System Dynamics Modeling of Employee Turnover Among Canadian Nursing Home Workers

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Abstract

Canada had one of the highest Covid-19 death rates worldwide in individuals living in nursing homes (NHs). In response, the province of Ontario with the largest population in Canada passed "The Fixing Long-Term Care Act" in 2021 to address long-standing issues in long-term care NHs. These issues include chronic underfunding, understaffing and poor working conditions that were compounded by increasing resident care needs. As a result, changes were made that included mandatory minimum hours of direct nursing and personal support worker (PSW) care, increased fines for NHs failing to meet standards, and an emphasis on resident rights for holistic care. Despite the Act's passage, problems retaining and recruiting PSWs make achieving the Act's commitments difficult. PSWs provide more than 80% of direct care to NH residents in Canada, helping with activities of daily living and providing emotional support and companionship. In Ontario, half of the PSW workforce leave the healthcare sector within 5 years and 43% left due to burnout. High PSW turnover disrupts care continuity and is associated with poorer quality of care and quality of life for residents. Contributing factors to PSW burnout include heavy workloads, systemic disrespect and underappreciation, and feelings of professional inefficacy. The Covid-19 epidemic further exposed the unaddressed need for a systemic approach to the long-standing issues that prevent better resident care and outcomes. The objective of this study was to develop a system dynamics (SD) model that could be used to help design more successful workforce-related policies to reduce PSW turnover and improve overall quality of care in NHs. We developed an SD model of PSW turnover consisting of four sectors: 1. The ministry-level sector that models the government's policies for direct hours of care, funding, care standards, compliance and enforcement. 2. The management-level sector that models organizational workplace culture and policies for PSW scheduling, backfilling, hiring, on-the-job training and upskilling. 3. The resident-family sector that tracks the flow of residents, their care needs, and family perceptions and expectations of care delivery. 4. The PSW responses sector that models the ways PSWs deal with challenging working conditions. We used causal loop diagrams to describe the complex feedback processes that lead to PSW turnover. One such process explores staff shortages leading to overwork/fatigue exacerbated by increasing resident complexity, productivity and quality declines from hiring new PSWs and employing temporary relief workers, and pervasive disrespect for the PSW profession that locks PSWs into a vicious cycle of "learned helplessness". Publicly reported NH data and those from the literature, PSW experiences extracted from group model building exercises, and historical home-specific data were used to build and calibrate the model for 4 NHs in Toronto, Ontario. The model is generalizable to an individual NH within and across provinces due to the similar working conditions in Canadian NHs. We discuss the results of several simulations that might reduce PSW turnover and improve care quality and their implications for governmental legislative changes and NH organizational practices and policies. We close with recommendations for policy design to reduce PSW turnover.

Keywords
System dynamics simulation, nursing home, personal support worker, employee turnover, and burnout.

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Biographies

Hannah J Wong is an Associate Professor in the School of Health Policy & Management, Faculty of Health, York University, Toronto Ontario Canada. She received her Ph.D. in Industrial Engineering, under the research field of Operations Research from the University of Toronto, Canada. Her research uses simulation modeling and statistical modeling to increase understanding of and insight into complex health care systems. She uses System Dynamics methodology to probe beyond the surface and reveal common causal themes that contribute to the relative levels of 'success' or 'failure' in organizational policy, management and operations. She uses regression techniques for the analysis of health services organization, delivery and outcomes data. Dr. Wong works with organization-specific clinical and administrative databases as well as large population-based health and social databases. Dr. Wong has taught courses in system dynamics, lean six sigma, statistics and research methods for undergraduate students in the Honors Bachelor of Health Studies Program at York University.

Tamara J Daly is a Professor in the School of Health Policy & Management, Faculty of Health, York University, Toronto Ontario Canada. Dr. Daly is a feminist political economist and health services researcher, an international expert on the relationship between nursing home resident and staff outcomes, and the policy and regulatory environments affecting services for seniors. Her scholarship highlights gender and health access and outcomes; advances working, living and visiting conditions in long term residential care; and promotes promising practices, principles and policies to improve access and health equity for older adults and for those who provide their care. She has authored more than 100 academic and plain language publications, is the recipient of teaching and research awards, and actively supervises students' research and towards publication. As an expert in care work, community supports, home care ageing and long-term care, Dr. Daly is frequently featured in the media on health care topics and at research and policy conferences. She has conducted ethnographic field work and survey data collection across 8 countries and received funding from the Canadian Institutes of Health Research (CIHR), the Social Sciences and Humanities Research Council (SSHRC), the Australian Research Council, the Alzheimer's Society and the European Research Council on Aging. Dr. Daly held a CIHR Research Chair in Gender, Care Work and Health from 2013-2018 and is the current Director of the York University Centre for Aging Research and Education.

Liane R Ginsburg is a Professor in the School of Health Policy & Management (SHPM), Faculty of Health, York University, Toronto Ontario Canada. She trained in healthcare organization and management at the University of Toronto where she received her PhD. She subsequently held a Career Scientist award from the Ontario Ministry of Health (2005-2010). Dr. Ginsburg has expertise in organizational behaviour and organization theory, including workplace culture, teamwork, and workforce outcomes. Dr. Ginsburg has extensively studied and published on nursing home staff outcomes in over 80 nursing homes in Western Canada as part of the Translating Research in Elder Care project and has expertise in integrated Knowledge Translation (iKT) research and practice. Publications in these areas appear in several tier one journals. Dr. Ginsburg currently chairs the CIHR Knowledge Translation Research peer review committee and is currently co-investigator on CIHR and other Ministry funded studies. Dr. Ginsburg is the current Associate Chair of the SHPM and teaches Applied Research Methods in Health to 4th year undergraduate students in the Honors Bachelor of Health Studies Program at York and Knowledge Translation research to students in the Graduate Program in Health.

Hsien Seow is a Professor in the Department of Oncology, Faculty of Health Sciences, McMaster University, Hamilton Ontario Canada. He earned a PhD from the Bloomberg School of Public Health, Johns Hopkins University, USA. Dr. Seow is the Canada Research Chair in Palliative Care and Health System Innovation. He is also an ICES and Escarpment Cancer Research Institute Scientist. Previously he held a CIHR New Investigator award and the Cancer Care Ontario Chair in Health Services Research. Dr. Seow was named in 2024 to the Royal Society of Canada's College of New Scholars, Artists and Scientists. The College recognizes mid-career leaders who are helping Canada and the world address major challenges and seize new opportunities, including those identified in emerging fields. Dr. Seow's research expertise is in health services and policy research, quality measurement and improvement, population-based analytics, program evaluation and quality indicator development. His interests involve ways to improve palliative care, particularly in the home and community as well as ways to support and improve the experience of family caregivers of those with serious, life limiting illnesses.