>
<td>83 (13.2)</td>
</tr>
<tr>
<td>Visit dentist at least once/year</td>
<td>No</td>
<td>76 (7.4)</td>
<td>31 (4.9)</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>941 (92.6)</td>
<td>597 (95.1)</td>
</tr>
<tr>
<td>Sugary drink daily</td>
<td>No</td>
<td>744 (73.1)</td>
<td>440 (70.1)</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>273 (26.9)</td>
<td>188 (29.9)</td>
</tr>
<tr>
<td>Sex</td>
<td>Male</td>
<td>512 (50.4)</td>
<td>317 (50.4)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>505 (49.6)</td>
<td>311 (49.6)</td>
</tr>
<tr>
<td>Highest household education</td>
<td>High school grad.</td>
<td>179 (17.6)</td>
<td>113 (18)</td>
</tr>
<tr>
<td></td>
<td>Certif./diploma</td>
<td>449 (44.2)</td>
<td>272 (43.3)</td>
</tr>
<tr>
<td></td>
<td>Bachelor’s degree</td>
<td>267 (26.3)</td>
<td>170 (27.1)</td>
</tr>
<tr>
<td></td>
<td>&gt;Bachelor’s degree</td>
<td>122 (12)</td>
<td>73 (11.6)</td>
</tr>
<tr>
<td>Income adequacy</td>
<td>Low</td>
<td>267 (26.3)</td>
<td>174 (27.7)</td>
</tr>
<tr>
<td></td>
<td>Middle</td>
<td>267 (26.3)</td>
<td>148 (23.5)</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>483 (47.5)</td>
<td>307 (48.9)</td>
</tr>
<tr>
<td>Owns home</td>
<td>No</td>
<td>258 (25.4)</td>
<td>143 (22.7)</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>759 (74.6)</td>
<td>485 (77.3)</td>
</tr>
<tr>
<td>Dental insurance</td>
<td>No</td>
<td>198 (19.5)</td>
<td>123 (19.5)</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>819 (80.5)</td>
<td>505 (80.5)</td>
</tr>
<tr>
<td>Born in Canada</td>
<td>No</td>
<td>77 (7.6)</td>
<td>50 (8.0)</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>940 (92.4)</td>
<td>578 (92.0)</td>
</tr>
<tr>
<td>Lived in home at least 2 years</td>
<td>No</td>
<td>168 (16.5)</td>
<td>104 (16.5)</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>849 (83.5)</td>
<td>524 (83.5)</td>
</tr>
<tr>
<td>Usually drinks tap water</td>
<td>No</td>
<td>430 (42.2)</td>
<td>283 (45.1)</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>587 (57.8)</td>
<td>345 (54.9)</td>
</tr>
<tr>
<td>Source of tap water</td>
<td>Municipal system</td>
<td>861 (84.7)</td>
<td>214 (18.1)</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>156 (15.3)</td>
<td>514 (81.9)</td>
</tr>
</tbody>
</table>

* dmftDMFT=decayed, missing, filled teeth (deciduous or permanent).

Note: counts and percentages may not add exactly to 100% because of rounding.
Two significant fluoridation status × socio-economic position interaction effects were observed (Models C and D): fluoridation status × certificate/diploma (household education) and fluoridation status × high income adequacy. To interpret these interactions, we used coefficients from model D (Table 3) to plot predicted dmft-DMFT. In the high income adequacy category, relative to low-income adequacy conditions and markedly better in the lowest income adequacy households than in low. In the fluoridation condition, mean dmft-DMFT was slightly lower (better) in the high-income adequacy condition, relative to low-income adequacy conditions and markedly better in the lowest income adequacy households than in low.

The results from the MLR analysis were substantively similar to those from the OLS models; thus we do not present them in full. Statistically significant effects were predominantly observed in the comparison between the two extreme categories of the outcome variable (3 or more dmftDMFT versus 0), thus we highlight some effects from that comparison in the adjusted models. We observed a protective effect of fluoridation; that is, fluoridation was associated with significantly reduced odds of having 3 or more dmft-DMFT versus 0 (coefficient = -0.44, 95% confidence interval [CI] -0.81 to -0.06, p=0.024). Higher household education (p=0.001) and visiting the dentist at least once in the past year was associated (p=0.006) with increased odds of having 3 or more dmftDMFT (versus 0); having visited the dentist at least once in the past year was associated (p=0.006) with increased odds of having 3 or more dmftDMFT (versus 0). In the adjusted models containing interaction terms, the fluoridation status by high income adequacy term was statistically significant (coefficient -1.19, 95% CI -2.3 to -0.06, p=0.039, similar pattern to the OLS models). The interaction between fluoridation and household education observed in the OLS models was not statistically significant in the MLR model (p=0.14).

We reran both OLS and MLR models for the subsample of respondents who reported that they usually drank tap water and that they had lived in their current home for at least 2 years (n=525). Main effects findings were substantively similar; for example, fluoridation had a protective effect that was marginally significant in the adjusted OLS model (coefficient = -0.72, 95% CI -1.5 to 0.06, p=0.07) and significant at the conventional 0.05 level in the MLR model (coefficient = -0.87, 95% CI -1.4 to -0.33, p=0.001 for effect of fluoridation on odds of 3 or more versus 0 dmftDMFT). No interaction terms were statistically significant in the OLS subsample models; in the MLR subsample models, there was a marginally significant interaction between fluoridation status and certificate/diploma (household education) (coefficient 1.68, 95%

### Table 3. Results of Ordinary Least Squares Regression Among Children Aged 6-11 (n=1,017) from the Canadian Health Measures Survey

<table>
<thead>
<tr>
<th>Variable</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluoridation status (reference=no/mixed)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>-0.53 (-1.1 to 0.02)**</td>
<td>-0.49 (-1.0 to 0.03)**</td>
<td>-1.6 (-3.4 to 0.28)**</td>
<td>-1.6 (-3.4 to 0.12)**</td>
</tr>
<tr>
<td>Household education (reference=high school graduation)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;Bachelor's degree</td>
<td>-1.3 (-2.4 to -0.3)†</td>
<td>-1.2 (-2.2 to -0.09)†</td>
<td>-1.8 (-3.2 to -0.4)†</td>
<td>-1.6 (-3.1 to -0.21)†</td>
</tr>
<tr>
<td>Bachelor's degree</td>
<td>-1.7 (-2.5 to -0.9)†</td>
<td>-1.6 (-2.4 to -0.8) †</td>
<td>-2.0 (-3.2 to -1.0)§</td>
<td>-2.0 (-3.0 to -0.97)§</td>
</tr>
<tr>
<td>Certif./diploma</td>
<td>-0.57 (-1.5 to 0.32)</td>
<td>-0.56 (-1.4 to 0.25)</td>
<td>-1.3 (-2.4 to -0.27)†</td>
<td>-1.3 (-2.3 to -0.37)§</td>
</tr>
<tr>
<td>Income adequacy (reference=low)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>0.47 (-0.30 to 1.2)</td>
<td>0.40 (-0.32 to 1.1)</td>
<td>1.2 (0.24 to 2.1)†</td>
<td>1.0 (0.16 to 1.9)†</td>
</tr>
<tr>
<td>Mid</td>
<td>0.69 (-0.12 to 1.5)**</td>
<td>0.65 (-0.10 to 1.4)**</td>
<td>0.90 (0.04 to 1.8) †</td>
<td>0.80 (0.04 to 1.6)**</td>
</tr>
<tr>
<td>Home ownership (reference=rent)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Own</td>
<td>-0.79 (-1.5 to -0.05)†</td>
<td>-0.65 (-1.4 to 0.07)**</td>
<td>-0.82 (-1.6 to 0.002)**</td>
<td>-0.77 (-1.6 to 0.04)**</td>
</tr>
<tr>
<td>Dental insurance (reference=no)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>-0.07 (-0.80 to 0.67)</td>
<td>-0.37 (-1.1 to 0.35)</td>
<td>-0.42 (-1.4 to 0.52)</td>
<td>-0.64 (-1.5 to 0.26)</td>
</tr>
<tr>
<td>Fluoridation × household education (interaction term)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FL × &gt;Bach. degree</td>
<td>–</td>
<td>–</td>
<td>1.4 (-0.52 to 3.2)</td>
<td>1.3 (-0.50 to 3.2)</td>
</tr>
<tr>
<td>FL × Bach. degree</td>
<td>–</td>
<td>–</td>
<td>1.2 (-0.30 to 2.7)</td>
<td>1.1 (-0.34 to 2.5)</td>
</tr>
<tr>
<td>FL × Cert./diploma</td>
<td>–</td>
<td>–</td>
<td>2.0 (0.30 to 3.6)†</td>
<td>2.0 (0.39 to 3.6)†</td>
</tr>
<tr>
<td>Fluoridation × income adequacy (interaction term)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FL × high income adequacy</td>
<td>–</td>
<td>–</td>
<td>-1.8 (-3.4 to -0.24)†</td>
<td>-1.7 (-3.2 to -0.23)†</td>
</tr>
<tr>
<td>FL × mid-income adequacy</td>
<td>–</td>
<td>–</td>
<td>-0.71 (-2.4 to 1.02)</td>
<td>-0.55 (-2.2 to 1.1)</td>
</tr>
<tr>
<td>Fluoridation × home ownership (interaction term)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FL × own</td>
<td>–</td>
<td>–</td>
<td>0.20 (-1.2 to 1.6)</td>
<td>0.41 (-0.94 to 1.8)</td>
</tr>
<tr>
<td>Fluoridation × dental insurance (interaction term)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FL × dental insurance</td>
<td>–</td>
<td>–</td>
<td>0.75 (-0.63 to 2.1)</td>
<td>0.54 (-0.72 to 1.8)</td>
</tr>
<tr>
<td>Brushes teeth at least twice/day (reference: no)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>–</td>
<td>-1.1 (-1.8 to -0.4)‡</td>
<td>–</td>
<td>-1.1 (-1.7 to -0.46)‡</td>
</tr>
<tr>
<td>Flosses teeth at least five times/week (reference: no)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>–</td>
<td>-0.18 (-0.76 to 0.40)</td>
<td>–</td>
<td>-0.22 (-0.82 to 0.37)</td>
</tr>
<tr>
<td>Visited dentist at least once in the past year (reference: no)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1.8 (1.0 to 2.7)§</td>
<td>–</td>
<td>1.8 (1.0 to 2.6)§</td>
<td>–</td>
</tr>
<tr>
<td>Sugary drink at least once/day (reference: no)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>0.49 (-0.16 to 1.2)</td>
<td>–</td>
<td>0.47 (-0.15 to 1.1)</td>
<td>–</td>
</tr>
<tr>
<td>Born in Canada (reference: no)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>-0.15 (-0.89 to 0.59)</td>
<td>–</td>
<td>-0.20 (-0.95 to 0.54)</td>
<td>–</td>
</tr>
</tbody>
</table>

* Outcome variable is number of decayed, missing or filled teeth, deciduous or permanent (dmftDMFT). Model A: dmftDMFT regressed on fluoridation status and socio-economic status (SES) variables. Model B: dmftDMFT regressed on fluoridation status and SES variables, adjusted for covariates. Model C: dmftDMFT regressed on fluoridation status, SES variables and fluoridation × SES interaction terms. Model D: dmftDMFT regressed on fluoridation status, SES variables and fluoridation × SES interaction terms, adjusted for covariates.

**p<0.10, †p<0.05, ‡p<0.01
CI -0.22 to 3.6, p=0.084, similar pattern to fluoridation × education interaction observed elsewhere), for effect on odds of 1-2 versus 0 dmftDMFT in adjusted models.

The concentration index of inequality in dmftDMFT by household education was -0.18 (95% CI -0.28 to -0.08) in the fluoridated communities and -0.16 (95% CI -0.23 to -0.09) in the no/mixed fluoridated communities (as reference, the index is bounded by -1 and +1). Both values differ significantly from zero in the negative direction, indicating a disproportionate concentration of dmftDMFT within lower education households in both fluoridated and no/mixed fluoridated communities. The two values do not differ from one another.

**DISCUSSION**

Among children aged 6 to 11 in the CHMS, we detected an inverse association between community drinking water fluoridation status and oral health outcomes, such that fluoridation was associated with fewer decayed, missing and filled teeth. Interpretation of interaction terms, used to test for a differential effect of fluoridation on dmftDMFT by socio-economic circumstances, indicated a beneficial effect across socio-economic categories that appeared particularly high in the income adequacy and the lower education households. The concentration index of education-related inequity indicated that dmftDMFT were disproportionately concentrated in lower education households, though this did not differ by fluoridation status.

We seek to interpret these findings in light of our objective, which was to understand the relation between fluoridation and oral health inequities. First, the protective main effect of fluoridation was observed in both OLS (marginal significance) and MLR models, was robust to adjustment for four socio-economic measures and four oral-health-related covariates, was particularly strong for more severe oral health outcomes (3 or more dmftDMFT versus 0) and, despite reduced statistical power, was maintained in the smaller subsample for which the exposure measurement was arguably improved. This effect of fluoridation is thus consistent with the assertion that fluoridation benefits everyone, regardless of socio-economic circumstances and above and beyond dental-related behaviours.

In terms of the equity of fluoridation, our findings tell a more nuanced story. As noted, social inequities in health refer to differences in health between (in this case) socio-economic groups where the differences favour those higher in socio-economic circumstances and are seen as unfair and avoidable. From this perspective, an intervention that is equitable would have a proportionally greater impact among those of lower socio-economic circumstances, whose health status is poorer to begin with. This is the pattern we observed with household education: fluoridation was associated with better oral health than no/mixed fluoridation across various education levels, but particularly among those in the lowest education category. For income, on the other hand, although benefits were seen across categories, the apparently largest benefit was for those in the highest income adequacy group. As noted by Harper et al., the study of health inequalities involves value judgements about what is fair or socially acceptable, and these value judgements may lead to different interpretations of the same data. Some may view our income effect as non-equitable because the higher income adequacy group (who are not socio-economically deprived) appear to be disproportionately benefitting from fluoridation. Others may view it as equitable because the greatest benefit was seen in the group with the poorest health status.

When judging the benefits of an intervention, one must consider both differential impact across socio-economic groups and overall impact on the population. For example, if an intervention produced no benefit for the lowest socio-economic group and some benefit for the higher socio-economic groups, health inequalities would increase but average or overall population health would improve (which many would view positively). According to our findings, better health outcomes in the fluoridation group were
apparent across all income categories, thereby resembling a distribution shift as described by Rose. Because all income groups were better off (lower dmftDMFT) in the fluoridation condition, and none was worse off in an absolute sense, we believe that the effect of fluoridation can be viewed as a positive one. The alternative position – to emphasize the negative income gradient in the fluoridated group, favouring the rich – would require one to privilege equity as the dominant principle over population health. Our findings also enable reflection on the libertarian critique of water fluoridation: one could argue that impingement on personal liberty (in the form of fluoridation) is justified, because harm associated with impingement is offset by health gains for the population as a whole.

Whereas our OLS and MLR analyses allowed us to estimate the average associations among fluoridation status, socio-economic variables and oral health, the concentration index provides additional information about the distribution of the oral health outcome across the population's socio-economic distribution. Our computation confirmed that dmftDMFT is disproportionately concentrated among children from lower-education households, in both fluoridated and no/mixed fluoridation communities. By way of improving the interpretability of the index, a computation provided in O'Donnell et al. was used and yielded the percentage of dmftDMFT that would need to be redistributed from the lower to the higher education categories to achieve an equal distribution of dmftDMFT. The values are 13.4% and 11.8% in fluoridated and no/mixed fluoridation communities, respectively. The concentration index did not differ in fluoridated versus no/mixed fluoridation communities. By way of improving the interpretability of the index, a computation provided in O'Donnell et al. was used and yielded the percentage of dmftDMFT that would need to be redistributed from the lower to the higher education categories to achieve an equal distribution of dmftDMFT. The values are 13.4% and 11.8% in fluoridated and no/mixed fluoridation communities, respectively. The concentration index did not differ in fluoridated versus no/mixed fluoridation communities, suggesting that fluoridation is not sufficient to offset the disproportionate concentration of dmftDMFT in lower education households.

Against the backdrop of our nuanced findings about the equitability of fluoridation, we consider the assertion made by some that there are other viable options, aside from fluoridation, to improve the oral health of children. The findings of O’Donnell et al. were used and yielded the percentage of dmftDMFT that would need to be redistributed from the lower to the higher education categories to achieve an equal distribution of dmftDMFT. The values are 13.4% and 11.8% in fluoridated and no/mixed fluoridation communities, respectively. The concentration index did not differ in fluoridated versus no/mixed fluoridation communities, suggesting that fluoridation is not sufficient to offset the disproportionate concentration of dmftDMFT in lower education households.

The limitations of our study include the cross-sectional nature of the data, which do not allow us to discern fluoride's impact on oral health outcomes, and the residual inaccuracies of our fluoride exposure variable. Nonetheless, we were able to detect a beneficial main effect of fluoridation on the tooth-level caries of children from a national sample, a benefit across socio-economic groups and an equitable effect to the extent that those with the worst outcomes benefited most, on average. Polarized viewpoints on drinking water fluoridation as a population/public health intervention have led to its elimination or uncertain status in many Canadian communities. Our findings support its continued use.

REFERENCES

RÉSUMÉ

Objectifs : L’un des arguments en faveur de la fluoration de l’eau potable est qu’il s’agit d’une mesure dont l’impact sur la santé buccodentaire est équitable. Nous avons examiné l’association entre l’exposition à la fluoration et les inégalités en santé buccodentaire chez les enfants canadiens.

Participants, lieu et intervention : Nous avons analysé les données de 1 017 enfants de 6 à 11 ans tirées du 1er cycle de l’Enquête canadienne sur les mesures de la santé, une enquête transversale représentative à l’échelle du pays qui comporte un examen clinique de la santé buccodentaire et un entretien avec le ménage. Notre mesure de résultat était le décompte des dents cariées, manquantes (en raison de caries ou de maladies parodontales) ou plombées, temporaires ou permanentes (dcmpDCMP). Les données ont été analysées par régression logistique linéaire (méthode ordinaire des moindres carrés) et multinomiale; nous avons aussi calculé l’indice de concentration pour les inégalités en santé buccodentaire liées à la scolarité. La fluoration ou non de l’eau (l’intervention) a été déterminée selon l’emplacement du site de collecte des données.

Résultats : La fluoration était associée à une meilleure santé buccodentaire (moins de dcmpDCMP), compte tenu de diverses variables socioéconomiques et comportementales, et cet effet était particulièrement fort pour les problèmes de santé buccodentaire les plus graves (trois dcmpDCMP ou plus). L’effet de la fluoration sur les dcmpDCMP a été observé dans toutes les catégories de revenu et de scolarité, mais semblait particulièrement prononcé au sein des ménages dont les niveaux de scolarité et de revenu étaient inférieurs. Les dcmpDCMP étaient démesurément concentrées dans les ménages à faible niveau de scolarité, mais ce résultat ne variait pas selon que leur eau était fluorée ou non.

Conclusion : L’effet principal de la fluoration sur les dcmpDCMP, et son effet bénéfique dans tous les groupes socioéconomiques, montrent qu’il s’agit d’une intervention en santé des populations à la fois bénéfique et justifiée. La fluoration était équitable au sens où ses avantages étaient particulièrement apparents dans les groupes dont le profil de santé buccodentaire était le pire, mais la nature des résultats devrait nous inciter à tenir compte des valeurs qui sous-tendent le verdict d’équité.

Mots clés : Canada; fluoration; santé buccodentaire; facteurs socioéconomiques
Exploring the Value of Mixed Methods Within the At Home/Chez Soi Housing First Project: A Strategy to Evaluate the Implementation of a Complex Population Health Intervention for People With Mental Illness Who Have Been Homeless

Eric L. Macnaughton, PhD, Paula N. Goering, PhD, Geoffrey B. Nelson, PhD

ABSTRACT

Objective: This paper is a methodological case study that describes the At Home/Chez Soi (Housing First) Initiative’s mixed-methods strategy for implementation evaluation and discusses the value of these methods in evaluating the implementation of such complex population health interventions.

Target Population: The Housing First (HF) model is being implemented in five cities: Vancouver, Winnipeg, Toronto, Montréal and Moncton.

Intervention: At Home/Chez Soi is an intervention trial that aims to address the issue of homelessness in people with mental health issues. The HF model emphasizes choices, hopefulness and connecting people with resources that make a difference to their quality of life. A component of HF is supported housing, which provides a rent subsidy and rapid access to housing of choice in private apartments; a second component is support.

Outcomes: The findings of this case study illustrate how the critical ingredients of complex interventions, such as HF, can be adapted to different contexts while implementation fidelity is maintained at a theoretical level. The findings also illustrate how the project’s mixed methods approach helped to facilitate the adaptation process. Another value of this approach is that it identifies systemic and organizational factors (e.g., housing supply, discrimination, housing procurement strategy) that affect implementation of key elements of HF.

Conclusion: In general, the approach provides information about both whether and how key aspects of the intervention are implemented effectively across different settings. It thus provides implementation data that are rigorous, contextually relevant and practical.

Key words: Homelessness; mental health; complex community interventions

The purpose of this paper is to discuss and illustrate the value of mixed methods in evaluating the implementation of complex population health interventions. In it, we present a methodological case study focusing on the implementation evaluation of the At Home/Chez Soi initiative. This is a research demonstration project designed to address the issue of homelessness, which over the past 30 years has become recognized as a serious social problem affecting a disproportionate number of people with mental health issues, many of whom also have addictions and other problems (e.g., poverty, isolation, unemployment). In the first part of the paper, we describe the demonstration project, the Housing First (HF) intervention it seeks to implement, as well as the evidence supporting it. We then discuss the methodology, both the rationale and the actual steps, of the project’s evolving mixed-methods strategy for implementation evaluation. Finally, by presenting early findings on implementation, we illustrate the value of mixed methods for implementing and understanding complex interventions.

Intervention

At Home/Chez Soi is the largest mental health services intervention trial ever mounted in Canada. On behalf of the Mental Health Commission of Canada, it seeks to implement and evaluate in five different cities (Vancouver, Winnipeg, Toronto, Montréal and Moncton) the HF model (sometimes referred to as the Pathways model) for 2,234 people. The HF model (see Box 1 for a more complete description) combines various research-based approaches, all with a recovery philosophy that emphasizes choices, hopefulness and connecting people with resources that make a difference to their quality of life. The first component is “supported housing”, which in contrast to “supportive housing” – i.e., congregate housing with on-site support – provides a rent subsidy and rapidly secures tenancy for individuals in private apartments in regular community dwellings. Rather than being provided on-site, support is provided to the individual by a mobile case management team, which is the second major component of the HF intervention. For

Author Affiliations

1. At Home/Chez Soi Project, Mental Health Commission of Canada, Calgary, AB
2. Centre for Addiction and Mental Health, Department of Psychiatry, University of Toronto, Toronto, ON
3. Department of Psychology, Wilfrid Laurier University, Waterloo, ON

Correspondence: Eric Macnaughton, 5475 Sophia St., Vancouver, BC V5W 2W2, Tel: 604-687 3996, E-mail: emacnaug@telus.net

Acknowledgements: Thanks go to the national At Home/Chez Soi project team: Jayne Barker, PhD (2008-11), and Cameron Keller, Mental Health Commission of Canada (MHCC) National Project Leads; Catharine Humé, MSc, National Program Director, and approximately 40 investigators from across Canada and the US. In addition we acknowledge five site coordinators and numerous service and housing providers, as well as those people for whom the intervention is intended. We thank the members of the At Home/Chez Soi National Qualitative Research Team, Myra Piat, Nathalie Egalité, Lauren Polvere, Greg Townley and Susan Eckerle Curwood for their contributions to this research.

The research has been made possible through a financial contribution from Health Canada to the MHCC. The first author was supported through a fellowship from the Canadian Health Services Research Foundation. The views expressed herein represent solely those of the authors. The funders played no role in the research design, data collection or interpretation, or in the decision to submit the manuscript for publication.

Conflict of Interest: None to declare.

© Canadian Public Health Association, 2012. All rights reserved.

CANADIAN JOURNAL OF PUBLIC HEALTH • SEPTEMBER/OCTOBER 2012 S57
EXPLORING THE VALUE OF MIXED METHODS WITHIN THE AT HOME/CHEZ SOI HOUSING FIRST PROJECT

Box 1. Housing First (HF) Model

The Housing First model merges the evidence-based practices of Supported Housing and case management (delivered in one of two formats, Intensive Case Management or Assertive Community Treatment, depending on level of need, see below).

Supported Housing: Basic Program Elements

- **Choice:** Housing is provided according to consumer choice (which, for the most part, is assumed to be private units in regular apartment buildings in the community, in contrast to the model known as “supportive housing” or “continuum housing”, which places people in congregate residential facilities with built-in mental health support of different levels, where residents may have to move to different facilities as their level of need changes).
- **Availability & access:** Compared with traditional supportive housing approaches, housing is made available to participants relatively quickly, with the expectation that the majority of participants move into their apartments within 6 weeks of entering the program; housing stock is procured through a housing agency that works for the program.
- **Affordability:** Rent supplements are provided so that participants can access housing in the private market; participants pay 30% or less of their income or the shelter portion of welfare.
- **Permanence/commitment to re-house:** Participants have standard leases and the tenancy protection that comes with this; should they be evicted, the program is committed to finding the participant another place.

Housing is provided according to consumer choice (which, for the most part, is assumed to be private units in regular apartment buildings in the community, regardless of whether they participate in treatment). Evidence regarding the effectiveness of HF in producing positive outcomes for homeless people with mental health issues has been reported in several recent reviews. It is important to note that the HF model to local circumstances in a way that was consistent with the underlying principles of the intervention. Thus, the challenge was to conceptualize a research design able to develop evidence that was both rigorous from a traditional scientific perspective and relevant to the implementation concerns of local stakeholders and decision-makers. As we describe below, the project did this by adopting a randomized controlled trial (RCT) design and an implementation evaluation strategy that was modified in keeping with the complex HF intervention.

From the standpoint of traditional scientific rigour, faithful implementation of critical intervention ingredients is essential to making sound inferences that observed trial outcomes are, in fact, attributable to the intervention. Towards this end, the At Home/Chez Soi project leaders worked with the model’s founders to develop a practice manual, carry out regular cross-site staff training events and offer site-specific technical assistance as needed. Confirming faithful implementation also involved the use of a specially adapted quantitative fidelity assessment instrument and process using a scale that captured what were understood by HF experts to be the critical ingredients of the Pathways HF model. The same time, in acknowledgement of the complexity of the intervention and in keeping with the ideas of population health intervention research, the project leaders recognized that fidelity would have to be conceptualized and ascertained appropriately, and, as described further below, that the project’s evolving mixed-methods strategy could help complement the fidelity assessment (see Table 1 for an outline of the overall study methodology, as well as an outline of the overall qualitative and mixed-methods design). Complex interventions comprise numerous critical ingredients, whose mechanisms of action may have uncertain connections to outcome in different contexts. Given this, implementation of such interventions should achieve fidelity with presumed essential principles and functions across varied contexts rather than simply to a specific form of that component. Also, given the potential complexity of mechanism-context-outcome pathways, it is important...
Table 1. Key Elements of the At Home/Chez Soi Research Design

<table>
<thead>
<tr>
<th>Sites and Intervention Conditions*</th>
<th>Data Collection Periods and Outcome Measures</th>
<th>Conception, Planning and Implementation†</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vancouver: ACT + HF for high needs</td>
<td>Baseline: 6, 12, 18, 24 months</td>
<td>Qualitative study of project conception</td>
</tr>
<tr>
<td>ICM + HF for moderate needs</td>
<td>Measures: Eligibility screening (MINI International Neuropsychiatric Interview), Demographics, Housing, Vaccinal, and Service Use History, Residential Follow-Back Timeline, Vocation Time-Line Follow-Back, Perceived Housing Quality Items, Landlord Relations, Objective Housing Quality, Health, Social and Justice Service Use Inventory, Health Service Access Items, Colorado Symptom Index, Global Assessment of Individual Need – Substance Problem Scale, Comorbid Conditions List, Multnomah Community Ability Scale, EQ-SD (health status), SF-12 Health Survey (health status), Quality of Life Index, Social Support Items and Food Security, Recovery Assessment Scale, Community Integration Scale, Working Alliance Inventory, Service Satisfaction Scale</td>
<td></td>
</tr>
<tr>
<td>Winnipeg: ACT + HF for high needs</td>
<td>Cross-site qualitative study of project planning and proposal development</td>
<td></td>
</tr>
<tr>
<td>ICM + HF for moderate needs</td>
<td>Mixed-methods implementation evaluation: Cross-site qualitative implementation evaluation (done twice, first year and second year, in conjunction with fidelity assessments)</td>
<td></td>
</tr>
<tr>
<td>Toronto: ACT + HF for high needs</td>
<td>Fidelity assessments of each program at each site (done twice, first year and second year)</td>
<td></td>
</tr>
<tr>
<td>ICM + HF for moderate needs</td>
<td>Qualitative implementation evaluation is merged with quantitative fidelity evaluation at both points and analyzed using the methodology described in this article</td>
<td></td>
</tr>
<tr>
<td>Montreal: ACT + HF for high needs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICM + HF for moderate needs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moncton: ACT + HF for high and moderate needs</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* ACT, Assertive Community Treatment; ICM, Intensive Case Management; HF, Housing First, refers here to the Supported Housing intervention (HF is sometimes used to refer to the intervention as a whole, i.e., both the housing and support aspects of the program).
† Apart from the mixed-methods implementation/fidelity evaluation described in this paper, the conception and proposal development phases of the project are being studied using qualitative methods. A mixed-methods approach examining outcomes is emerging.

Developing a coherent mixed-methods methodology

In light of these considerations, mixed-methods approaches are increasingly considered useful and even necessary for RCT studies of complex interventions. However, a systematic review of such studies showed that the majority failed to employ mixed-methods approaches. Furthermore, those that did usually failed to “position their study within the on-going discussions about mixed methods research” (p. 326) and were conducted in such a way that the qualitative and quantitative aspects generally lacked coherence; for instance, they often failed to justify the use of mixed methods in methodological discussions, usually analyzed qualitative and quantitative data separately, and published these results separately. In order to achieve more methodological coherence, At Home/Chez Soi reviewed relevant methodological literature and then developed a Discussion Paper, which identified two key issues requiring consideration: choice of research paradigm and design function that fit the purpose of the study. In the current case, achieving “coherence” meant identifying a design within the mixed-methods literature that appropriately measured implementation of a complex intervention, i.e., one that ascertained the fidelity of critical ingredients according to quantitatively operationalized forms but was also sensitive to intervention functions that were better understood qualitatively.

Choice of research paradigm: Pragmatism

The first question raised by the Discussion Paper was whether using mixed methods was even acceptable, given arguments that inductive qualitative research constitutes a specific knowledge paradigm that produces evidence incommensurable with positivistic quantitative research. In consideration of the arguments of others, however, project leaders were comfortable situating mixed methods within the standpoint of pragmatism. As opposed to maintaining a strict induction/deduction split, pragmatism is defined by abduction (where inferences are gleaned by working back and forth between theory and data) and transferability (whether generalizations inferred from one setting are workable within another setting).

Consideration of mixed-methods design functions

According to pragmatism, the functions of the chosen design should fit the overall purpose of the study. Thus, it became important to consider literature outlining the various functions of mixed-methods approaches. The most common functions include triangulation (using qualitative methods to provide a parallel outcome “measure” that could cross-validate the quantitative one) and complementarity (using a second method in parallel to provide an enriched understanding of the concept that the first has measured). A third function, expansion, entails using multiple methods to examine more than one facet of a phenomenon. Expansion designs are particularly relevant for evaluation or trial research, as they can help explicate various components of a phenomenon (e.g., the context, process, ingredients, outcome of an intervention); and in their “integrated” form they can help explore the possible links between these elements.

Choosing and articulating an appropriate design

Drawing from a typology of expansion-type trial designs created by Creswell et al., project leaders identified one particular integrated expansion design – namely, a within-trial fidelity/implementation evaluation – as fitting the purposes of the study. By providing complementary measures of the fidelity with which critical intervention components were implemented, it helped to provide implementation data that were both rigorous and relevant to various contexts. As discussed more fully below, the approach sought to understand the contextual factors (e.g., resources, structures, relationships) that either facilitated or hindered the implementation of critical ingredients within and across sites. It also sought to build theoretical understanding regarding the importance of such ingredients and to determine whether apparent discrepancies between actual and ideal implementation represented fidelity gaps or necessary adaptations to local context. As befits a complex intervention, this would help establish theoretical fidelity.
EXPLORING THE VALUE OF MIXED METHODS WITHIN THE AT HOME/CHEZ SOI HOUSING FIRST PROJECT

(i.e., attention to essential functions of the intervention), rather than just attending to standardization of specific forms.

In terms of methodological coherence, the research team was confident that the use of mixed methods was justified and that the chosen form (mixed-methods fidelity evaluation) appropriately meshed form and function, given that the design enacts the mixed-methods functions of complementarity and expansion in order to ensure that there is appropriate implementation of critical intervention components and to build further understanding of the links between these components and outcomes of participants in this complex population health intervention.

Strategy of Inquiry
Using an instrument adapted from validated scales measuring recovery-oriented ACT implementation and supported housing, an external fidelity team spent several days in each site observing the functioning of the housing, ACT and ICM teams, and subsequently produced program-specific reports that included overall ratings on the intervention’s four main domains, as well as specific ratings on each of the dimensions within those domains. The ratings and accompanying comments and recommendations were communicated to the teams and were understood to reflect the team’s experience after 1 year and to provide data that could be used for program improvement. All parties were aware that the fidelity team would conduct a subsequent rating when the teams were more fully established.

Approximately 1 month after the first fidelity assessments, site qualitative researchers began a complementary process, using interview guides developed by the project’s National Qualitative Research Team, in collaboration with researchers at each of the project sites. While the purpose of the quantitative fidelity visits was to ascertain the extent to which critical ingredients had been implemented and to provide advice about program improvement, the purpose of the qualitative implementation evaluation was to delve further into the questions of how the implementation of critical ingredients was proceeding and how context was affecting their implementation and their possible relationship with outcomes.

Research Questions
For the purposes of this article, we describe only one of several key ingredient domains, “housing choice and structure”. The part of the fidelity scale addressing this domain includes items that measure the extent to which the program offers rapid access to regular apartments of participants’ choice. Two stakeholder-specific versions of the qualitative questionnaire addressed these research questions: How are critical ingredients of the intervention experienced/understood by key stakeholders (participants, service providers, principal investigators and site coordinators) as achieving the aims of that intervention? How do contextual factors such as resources, relationships and structures affect implementation? Are apparent discrepancies violations of fidelity or necessary adaptations of the model to context?

Sampling and Data Gathering
In each site, local qualitative researchers conducted key informant interviews with site coordinators, principal investigators, ACT and ICM team leaders, and housing team leaders. They also conducted separate focus groups with project participants and ACT and ICM staff. The number of people sampled varied by site but ranged roughly between 25 and 60 people over the course of 2 to 5 months. In addition, the National Qualitative Research Team conducted key informant interviews with seven informants. These included individuals who were involved with the fidelity visits and who were able to speak to cross-site issues affecting implementation, including governance, cross-site training and site-specific technical assistance. Finally, participants interviewed within a month of their entry into the project provided relevant information concerning the early impacts of the intervention. A total of 283 people were interviewed for the qualitative research on implementation.

Analysis and Integration
Local qualitative researchers employed thematic analysis using constant comparative analysis consistent with grounded theory. All sites employed a team-based approach to generating themes, which were either open-ended or generated according to several categories from the research instrument itself. Each team then submitted a report, after which the National Qualitative Research Team worked with the fidelity team to produce a synthesis report that reflected cross-site themes emerging from the qualitative site reports, national key informant interviews and the site fidelity reports.

Initial findings and insight into the value of the approach
At the time this paper was submitted, the demonstration project had passed the midway point in its 5-year timeframe. Below, we outline some initial implementation findings, as well as the value and challenges associated with the process. We do so using the domain of housing choice and structure, an important early implementation issue, as an example. While the quantitative findings identify problems implementing this particular program ingredient, the qualitative findings illuminate systemic implementation barriers. The qualitative data also provide insight into the significance of rapid housing choice to participants, as well as suggesting how contextual differences affect the meaning of “choice”.

Initial Quantitative Findings
As mentioned, the HF model seeks to offer participants immediate access to an apartment, where they receive a rent subsidy and become residents in a private dwelling in the community. Participants are meant to have much choice in the location and other features of their housing. Ideally, 85% of program participants move into a unit of their own choosing within 6 weeks of receiving a housing subsidy. Accomplishing this requires efforts and coordination on the part of mental health and housing teams. Mental health teams help to elicit participant choices. Programs’ housing teams are responsible for building relationships with potential landlords, doing the initial legwork to procure appropriate housing and helping the participant make the transition from the street into his or her own place. When measured against the ideals of the model, however, the quantitative fidelity reports suggested that providing such rapid access to dwellings of choice has been a challenge for some sites. The average rating for the item “housing availability” across the sites was 2.2 on a 1-4 scale, where 4 indicates maximum fidelity to the model.
Initial Qualitative Findings

In terms of implementation barriers or facilitators, qualitative site reports affirmed the importance of rent subsidies and housing team procurement strategies in expanding potential housing supply. However, the qualitative data also highlighted how systemic barriers, such as inadequate supply and discrimination, present significant challenges that hinder the housing team’s ability to ensure that participants have adequate choice. These reports also identified continuity of relationships as critical to achieving quicker access. One site needed to develop a better system of removing bottlenecks at the project screening phase and then referring, to the housing team, individuals who had completed the initial research screening. Other sites needed to develop closer working relationships between housing and ACT and ICM teams so that yet-to-be housed individuals could be identified and engaged.

The qualitative data also provided an enriched understanding of the significance of rapid access as a critical ingredient in the project’s overall theory of action. First of all, from the service provider perspective, the qualitative data highlighted the importance of rapid access to housing as an opportunity to “fulfill a promise” to the individual and thus as a vehicle for early engagement. From the consumer perspective, data from the narrative interviews suggested how unimpeded access to permanent housing provides an opportunity for initial healing and an orientation towards the future, thus representing a critical building block to the longer-term recovery process. The qualitative data also indicated, however, that private housing may raise concerns about isolation for some individuals. This suggests that for some participants, the meaning of “choice” connotes not only the opportunity to live in a private apartment but also the opportunity to choose among other options, including places with built-in support and on-site opportunities for social engagement.

The cross-site implementation evaluation report also highlighted the importance of culture in relation to access to private apartments of people’s choice. It was important to have housing teams based in organizations possessing a “nimble” enough organizational culture to quickly develop relationships with potential landlords. Culture in the ethnocultural sense also emerged as a relevant issue, as some key informants suggested that private apartments may be less attractive to individuals who, for cultural reasons, placed less value on privacy and individual choice and more on inter-connectedness.

The Value of the Approach

In general, this implementation strategy provided a picture of not only whether a critical ingredient was implemented, but also what factors contributed to or hindered its implementation. It also added insight about why certain ingredients are important to the program’s theory of action and how these ingredients may operate across different contexts; in this case, it suggested why choice over housing helps engage participants in care, as well as offering an understanding of how the ingredient of choice may play out differently depending on the individual or cultural context. This supports arguments made by Hawe et al and Hawe and Potvin that fidelity standards for ingredients of complex interventions (in this case, housing choice) in some cases are less well understood and measured in terms of form (e.g., whether an individual has access to a private apartment) than by functions or principles (i.e., whether a range of options are offered in response to the individual’s preference) and that mixed methods can help build fidelity at a functional or theoretical level. In doing so, this approach helps establish fidelity in a way that is appropriate for diverse contexts. At a practical level, our findings also remind HF proponents to provide an array of choices in addition to private apartments, as long as doing so does not impinge upon other critical ingredients (e.g., housing permanence) or violate the model’s fidelity standards.

In summary, by describing how the qualitative and quantitative approaches were conceptualized and carried out in tandem, we hope to have illustrated how a coherent mixed-methods approach can produce implementation data that are rigorous, contextually relevant and have practical benefit for guiding ongoing implementation of the Housing First intervention.

Challenges and future directions

As the At Home/Chez Soi initiative proceeds, the research teams will make some changes in order to maximize the potential of the mixed-methods approach to implementation fidelity. The project is a huge, complex undertaking that involved large amounts of data gathering, even before the mixed-methods strategy was conceived. Given competing priorities, it is understandable how qualitative implementation evaluation was seen by many as extra work. Further, the amount of work took several weeks and in some cases several months to complete, making it more difficult to feed back timely and useful information that could improve the quality of implementation.

In light of these challenges, research team members have planned ways in which the second phase of the qualitative implementation evaluation will be easier and quicker to do, as well as more closely integrated with the fidelity visits. During the first phase, the fidelity instrument was not finalized before the protocol for qualitative implementation evaluation had been developed. In the second phase, the fidelity assessment visits will dovetail more closely with the qualitative implementation evaluation, thus allowing for more focused questions that can help the project participants understand and guide the implementation of this intervention across various Canadian contexts.

CONCLUSION

In conclusion, while the RCT is generally considered to be the “gold standard” for inferring that an intervention caused a given outcome, qualitative research is key to ascertaining just what the intervention is and how it can be best implemented within a given context. Together, qualitative and quantitative methods help verify and guide implementation and extend our understanding of how to implement complex population health interventions successfully within different contexts, so that they can achieve the desired outcomes for the people they seek to help. We hope that this description of our approach illustrates how rigorous and relevant evidence for implementing and evaluating complex population health interventions can be created.

REFERENCES

EXPLORING THE VALUE OF MIXED METHODS WITHIN THE AT HOME/CHEZ SOI HOUSING FIRST PROJECT


8. Aubry T, Ecker J, Jetté J. Supported housing as a promising Housing First approach with severe and persistent mental illness. In: Guirguis M, McNeel R, Hwang S (Eds.), *Homelessness and Health;* accepted.


**RÉSUMÉ**

**Objectif :** Ceci est une étude de cas méthodologique décrivant la stratégie à méthodes mixtes qui évalue la mise en œuvre du modèle de priorité au logement de l’initiative Chez Soi/At Home; nous traitons aussi de l’utilité de telles méthodes pour évaluer la mise en œuvre d’interventions complexes en santé des populations.

**Population cible :** Le modèle de priorité au logement (PL) est appliqué dans cinq villes: Vancouver, Winnipeg, Toronto, Montréal et Moncton.

**Intervention :** Chez Soi est un essai d’intervention qui s’attaque au problème de l’itinérance chez les personnes aux prises avec la maladie mentale. Le modèle de PL met l’accent sur les choix, l’espoir et la mise en rapport des gens avec des ressources qui comptent pour leur qualité de vie. L’un des éléments du modèle est le logement subventionné: une partie du loyer est payée par le projet, et les bénéficiaires ont un accès rapide à un appartement privé de leur choix; un deuxième élément est le soutien. Des méthodes quantitatives et qualitatives ont été utilisées pour évaluer la mise en œuvre du modèle.

**Résultats :** Selon les constatations de cette étude de cas, les ingrédients essentiels d’une intervention complexe, comme le modèle de PL, peuvent être adaptés à différents contextes tout en respectant la mise en œuvre de l’intervention sur le plan théorique. On a aussi constaté que l’emploi de méthodes mixtes facilite ce processus d’adaptation. Une autre utilité de cette approche est qu’elle permet de repérer les facteurs généraux et organisationnels (cf., l’offre de logements, la discrimination, la stratégie d’obtention de logements) qui influencent la mise en œuvre des éléments clés du modèle de PL.

**Conclusion :** Dans l’ensemble, l’approche mixte permet de savoir si les aspects clés de l’intervention sont mis en œuvre efficacement à différents endroits, et de quelle façon. Elle fournit donc des données de mise en œuvre à la fois rigoureuses, pratiques et adaptées au contexte.

**Mots clés :** itinérance; santé mentale; interventions communautaires complexes
A Critical Look at a Nascent Field

Louise Potvin, PhD

ABSTRACT

A broad coalition of partners, entitled PHIRIC (Population Health Intervention Research Initiative for Canada), are working to increase the amount/quality of population health intervention research (PHIR) in our country. A central theme is to advance the science in this area. The current CJPH Supplement is welcomed as a set of diverse studies done to further our understanding of PHIR. The papers illustrate the range of questions that can be addressed and the variety of methods that need to be utilized. There is a need for critical reflection on three questions: 1) what constitutes PHIR? 2) which intervention parameters can be researched? and 3) what methods are recognized by the research community? Although legitimate attempts to define PHIR exist, the boundaries remain elusive. (Even the choice of articles in the current Supplement might be questioned.) It has cogently been argued that ‘true’ public health interventions intend to change risk conditions and alter distributions of health risk. This commentary suggests an important amendment to prior evaluation questions in stating that PHIR must pay attention to how intervention outcomes are distributed. There are also questions inherent in assessing the equity and distribution of an outcome. The bottom line is that we need to spread the word: more research is needed.

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

Can J Public Health 2012;103(Suppl. 1):S63-S64.

S

ince 2006, a broad coalition of partners from organizations involved in health policy and programs, social and health research and the diffusion of scientific knowledge has been implementing a work plan to increase the amount and quality of population health intervention research (PHIR).1 One of the important items on this work plan is to advance the science of PHIR.2 As a founding member of this coalition, PHIRIC (Population Health Intervention Research Initiative for Canada), I welcome the publication of this special issue of the CJPH that reports on nine studies undertaken to further our understanding of population health interventions. Not only do the papers presented here illustrate the wide range of interventions, in the form of policies and programs that are created and implemented to improve population health, but they also exemplify the diversity and richness of the research questions that can legitimately be addressed to interventions and consequently the variety of research methods that need to be utilized to provide valid answers to those questions. In developing the science of PHIR, inevitably we will have to critically reflect on those three issues that are basic to all sciences: 1) what constitutes a proper object for our field, i.e., what is a population health intervention? 2) Which intervention parameters can legitimately be researched? and 3) What methods are recognized as valid by the research community? It is certainly not the role of a special issue like this one to provide definitive answers to those questions; however, it can and should contribute to this reflection.

Population health intervention has been defined as a “policy or program, within or outside of the health sector that has the potential to impact health at the population level”3. Whereas this definition clearly identifies a policy such as water fluoridation (as in McLaren and Herbert’s article4) as a receivable object for PHIR because it aims at changing the exposure of the whole population to a protective factor in oral health, it also casts some doubts about other interventions that were selected for this special issue. For example, is a home visiting nursing program5 a population intervention or is it a nursing preventive practice that takes place in a community? Is it because this largely “social” practice of health professionals takes place outside of the medical setting that it can be qualified as “population”? I would argue that many interventions are difficult to classify, especially those that are dealing with preventive medical services. In reference to Rose6, Hawe and Potvin7 insisted that a population health intervention “intend[s] to change the conditions of risk in order to alter the distribution of health risk”. Contrary to the argument made by Jack and colleagues,8 I do not believe that the program of interest in their paper is a population health intervention, as it will not affect the distribution of health risk in the population. I acknowledge however that there is an overlapping zone between PHIR and medical care/health services research. To the extent that the research question deals with issues that are related to the delivery and access to specific groups in a population, an argument could certainly be made about the relevance of this type of study for a science of population health intervention.

Concerning the types of questions that are acceptable for a population health intervention science, Hawe and Potvin8 listed a series of evaluation questions that appeared relevant to guide enquiries on population health interventions. An important amendment needs to be made to this list. As exemplified in a couple of the papers published in this issue, PHIR pays particular attention to how the intervention outcomes are distributed in a population. Whereas this concern could be addressed under the generic issue of...
outcome evaluation, I believe that PHIR has much to gain if it were to champion the idea that outcome distribution across the whole population matters. There are a number of difficult methodological questions associated with assessing the equity of an intervention’s outcome distribution\(^8\) and PHIR should lead methodological development with regard to those questions.

Finally, it should be clear after having read the collection of papers presented in this special issue that, as a multidisciplinary endeavour, PHIR welcomes a diversity of methods. I believe that there are many more acceptable methods for PHIR than what was published here. Synthetic review, for example, although much more complex to implement when dealing with population health interventions than when assessing clinical interventions, is a very powerful methodology to synthesize knowledge about specific interventions and families of interventions. There is a need for serious methodological development that will provide guidelines for dealing with implementation variations in population health interventions.

The science of PHIR is still young. There is so much more to be known about population health interventions than the knowledge cumulated to date. That such knowledge is critical for public health practice should be obvious by now. We need to spread the word: more research is needed!

REFERENCES


RÉSUMÉ

Une large coalition de partenaires appelée l’IRISPC (Initiative de recherche interventionnelle en santé des populations du Canada) travaille à accroître la quantité et la qualité de la recherche interventionnelle en santé des populations (RISP) au pays. L’un de ses thèmes centraux est de faire progresser la science dans ce domaine. Le présent supplément à la *Revue canadienne de santé publique* est le bienvenu, car on y publie diverses études qui améliorent notre compréhension de la RISP. Les articles illustrent la gamme de questions que l’on peut aborder et la diversité des méthodes que l’on peut employer. Il faut réfléchir de façon critique à trois questions : 1) qu’est-ce que la RISP? 2) quels paramètres d’intervention peut-on étudier? et 3) quelles sont les méthodes reconnues dans le monde de la recherche? Bien qu’il existe des tentatives légitimes de définir la RISP, ses frontières demeurent floues. (Même le choix des articles pour ce supplément peut être mis en question.) Certains ont fait valoir de façon convaincante que les « vraies » interventions de santé publique ont pour intention de changer les conditions de risque sanitaire et d’en modifier la répartition. Dans ce commentaire, nous proposons d’apporter une modification importante aux questions d’évaluation antérieures, en énonçant que la RISP doit s’intéresser à la répartition des résultats d’une intervention. Il y a aussi des questions inhérentes à l’évaluation de l’équité et de la répartition d’un résultat. Pour l’essentiel, nous devons faire passer ce message : il est nécessaire de poursuivre la recherche.