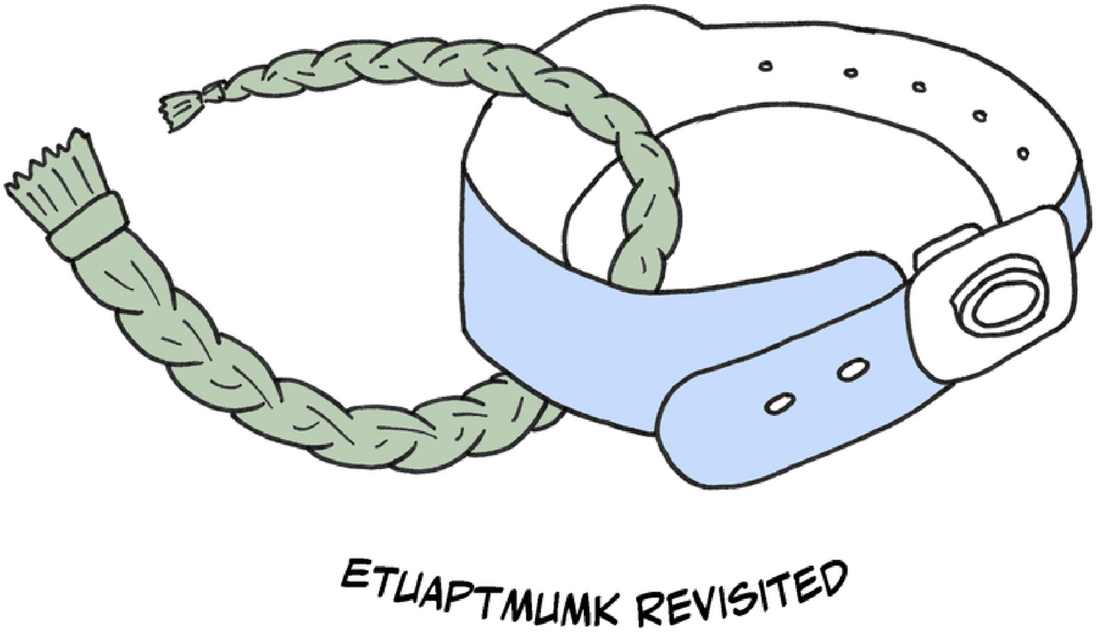
HEALTHY
POPULATIONS
JOURNAL

Volume 3 | No. 2
Spring 2023

ISSN: 2816-2536

Special Issue on Health Equity

In Partnership with the
Canadian Association for Health Sciences and Policy Research
Student Working Group



Cover Art by Jane Zhao. Read more about this special issue inside.

About the Cover and Special Issue

Supporting Student-led Health Research

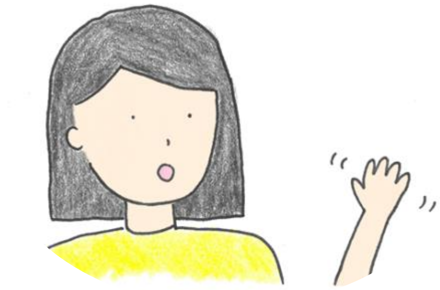
The Canadian Association for Health Sciences and Policy Research (CAHSPR) Student Working Group is a pan-Canadian, student-run, voluntary group. The Student Working Group was formed in 2008 to enhance and facilitate graduate student and postdoctoral fellow involvement in the annual CAHSPR conference and in the health services and policy research community.

When the CAHSPR Student Working Group proposed a collaboration with HPJ to create a special issue highlighting student-led health equity research, HPJ recognized this collaboration presented a unique opportunity that allowed us both to work towards our respective (and complementary) missions to promote trainee skill development and mobilize the outstanding research being produced by students and emerging researchers.

Thank you to CAHSPR Student Working Group members and colleagues who contributed to the planning of this special issue: Marichelle Leclair, Sahr Wali, Komal Aryal, Rose Gagnon, Roma Dhamanaskar, Mary Bunka, Carolyn Melro, & Zeenat Ladak.

About the Artist

Jane Zhao
University of Toronto



About the artist: Neuroscientist turned historian, Q. Jane Zhao is a healthy policy PhD student at the University of Toronto's Institute of Health Policy, Management and Evaluation (IHPME). Their work lies at the intersection of primary care, health policy, and stories.

They are an inaugural *Connaught PhDs for Public Impact Fellow* and a former *School of Cities Graduate Student Fellow*. They graduated from the Master's program in Narrative Medicine at Columbia University and studied neuroscience, history of medicine, and philosophy at McGill University.

If you get a chance to meet Jane, talk to them about Donna Haraway, climate action, and climbing.

Cover comic: The title of this comic is "Etuaptmumk Revisited" and it comes from several months of comic creation on a project communicating the realities and nuances of Indigenous heart health, health service delivery, and interplay with the social determinants of health. As Two-Eyed Seeing is a powerful concept to bring together our different ways of knowing, I wanted to challenge traditional depictions with human eyes and puzzle pieces. Instead, I asked myself: *what would a bridging of these two worlds look like?*

What came to me was the concept of interlinking bracelets, one of sweetgrass and one from the hospital. One link is used as a medicine, grounding and representing love and care; the other an object of identity, surveillance, and control.

I don't have an answer, what comes of this. Won't you join me to find out?

HPJ
HEALTHY
POPULATIONS
JOURNAL

Welcome from the Editors

We are so pleased to welcome readers to the sixth issue of the *Healthy Populations Journal* (HPJ), a special edition focusing on health equity. HPJ is a multi-faculty, student led, open access, peer-reviewed journal housed at HPI at Dalhousie University. HPJ aims to make academic authorship accessible for students by reducing barriers to publishing, sharing, and accessing research. As part of our mission to support and disseminate research which advances knowledge on population health research and global health equity, we partnered with the CAHSPR Student Working Group to create a special issue to facilitate a sharing of student-led research taking place across Canada.

As trainees in health services and policy research, we have conducted a large part of our graduate studies during the COVID-19 pandemic. Our identity as emerging scholars has been shaped by the social dynamics and political decisions made about the broader social and health system crises which have been brought to the forefront by COVID-19. In this context, we witnessed the repeated evocation of health equity among different entities in ways that used “equity” to characterize certain population groups in a deficit manner. To counter this narrative, the CAHSPR Student Working Group and HPJ wanted to create space to highlight strength-based health equity research efforts led by emerging scholars.

We carefully selected the articles in this issue to represent various fields of health services and policy research to broaden each other’s understanding on the range and complexities of health inequities and the impact they have on different populations. Research articles and commentaries in this issue explore wide-ranging and timely topics related to health equity including Ménard et al.’s call for more research on the impact of language discordance in long-term care; Anderson et al.’s discussion on child rights and wellbeing in Nova Scotia; Voss et al.’s reflections on promoting Exercise is Medicine on Campus for equity deserving groups; and O’Donnell et al.’s paper on parents’ use of social media to understand their child’s teething pain.

This issue features three literature reviews: McCoy et al.’s review on equitable transitions for patients receiving palliative/end-of-life care; Gilham et al.’s review on tools to appraise teachers’ mental health literacy; and Chanzu et al.’s review on the use of infographics and medication adherence. In addition, two research protocols describe important future work: Jefferies et al.’s rapid review protocol looking at initiatives for the advancement of Black nurses in Canada, and Aly et al.’s scoping review protocol for exploring frailty among older populations in Arabic-speaking countries. This issue concludes with a book review commentary by Machat and an infographic by Chanzu et al.

The cover of this issue features original art by Jane Zhao, a PhD student at University of Toronto.

This special issue would not be possible without support from the Healthy Populations Institute, CAHSPR SWG, and guidance from the HPJ Editorial Board Members. We hope you enjoy reading Volume 3, Issue 2.

Christie Stilwell
PhD in Health Student,
Dalhousie University
Co-Editor-in-Chief, HPJ

Stephanie Zubriski

Stephanie Zubriski
PhD in Health Student,
Dalhousie University
Co-Editor-in-Chief, HPJ

Julia Kontak

Julia Kontak
PhD in Health Student,
Dalhousie University
Managing Editor, HPJ

Marichelle Leclair
PhD Student,
Université de Montreal
Guest Editor, HPJ
CAHSPR SWG

HEALTHY
POPULATIONS
JOURNAL

Table of Contents

About the Cover and Special Issue

Welcome

Commentary

Research Protocols

Articles

Book Review/Commentary

Infographic

Closing

HPJ HEALTHY POPULATIONS JOURNAL

Commentary

More Research is Needed to Understand the Impact of Language Discordance in Long-Term Care in Canada

Alixe Ménard[1, 2], MSc; Mary M. Scott[1, 3], MSc; Annie H. Sun[1], MPH; Anna Cooper-Reed[1], PhD; Prabasha Rasaputra[1], BSc; and Amy T. Hsu[1, 3, 4], PhD
[1] Bruyère Research Institute, Ottawa, Ontario, Canada
[2] Faculty of Health Sciences, University of Ottawa
[3] Clinical Epidemiology Program, Ottawa Hospital Research Institute, Ottawa, Ontario, Canada
[4] Department of Family Medicine, University of Ottawa

DOI: 10.15273/hpj.v3i2.11596

Abstract

There is consistent evidence highlighting the risks of language barriers and discordance to quality care and patient safety, especially in primary care and hospital settings. However, there has been limited research on the impact of language barriers and discordance on quality care for older individuals residing in long-term care. In this commentary, we highlight select studies on differences in health care access and outcomes that linguistic minorities experience in Canadian long-term care homes, and discuss the importance of tackling language barriers and discordance to equitable long-term care. This article reflects on the impact of language discordance in health care, an identified determinant of health disparities, and calls for further research on health inequity experienced by older adults in Canada as well as strategies toward more equitable care.

Keywords: language, long-term care, outcome assessment, health equity

Communication is fundamental to high-quality health care. Barriers to good provider-patient communication can exist even when clinicians speak the same language as their patients. These challenges are amplified when the patient is an older person with cognitive impairment (de Vries, 2013; Robinson et al., 2006). While English and French remain the dominant languages in Canada, there is a growing number of Canadian residents who speak a non-official language at home. According to the 2021 Census, 4.6 million (13%) Canadians mostly speak a non-official language at home (Statistics Canada, 2022a). Among Canadians over 75 years old, 16% primarily speak a non-official language in their homes (Statistics Canada, 2022b). As the proportion of older adults who speak a non-official language grows, there is a parallel need to augment clinicians' and our health care system's ability to provide person-centred, culturally-safe care.

Individuals who are members of linguistic minorities and those belonging to ethnic and racialized communities commonly experience disparities in their interactions with the Canadian health care system (Cano-Ibáñez et al., 2021; Phillips-Beck et al., 2020; Seale et al., 2022). This may be attributable, in part, to structural inequalities and racism, a lack of health care providers who are able to holistically meet the needs of linguistic minorities in Canada, and a lack of trained interpreter services available to patients (de Moissac & Bowen, 2019; Kitching et al., 2020). These disparities may also be a result of unconscious bias and discrimination on the part of health care providers (de Moissac & Bowen, 2019; Kitching et al., 2020; Lane & Vatanparast, 2022; Marya & Patel, 2021; Steinberg et al., 2016).

Health equity is a public health priority aimed at creating equal opportunity for patients to reach their maximum health potential, regardless of their primary language or identity (Braveman et al., 2011). Language is an important aspect of communication, trust building, and cultural identity—all of which are factors in providing equitable care. This is particularly important for populations receiving care in long-term care (LTC) homes, as residents are often entirely dependent on the care team for their daily activities and health care needs.

Developing a better understanding of health care inequity in relation to the primary language spoken by patients is imperative to improving care for older adults receiving LTC. Yet, it is among the least examined health equity dimensions in Canadian literature, next to religion and gender identity (Canadian Institute for Health Information, 2016). Furthermore, while health administrative data in Canada currently capture the languages spoken by patients, many do not capture ethnicity. Accordingly, there is a scarcity of evidence on the experience of linguistic as well as ethnic minorities in the context of Canadian LTC settings. Below, we highlight select Canadian studies that have examined the impact of linguistic discordance on older individuals accessing and receiving care in LTC homes.

Understanding the Impact of Linguistic Discordance

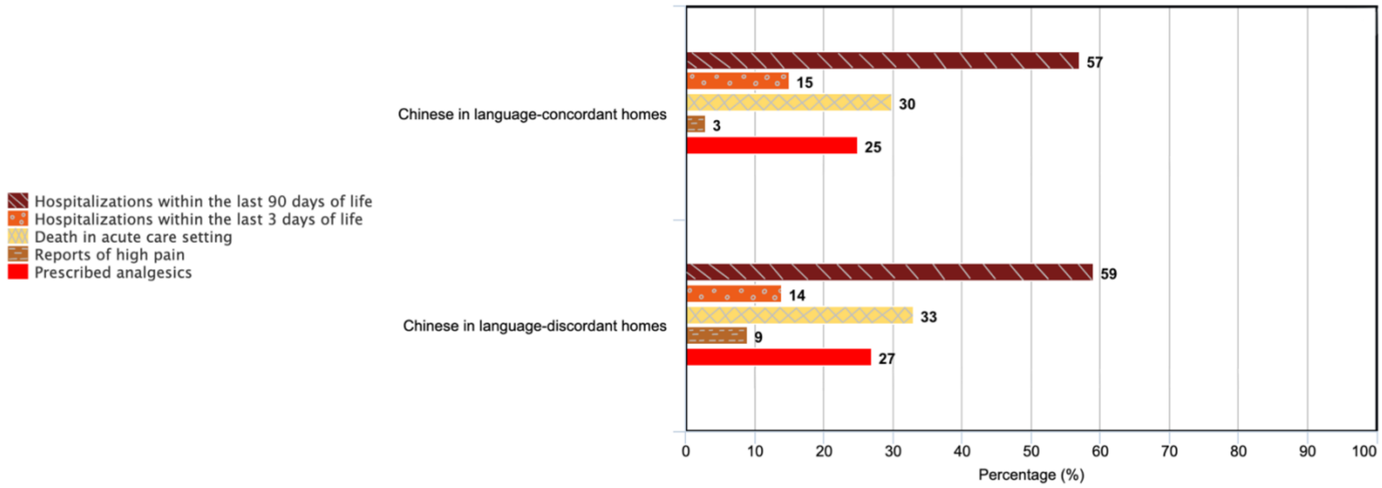
There is significant variation in publicly available information regarding language services and how to access them across Canadian provinces and territories. An environmental scan by Hsu et al. (2022) found that language barriers present additional challenges to understanding and accessing LTC services, such as finding resources on LTC and information about available care options in the patient's preferred language. Such barriers may explain system-level disparities detectable in population trends, including longer wait times for LTC placement experienced by recent immigrants compared to long-term Canadian residents (Qureshi et al., 2021) and for ethnocentric LTC homes compared to mainstream homes (Um, 2016).

In terms of the impact of language discordance on clinical outcomes, a recent systematic review (Scott et al., 2023) of 34 studies on differences experienced by minority older adults in LTC found only two Canadian studies (Batista et al., 2021; Yap et al., 2019). In the study by Yap et al., Asian residents in Canadian LTC homes were found to be more likely to develop pressure injuries than non-Asian residents. This care-related outcome was attributed to differences in nutritional status and dietary intake between Asian and non-Asian residents (Yap et al., 2019). However, language discordance could also be an important factor in this outcome. The study by Batista et al. found that francophones in non-designated homes are more likely to experience worsening depressive symptoms compared to francophones in French-designated facilities (23.6% vs. 21.6%, $p < .001$). Francophone residents in non-designated homes were also more likely to be prescribed antipsychotics than their anglophone counterparts (23.3% vs. 21.1%; Batista et al., 2021). Furthermore, Francophones receiving care in a language-concordant environment experienced a lower likelihood of falls compared to those in language-discordant homes (14.5% vs. 16.2%; Batista et al., 2021).

Similarly, emerging evidence in this area on non-Francophone populations suggests that linguistic minority individuals who are placed in a language-discordant home are more likely to experience increased hospital visits, depressive symptoms, and reported pain (Rasaputra et al., 2023). For example, using population-level health administrative data in Ontario, a study of 19,055 LTC residents near the end of life found that Chinese-speaking residents receiving care in language-discordant homes were more likely to be hospitalized in their last 90 days of life and die in acute care settings compared with Chinese-speaking residents in a language-concordant home (Figure 1). Similarly, the same Chinese-speaking residents in language-discordant homes were more likely to report frequent and severe pain in their last six months of life and be prescribed opioid analgesics for pain in their last two weeks of life than Chinese-speaking residents in language-concordant homes (Figure 1). As these findings suggest, there is a clear need to support more language-concordant care within Canadian LTC homes to ensure evidence-informed, high-quality, and equitable care for aging Canadians being cared for in this setting.

Figure 1

Clinical Outcomes for Chinese-Speaking Long-Term Care Residents Nearing End of Life in Language-Concordant Homes Vs. Language Discordant Homes



Note. From "End-of-Life Care for Chinese Residents in Ethnic and Non-Ethnic Long-Term Care Homes in Ontario, Canada: Differences in Acute Care Use, Reported Pain, and Place Of Death," by P. Rasaputra, A. H. Sun, A. Clarke, C. Fung, P. Quail, B. Robert, and A. T. Hsu, 2023.

An Opportunity for Canada to Honour Cultural Diversity

Addressing language discordance in LTC homes requires an understanding of the current impact of language discordance on patient care. The COVID-19 pandemic has highlighted the need for Canadians to focus on improving LTC, particularly in ensuring that national standards and clinical practice uphold equity, diversity, and inclusion. Improving care quality for older adults belonging to minority identities and linguistic groups requires increased awareness of current disparities by clinicians, organizational leaders, and policy-makers, and a concerted effort in planning for the demographic shift among those who need LTC in Canada. Despite limitations, as illustrated by studies presented here, there is strong potential for health administrative data to be leveraged as a tool to support a better understanding of past and current inequities in care experienced by linguistic minorities when accessing and receiving care within LTC homes. As Canada implements new standards for LTC, research is needed to monitor these efforts and ensure that high-quality, equitable LTC is provided to all residents, irrespective of their language. This research can also impact the development of standards in assisted living and retirement home settings, given their similar patient populations. If we are successful in adapting our current LTC system to the needs of minority older adults, Canada will have the opportunity to be an exemplary provider of equitable LTC in the world.

Author contributions

All authors read and approved the final article.

Conflicts of interest

The authors declare that they have no conflicts of interest.

References

Batista, R., Prud'homme, D., Rhodes, E., Hsu, A., Talarico, R., Reaume, M., Guérin, E., Bouchard, L., Desaulniers, J., Manuel, D., & Tanuseputro, P. (2021). Quality and safety in long-term care in Ontario: The impact of language discordance. *Journal of Post-Acute and Long-term Care Medicine*, *22*(10), 2147–2153.e3. https://doi.org/10.1016/j.jamda.2020.12.007

Braveman, P. A., Kumanyika, S., Fielding, J., LaVeist, T., Borrell, L. N., Manderscheid, R., & Troutman, A. (2011). Health disparities and health equity: The issue is justice. *American Journal of Public Health*, *101*(Suppl 1), S149–S155. https://doi.org/10.2105/AJPH.2010.300062

Canadian Institute for Health Information. (2016, July 22). *Pan-Canadian dialogue to advance the measurement of equity in health care: Proceedings report*. https://secure.cihi.ca/free_products/Measurement_of_Equity_in_Health_Care_Proceedings_Report_EN.pdf

Cano-Ibáñez, N., Zolfaghari, Y., Amezcua-Prieto, C., & Khan, K. S. (2021). Physician–patient language discordance and poor health outcomes: A systematic scoping review. *Frontiers in Public Health*, *9*, Article 629041. https://doi.org/10.3389/fpubh.2021.629041

de Moissac, D., & Bowen, S. (2019). Impact of language barriers on quality of care and patient safety for official language minority francophones in Canada. *Journal of Patient Experience*, *6*(1), 24–32. https://doi.org/10.1177/2374373518769008

de Vries, K. (2013). Communicating with older people with dementia. *Nursing Older People*, *25*(4), 30–37. https://doi.org/10.7748/nop2013.05.25.4.30.e429

Hsu, A. T., Ménard, A., & Scott, M. (2022, February 22). *Understanding the long-term care experience of official language minorities in Canada: An environmental scan.* Health Canada. https://sante-closm.ca/wp-content/uploads/2022/10/Hsu-A.-T.-Me%CC%81nard-A.-et-Scott-M.-2022b.pdf

Kitching, G. T., Firestone, M., Schei, B., Wolfe, S., Bourgeois, C., O'Campo, P., Rotondi, M., Nisenbaum, R., Maddox, R., & Smylie, J. (2020). Unmet health needs and discrimination by healthcare providers among an Indigenous population in Toronto, Canada. *Canadian Journal of Public Health*, *111*(1), 40–49. https://doi.org/10.17269/s41997-019-00242-z

Lane, G., & Vatanparast, H. (2022). Adjusting the Canadian healthcare system to meet newcomer needs. *International Journal of Environmental Research and Public Health*, *19*(7), Article 3752. https://doi.org/10.3390/ijerph19073752

Marya, R., & Patel, R. (2021). *Inflamed: Deep medicine and the anatomy of injustice*. Macmillan.

Phillips-Beck, W., Eni, R., Lavoie, J. G., Avery Kinew, K., Kyoon Achan, G., & Katz, A. (2020). Confronting racism within the Canadian healthcare system: Systemic exclusion of First Nations from quality and consistent care. *International Journal of Environmental Research and Public Health*, *17*(22), Article 8343. https://doi.org/10.3390/ijerph17228343

Qureshi, D., Schumacher, C., Talarico, R., Lapenskie, J., Tanuseputro, P., Scott, M., & Hsu, A. (2021). Describing differences among recent immigrants and long-standing residents waiting for long-term care: A population-based retrospective cohort study. *Journal of Post-Acute and Long-Term Care Medicine*, *22*(3), 648–655. https://doi.org/10.1016/j.jamda.2020.07.018

Rasaputra, P., Sun, A. H., Clarke, A., Fung, C., Quail, P., Robert, B., & Hsu, A. T. (2023). *End-of-life care for Chinese residents in ethnic and non-ethnic long-term care homes in Ontario, Canada: Differences in acute care use, reported pain, and place of death* [Manuscript in preparation]. Bruyère Research Institute, Ottawa, Ontario, Canada.

Robinson, T. E., II, White, G. L., Jr., & Houchins, J. C. (2006). Improving communication with older patients: Tips from the literature. *Family Practice Management*, *13*(8), 73–78. https://www.aafp.org/pubs/fpm/issues/2006/0900/p73.html

Scott, M. M., Sun, A. H., Ménard, A., Rasaputra, P., Ramzy, A., Murmann, M., Cooper-Reed, A., & Hsu, A. T. (2023). *Targeting health inequity for minority populations by exploring care-related outcomes in residential long-term care: A systematic review* [Manuscript submitted for publication]. Bruyère Research Institute, Ottawa, Ontario, Canada.

Seale, E., Reaume, M., Batista, R., Eddeen, A. B., Roberts, R., Rhodes, E., McIsaac, D. I., Kendall, C. E., Sood, M. M., Prud'homme, D., & Tanuseputro, P. (2022). Patient–physician language concordance and quality and safety outcomes among frail home care recipients admitted to hospital in Ontario, Canada. *CMAJ*, *194*(26), E899–E908. https://doi.org/10.1503/cmaj.212155

Statistics Canada. (2022a, August 17). *Increasing diversity of languages, other than English or French, spoken at home* [Infographic]. https://www150.statcan.gc.ca/n1/pub/11-627-m/11-627-m2022051-eng.htm

Statistics Canada. (2022b, August 17). *Language spoken most often at home by age: Canada, provinces and territories*. https://doi.org/10.25318/9810022601-eng

Steinberg, E. M., Valenzuela-Araujo, D., Zickafoose, J. S., Kieffer, E., & DeCamp, L. R. (2016). The "battle" of managing language barriers in health care. *Clinical Pediatrics*, *55*(14), 1318–1327. https://doi.org/10.1177/0009922816629760

Um, S. (2016, April). The cost of waiting for care: Delivering equitable long-term care for Toronto's diverse population. *Wellesley Institute.* https://www.homelesshub.ca/sites/default/files/attachments/The-Cost-of-Waiting-For-Care.pdf

Yap, T. L., Kennerly, S., Horn, S. D., Barrett, R., Dixon, J., & Bergstrom, N. (2019). Influence of nutrition and nonnutrition factors on pressure injury outcomes among at-risk Asian nursing home residents. *Advances in Skin & Wound Care*, *32*(10), 463–469. https://doi.org/10.1097/01.ASW.0000579696.82285.3f

HPJ HEALTHY POPULATIONS JOURNAL

Commentary

Child Rights and Well-Being in Nova Scotia: A Critical Conversation

Kristyn Anderson[1], RSW; Cecilia Carrea[2], PhD; Charlene Gagnon[3], BBA; Jenna Hopson[4], MPH; Sara F. L. Kirk[1, 2], PhD; Lila Pavey[4], MPH; and Naj Siritsky[5], MSSW
[1] Faculty of Health, Dalhousie University
[2] Healthy Populations Institute, Dalhousie University
[3] What We Make It, Kula Partners, Halifax, Nova Scotia, Canada
[4] Mental Health and Addictions Services, IWK Health Centre, Nova Scotia, Canada
[5] Nova Scotia College of Social Workers, Halifax, Nova Scotia, Canada

DOI: 10.15273/hpj.v3i2.11592

Abstract

Childhood lays the foundations for lifelong health and well-being. Children and youth have a fundamental right to have their needs met and to have their health and well-being considered a priority. Nova Scotia is one of the last provinces in Canada to create an independent body focused on asserting and protecting children's rights. At present, legislation in support of an independent Child and Youth Commission (CYC) is being considered to monitor child rights and engage young people in conversations about the things that matter to them. On November 18, 2022, and in recognition of National Child Day, a "Fishbowl Conversation" panel presentation was convened, with the panel held in-person at Dalhousie University and an audience participating online. The panel engaged in a critical conversation about ongoing work in Nova Scotia aimed at addressing child rights and well-being, for the purpose of guiding the work of a CYC. This commentary article summarizes the recommendations from this panel, unifying the work from various reports and initiatives addressing child rights in the province.

Canada is a signatory to the United Nations Convention on the Rights of the Child (1989). When Canada ratified the convention in 1991, it committed to including youth voices in decision-making on things that matter to them (Public Health Agency of Canada, 2021). Three decades later, this commitment has yet to be fully implemented, with Nova Scotia being one of the last two provinces in Canada to create a politically independent Child and Youth Commission (CYC) to advise the provincial government and help promote and protect the rights and well-being of children and youth in the province (Stratford, n.d.). Work that focuses on the rights and well-being of children (1–10 years old) and youth (11–18 years old) takes place in various institutions and organizations across the province. To recognize National Child Day 2022, Dalhousie University's Healthy Populations Institute, IWK Mental Health and Addictions, and the Nova Scotia College of Social Workers (NSCSW) convened a panel to discuss recent, relevant, and multi-faceted reports and initiatives on child and youth rights and well-being in Nova Scotia. The purpose of this panel was to unify the recommendations in these reports and initiatives and guide the work of a future CYC.

Eight presenters gave an overview of their work with children and responded to questions from the moderator that had been provided in advance. The chat room was then opened up to questions from an audience of 207 participants who attended virtually. The panelists and the reports/initiatives they presented on were as follows:

1. Estelle Alexander, a fourth-year health promotion student at Dalhousie University and youth representative, offered the perspectives of youth (11–18 years) regarding the *One Chance to Be a Child* report, a data profile released in April 2022 that provides a comprehensive snapshot of how children and youth are doing in Nova Scotia (Dalhousie University Department of Pediatrics & Healthy Populations Institute, 2022).
2. Danny Graham, the chief engagement officer of Engage Nova Scotia, spoke about the work being undertaken by his organization regarding the Nova Scotia Quality of Life Initiative (Engage Nova Scotia, n.d.). The goal of the initiative is to include well-being as a measure of success and progress in guiding the province into the future.
3. Crystal Hill, a social worker from Nova Scotia Legal Aid, provided a brief history of how Nova Scotia Legal Aid first hired an Indigenous social worker to bridge a gap in services for this population, particularly with respect to support in court proceedings. Hill works with legal aid clients who have family matters before the court.
4. Charys Payne, a lawyer with the African Nova Scotian Justice Institute (ANSJI), provided an overview of the ANSJI, which is a provincially funded, community-led organization established in response to the systemic racism faced by African Nova Scotians in the justice system.
5. Lynn Brogan, president of the Nova Scotia College of Social Workers, provided an overview of the findings from a project aimed at gaining insight into how the child welfare system could be better designed to support the rights and needs of children in this province (Nova Scotia College of Social Workers, 2021).
6. Jacqueline Gahagan, a professor and associate vice-president of research at Mount Saint Vincent University, presented on their research (Gahagan, 2021) examining and evaluating the impact of post-secondary tuition-waiver programs for former youth in care of the welfare system.
7. Malcolm Shookner, the president of Atlantic Summer Institute (ASI) on Healthy and Safe Communities, provided an overview of ASI and its mandate as a catalyst for social change focused on the determinants of health. He spoke of the need for a whole-of-government approach in terms of intersectoral action across departments, the value of investing in "upstream" mental health promotion, and the impact it can have on child and youth mental health (ASI, 2022).
8. Lila Pavey, a health promotion specialist with the Mental Health and Addictions Program at IWK Health, began by stating that Nova Scotia currently has the highest provincial rate of police-reported human trafficking in Canada and one of the highest provincial rates of trafficking of victims aged 12 to 17 years. She presented on the *Hearing Them* report (Pavey et al., n.d.), which resulted from the direct consultations of 149 adults with past or present lived experience in the sex industry to explore what makes people vulnerable and to identify specific risks. The consultations were specific to trafficking and commercial sexual exploitation of children and youth because these experiences can have harmful lifelong implications and contribute to poor health outcomes.

Panel Recommendations

The full report and recording of this panel event can be accessed through DalSpace at the following links:

- http://hdl.handle.net/10222/82367 (report)
- http://hdl.handle.net/10222/82387 (video)

Recommendations from each of the presenters are summarized below:

1. Estelle Alexander emphasized the need to establish child and youth panels or advisories within government to provide counsel on decisions that affect young people. This includes topics regarding child and youth mental health, bullying, different ways of learning, changes to the school curriculum, at-home supports, equitable access to opportunities, and overall well-being.
2. Danny Graham recommended the inclusion of well-being as a measure of success and progress in guiding the province into the future. Special attention to single-parent and low-income families is required.
3. Crystal Hill spoke about the need to "bridge the gap between client and lawyer" to support families in court proceedings.
4. Charys Payne recommended that the powers, education strategies, and advocacy strategies of the CYC be made robust enough to mandate structural requirements such as the following:
    i. the collection of race-based data as it relates to overrepresentation of youth in social and criminal justice systems,
    ii. the development of culturally competent practice standards for staff working with African Nova Scotian and racialized youth, and
    iii. the inclusion of a provision in the proposed legislation, recognizing the United Nations Convention on the Rights of the Child and the United Nations International Decade for People of African Descent. This provision should require the CYC to be responsible for educating on and advocating for the interests and needs of children of African descent and mirror Prince Edward Island's Child and Youth Advocate Act, section 12, subsection 1-C.
5. Lynn Brogan highlighted the need to address issues of systemic racism, discrimination, and bias within the child welfare system, as well as the unintended inequity and other negative consequences for Nova Scotians at risk created by the amendments implemented in 2017 to the Children and Family Services Act.
6. Jacqueline Gahagan proposed to establish a minimum set of program evaluation standards with data comparability at the national level to address disparities and reduce barriers to educational attainment among those with experience in the child welfare system.
7. Malcolm Shookner recommended a greater focus upstream on the social determinants of health that support infant, child, and youth mental health. This can be targeted by building on the extensive evidence compiled and reported by organizations represented at the panel discussion.
8. Given that the risk factors for commercial sexual exploitation of children and youth are also health and well-being indicators, Lila Pavey recommended that each of these factors needs to be monitored and addressed through a comprehensive whole-of-government approach. One way to start is by establishing an integrated plan with shared outcomes for Nova Scotia to ensure children and youth's rights are at the forefront of all decision-making.

Conclusion

"Having a sense of belonging" and "feeling like their voice is being heard" were central themes emerging from youth who participated in focus groups and whose voices were relayed by the youth representative at this panel, Estelle Alexander. The tools and information available through existing reports and initiatives need to be acted upon. With the formation of a CYC, an opportunity exists to advance the rights of children and youth in Nova Scotia. Sustainable development goals and social determinants are embedded in human rights charters, and government and wider society have a responsibility to act.

References

Atlantic Summer Institute on Healthy and Safe Communities. (2022, March). *Upstream investment: Placing infant, child and youth mental health promotion at the forefront: Executive summary* [Policy brief]. https://www.asi-iea.ca/en/files/2022/03/Policy-Brief-ES-.pdf

Dalhousie University Department of Pediatrics, & Healthy Populations Institute. (2022). *One chance to be a child: A data profile to inform a better future for child and youth well-being in Nova Scotia*. Retrieved July 3, 2022, from www.onechancens.ca

Engage Nova Scotia. (n.d.). *Overview of the NS Quality of Life Initiative*. https://engagenovascotia.ca/about-qol

Gahagan, J. (2021, July 19). Youth who grew up in care have the right to post-secondary education—and tuition waivers open doors. *The Conversation*. https://theconversation.com/youth-who-grew-up-in-care-have-the-right-to-post-secondary-education-and-tuition-waivers-open-doors-160972

Nova Scotia College of Social Workers. (2021, March 2). *Children and Family Services Act: 4-year review*. https://nscsw.org/wp-content/uploads/2021/03/CFSA-Review-Submission-Final.pdf

Pavey, L., Hopson, J., & Gagnon, C. (n.d.). *Hearing them: Exploring the vulnerabilities and risk factors for commercial sexual exploitation of children and youth in Nova Scotia*. https://static1.squarespace.com/static/615b42b67a44671f61b7f0c8/t/6346e16f9ce1ec7093794c09/1665589615819/Hearing+them++Risks+Prevention.pdf

Public Health Agency of Canada. (2021, November 5). *The United Nations Convention on the Rights of the Child: An overview for children and teenagers*. https://www.canada.ca/en/public-health/services/national-child-day/united-nations-convention-rights-of-the-child.html

Stratford, A. (n.d.). Our vulnerable children, youth, and families deserve better. *Nova Scotia College of Social Workers Blog*. Retrieved July 3, 2022, from https://nscsw.org/our-vulnerable-children-youth-and-families-deserve-better/

United Nations Convention on the Rights of the Child, November 20, 1989, https://www.ohchr.org/en/instruments-mechanisms/instruments/convention-rights-child

HEALTHY POPULATIONS JOURNAL

Commentary

Leveraging Exercise is Medicine On Campus Programs to Promote Activity to Equity-Deserving Groups

M. Lauren Voss*[1], MSc; Myles O'Brien*[2, 3], PhD; Joyla A. Furlano[4], PhD; Michelle Y. S. Wong[5, 6], MSc; Nick W. Bray[7, 8], PhD; Jonathon R. Fowles[9], PhD; and Taniya S. Nagpal[10], PhD
* Co-first authors
[1] Faculty of Kinesiology and Physical Education, University of Toronto
[2] School of Physiotherapy, Dalhousie University
[3] Department of Medicine, Dalhousie University
[4] Faculty of Health Sciences, McMaster University
[5] School of Kinesiology, Western University
[6] Division of Critical Care Medicine, Department of Medicine, Schulich School of Medicine and Dentistry, Western University
[7] Department of Physiology and Pharmacology, Cumming School of Medicine, University of Calgary
[8] Hotchkiss Brain Institute, University of Calgary
[9] School of Kinesiology, Acadia University
[10] Faculty of Kinesiology, Sport, and Recreation, University of Alberta

DOI: 10.15273/hpj.v3i2.11518

Abstract

Despite the well-known benefits of leading an active lifestyle, global adherence to physical activity recommendations is low. Individuals who are from marginalized groups, including racialized populations and those with a low socio-economic status, are more physically inactive compared to those who identify as white or who have a higher income. The differences in physical activity level by socio-demographic characteristics reflect inequitable access to lifestyle resources. Exercise is Medicine On Campus (EIM-OC) is a unique international post-secondary initiative that aims to promote a culture of physical activity and chronic disease prevention and management on university/college campuses and within their local communities. EIM-OC programs currently exist on every continent, with the majority of chapters existing in North America. This provides EIM-OC a unique opportunity to address inequities in physical activity promotion. This commentary provides perspective on traditional EIM-OC program offerings, highlights learnings from the COVID-19 pandemic, and recommends strategies to increase the inclusivity of future physical activity programming.

It is well established that leading a physically active lifestyle is associated with numerous physical and mental health benefits (Warburton et al., 2006). Unfortunately, most individuals experience impactful barriers (e.g., lack of time or knowledge, associated costs) and/or lack the facilitators to be active, resulting in a physically inactive and highly sedentary lifestyle (Guthold et al., 2018). This perpetuates the development and poor management of chronic conditions and instances of moderate complex (≥3 conditions across three body systems) or highly complex (≥5 conditions across ≥3 body systems) multimorbidity (Martinez-Gomez et al., 2017). While population rates of leisure-time physical inactivity and chronic disease are prevalent in Western countries, they are exaggerated in non-white populations (e.g., Black, Hispanic) and among people with lower socio-economic status (Saffer et al., 2013).

Post-secondary education provides a unique transitionary period in which young adults start to gain autonomy and may develop habits that last a lifetime. The presence of on-campus exercise facilities may enable physical activity for this group; however, an increased workload, associated stress, and additional financial limitations may serve as significant barriers (Pellerine et al., 2022). On-campus exercise programs and facilities may be structured to deliver more "traditional" forms of exercise, such as weightlifting and cardio machines like treadmills or rowing machines. The lack of diversity in exercise equipment and movement-based programs may serve as a deterrent to engaging in physical activity (Rapport et al., 2018). Additional time constraints and burdens associated with holding part-time or full-time jobs may also be exacerbated among lower socio-economic status students, further inhibiting their ability to take advantage of on-campus programming (Gómez-López et al., 2010).

The purpose of this commentary is to highlight lessons learned from the COVID-19 pandemic relating to physical activity and recommend how a university/college program, Exercise is Medicine On Campus (EIM-OC), can promote and enhance physical activity among equity-deserving groups. As members of the Exercise is Medicine Canada On Campus national student executive, we conclude the article by providing recommendations about how EIM-OC student leaders can achieve this aim.

COVID-19 and Impacts on Physical Activity

Public health interventions have the potential to reduce existing health inequities; however, such resources are unequally distributed between different population groups and predominantly favour those at the upper end of the socio-economic spectrum (Czwikla et al., 2021). Such disparities were exacerbated during the global COVID-19 pandemic; physical activity decreased across all population groups, but inequities in access to physical activity resources were particularly amplified (de Boer et al., 2021). In North America, during the first wave of the pandemic, physical activity facilities such as playgrounds and community centres were closed (Courtemanche et al., 2020; Government of Alberta, 2020; Government of Ontario, 2021). Many jurisdictions removed COVID-19 restrictions in a stepwise fashion, prioritizing access to open green spaces and sporting facilities that allowed for physical distancing (e.g., golf, tennis). Urban, lower-income populations tend to live in areas with less green space, and there is a high cost associated with the available sports that allowed for physical distancing (Chen et al., 2020; Rigolon et al., 2021; Wang & Lan, 2019). Thus, access to engaging in unstructured physical activity (e.g., activities in a local park, going for bike rides) or sport was likely unfairly distributed.

Effects of COVID-19 Restrictions on University/College Campuses

University students' physical activity levels were also impacted by COVID-19 with systematic reviews reporting reductions in light, moderate, and vigorous physical activity with a simultaneous increase in sedentary behaviour (López-Valenciano et al., 2021; Rivera et al., 2021). Most institutions moved to virtual programming and closed on-campus exercise facilities and residences, which required students to find alternative housing or to move home. These restrictions would have removed opportunities for incidental physical activity (e.g., biking or walking to campus, moving between lecture theatres, non-sedentary participation in experiential learning; Amornsriwatanakul et al., 2022) and access to facilities at a reduced or zero cost. It is also possible that some students may have moved home to a household with immunocompromised or high-risk family members, which may have meant that those students opted out of accessing local facilities due to infection risk.

The transition to a post-pandemic world provides exercise and health care professionals with an opportunity to consider inequities in physical activity promotion and access, as many programs are resuming for the first time. Exercise is Medicine® (EIM) and the EIM-OC program may be leveraged to widely promote physical activity and offer resources to assist more individuals within their community with becoming physically active.

Exercise is Medicine

EIM was established by the American College of Sports Medicine in 2007 and aims to make physical activity assessment and promotion a standard in clinical care, connecting health care with evidence-based physical activity resources for people everywhere and of all abilities (Sallis, 2009). EIM has garnered a global presence with programs in 37 countries, including the establishment of EIM-Canada, EIM-Latin America, EIM-Europe, and EIM-Asia (Exercise is Medicine, n.d.-b). While the objectives may vary slightly between national programs, EIM programs generally aim to further the American College of Sports Medicine's mission by promoting "buy-in" from health care providers, promoting exercise professionals as an extension of health care, and engaging students and student-led initiatives through their EIM-OC program.

Exercise is Medicine On Campus

Exercise is Medicine On Campus (EIM-OC) is a sub-program of EIM that aims to improve health and well-being at post-secondary institutions by engaging student leaders in the promotion of physical movement on university/college campuses. The vision of EIM-OC is "[t]o see all campus and community members across multiple disciplines discover, share and adopt the principles of EIM that will help change the culture of physical activity and chronic disease prevention and management campus wide" (Exercise is Medicine, 2019, p. 2). While the function of each individual EIM-OC group varies, they utilize their student-led university/college clubs to conduct educational seminars, lead local community exercise initiatives, and promote healthy physical behaviours to the students on their campus. Globally, there are approximately 220+ registered EIM-OC groups, predominantly in North America (Exercise is Medicine, n.d.-a). The unique position of each EIM-OC chapter within their community and post-secondary institution provides an opportunity for these programs to address the disproportionately high physical inactivity level of equity-deserving groups in their immediate and surrounding area. Importantly, this aligns with the EIM aim of "for people everywhere of all abilities" (Exercise is Medicine, n.d.-c).

Many established EIM-OC programs seek to improve physical activity in the community by leveraging existing programs or facilities. For example, the EIM-OC program at the University of West Georgia provided a free 12-week program that matched students with a fitness professional and provided fitness assessments, education around exercise basics (e.g., determining exercise intensity, proper form), and a tailored exercise program based on participant goals (Biber & Knoll, 2020). Other common activities include outreach or community-based programs, such as free exercise assessment days, seminars to community groups, or participation in public fun runs/walks (Exercise is Medicine, 2019). Some EIM-OC clubs have successfully implemented physical activity as a vital sign among university health care providers and developed referral networks. These referral networks allow students to be referred to fitness specialists within the EIM-OC club or health/fitness centre for exercise programming or behavioural counselling (Lagally et al., 2019). Finally, EIM-OC groups and their faculty leaders also work directly with medical schools offering prospective health care providers with resources and skills-based workshops on prescription and counselling for physical activity (Exercise is Medicine, n.d.-a).

Exercise is Medicine On Campus after COVID-19

During the global COVID-19 pandemic, EIM-OC groups were challenged to pivot their initiatives to virtual modalities. Student leaders successfully organized several online group fitness classes, seminars on exercise prescription and counselling, and social events to encourage their peers to remain active despite restrictions to traditional activities, such as those in fitness facilities (Exercise is Medicine, n.d.-a). For example, the University of North Carolina at Chapel Hill pivoted to providing online consultations and tailoring suggested programs to participants' locations (Stanford et al., 2020). The referrals received by the EIM-OC team increased by ~700% during the first wave of COVID-19 (Stanford et al., 2020). The virtual consultations improved program adherence rate, with more individuals completing follow-up sessions. Given its success, their EIM-OC group will continue to provide virtual consultations post-COVID-19 (Stanford et al., 2020).

The increase in attendance to virtual events is not surprising, given the expanded accessibility, and joining virtually may have felt easier for those who were uncertain about attending an in-person event. Notably, prior to COVID-19, EIM-OC groups in Canada had expressed that their educational and physical activity events were often attended by the "converted," including those who were already active or had a pre-existing interest in EIM (McEachern et al., 2019). EIM-OC groups can harness the lessons learned during the pandemic and change their offering of events to improve accessibility of physical activity resources and education on campus and within the community.

Future Considerations for EIM-OC Student Leaders

1. Integrate awareness of equity-related issues in physical activity access and promotion into educational seminars and advocacy initiatives. Most EIM-related seminars focus on the benefits of physical activity and how to prescribe it or counsel different clinical groups. These educational initiatives draw an attentive audience of prospective exercise and health professionals who can integrate these practices into their future careers. It is important that these individuals are aware of the inequities faced by marginalized populations, such as ethnic minorities, those living in rural areas or with limited economic resources, and others that identify with a minority-based community. Recently, EIM presented components of exercise prescription and referral to integrate into medical school curricula (Capozzi et al., 2022), and we suggest that equity-related issues should be added to the recommendations of physical activity promotion within medical curricula. Efforts should be made to invite individuals from marginalized communities to speak on their experience in trying to access physical activity programming.

2. Continue virtual programming where possible. Although we repeatedly see subjective comments that in-person interaction is superior to virtual events, this does not mean we should ignore the abundance of reach that online platforms have had throughout the pandemic. Several studies have successfully shown delivery of online physical activity programs to various population groups and report similar or higher adherence (Beauchamp et al., 2021; Torriani-Pasin et al., 2021; Winters-Stone et al., 2022). Importantly, in on-campus settings, a virtual option for students and community members can address inequities such as cost and location (Silva et al., 2022).

3. Collaborate with other on-campus health-related groups to diversify perspectives and knowledge. Many of the current EIM-OC programs are understandably housed within the kinesiology faculty, with few actively involving medical schools. Collaborating with other students from health-related programs (e.g., occupational therapy, nursing, medical school) may diversify perspectives and expose more individuals to the concept of "Exercise is Medicine" at an early stage in their career. COVID-19 forced many groups to pivot and offer programs beyond the traditional exercise classes (Stanford et al., 2020). Additionally, creating strong relationships with campus offices or programs that are currently addressing inequities on campus may further the reach of EIM-OC programs. This may help ensure that programming is culturally sensitive, such as using appropriate language in resources. It is well known that a "one size fits all" approach should be avoided in the promotion of physical activity and that providing options based on individual needs, preferences, habits, and motivation may help to increase activity among students (Thornton et al., 2016). Offering less "traditional" forms of exercise programming (e.g., hikes, salsa dancing) that address a greater variety of preferences may also serve to broaden the reach of EIM-OC programs.

Conclusion

Public health initiatives like EIM and EIM-OC may serve an important role in supporting equity-deserving groups in having greater access to physical activity. Moving forward, we recommend on-campus groups consider their delivery of services for equity-deserving groups and integrate education on equity-related issues, as well as collaborate with other on-campus or community groups to expand the reach of EIM-OC programs. The recommendations provided may improve inclusivity within campus communities and help students lead more physically active lifestyles.

References

Amornsriwatanakul, A., Rahman, H. A., Wattanapisit, A., Nurmala, I., de la Cruz, M. H. T. O., Car, J., & Chia, M. (2022). University students' overall and domain-specific physical activity during COVID-19: A cross-sectional study in seven ASEAN countries. *Heliyon*, *8*(12), Article e12466. https://doi.org/10.1016/j.heliyon.2022.e12466

Beauchamp, M. R., Hulteen, R. M., Ruissen, G. R., Liu, Y., Rhodes, R. E., Wierts, C. M., Waldhauser, K. J., Harden, S. H., & Puterman, E. (2021). Online-delivered group and personal exercise programs to support low active older adults' mental health during the COVID-19 pandemic: Randomized controlled trial. *Journal of Medical Internet Research*, *23*(7), Article e30709. https://doi.org/10.2196/30709

Biber, D. D., & Knoll, C. (2020). Exercise Is Medicine on Campus®: A pilot study. *Recreational Sports Journal*, *44*(2), 149–157. https://doi.org/10.1177/1558866120964815

Capozzi, L. C., Lun, V., Shellington, E. M., Nagpal, T. S., Tomasone, J. R., Gaul, C., Roberts, A., & Fowles, J. R. (2022). Physical activity RX: Development and implementation of physical activity counselling and prescription learning objectives for Canadian medical school curriculum. *Canadian Medical Education Journal, 13*(3), 52–59. https://doi.org/10.36834/cmej.73767

Chen, Y., Yue, W., & La Rosa, D. (2020). Which communities have better accessibility to green space? An investigation into environmental inequality using big data. *Landscape and Urban Planning*, *204*, Article 103919. https://doi.org/10.1016/j.landurbplan.2020.103919

Courtemanche, C., Garuccio, J., Le, A., Pinkston, J., & Yelowitz, A. (2020). Strong social distancing measures in the United States reduced the COVID-19 growth rate. *Health Affairs*, *39*(7), 1237–1246. https://doi.org/10.1377/hlthaff.2020.00608

Czwikla, G., Boen, F., Cook, D. G., de Jong, J., Harris, T., Hilz, L. K., Iliffe, S., Lechner, L., Morris, R. W., Muellmann, S., Peels, D. A., Pischke, C. R., Schüz, B., Stevens, M., Telkmann, K., van Lenthe, F. J., Vanderlinden, J., & Bolte, G. (2021). Equity-specific effects of interventions to promote physical activity among middle-aged and older adults: Results from applying a novel equity-specific re-analysis strategy. *The International Journal of Behavioral Nutrition and Physical Activity*, *18*, Article 65. https://doi.org/10.1186/s12966-021-01131-w

de Boer, W. I. J., Mierau, J. O., Schoemaker, J., Viluma, L., Koning, R. H., & Lifelines Corona Research Initiative. (2021). The impact of the Covid-19 crisis on socioeconomic differences in physical activity behavior: Evidence from the Lifelines COVID-19 cohort study. *Preventive Medicine*, *153*, Article 106823. https://doi.org/10.1016/j.ypmed.2021.106823

Exercise is Medicine. (n.d.-a). *EIM On Campus*. Retrieved April 4, 2023, from https://www.exerciseismedicine.org/eim-in-action/eim-on-campus/

Exercise is Medicine. (n.d.-b). *Exercise is Medicine global presence*. Retrieved May 8, 2023, from https://www.exerciseismedicine.org/eim_map/

Exercise is Medicine. (n.d.-c). *What is Exercise is Medicine: A global health initiative*. Retrieved May 8, 2023, from https://www.exerciseismedicine.org/about-eim/

Exercise is Medicine. (2019). *Exercise is Medicine On Campus action guide*. https://www.exerciseismedicine.org/wp-content/uploads/2021/02/EIM-on-Campus-action-guide.pdf

Gómez-López, M., Gallegos, A. G., & Extremera, A. B. (2010). Perceived barriers by university students in the practice of physical activities. *Journal of Sports Science & Medicine*, *9*(3), 374–381. https://www.jssm.org/volume09/iss3/cap/jssm-09-374.pdf

Government of Alberta. (2020, June). *Opening soon: Alberta's relaunch strategy*. https://open.alberta.ca/dataset/61f54c09-d6d7-4a12-a5be-0bc663a02c31/resource/e158ff14-eab7-4f24-94f4-b67c3639d0d5/ download/covid-19-alberta-relaunch-strategy-2020-06.pdf

Government of Ontario. (2021, April 16). *Ontario strengthens enforcement of Stay-at-Home order*. https://news.ontario.ca/en/release/61192/ontario-strengthens-enforcement-of-stay-at-home-order

Guthold, R., Stevens, G. A., Riley, L. M., & Bull, F. C. (2018). Worldwide trends in insufficient physical activity from 2001 to 2016: A pooled analysis of 358 population-based surveys with 1.9 million participants. *The Lancet Global Health*, *6*(10), e1077–e1086. https://doi.org/10.1016/s2214-109x(18)30357-7

Lagally, K. M., Sherman, J., Amorose, A. J., Rinaldi-Miles, A., & Winters, C. S. (2019). Exercise Is Medicine on Campus programs: A descriptive study. *Recreational Sports Journal*, *43*(2), 106–116. https://doi.org/10.1177/1558866119889898

López-Valenciano, A., Suárez-Iglesias, D., Sanchez-Lastra, M. A., & Ayán, C. (2021). Impact of COVID-19 pandemic on university students' physical activity levels: An early systematic review. *Frontiers in Psychology*, *11*, Article 624567. https://doi.org/10.3389/fpsyg.2020.624567

Martinez-Gomez, D., Guallar-Castillon, P., Garcia-Esquinas, E., Bandinelli, S., & Rodríguez-Artalejo, F. (2017). Physical activity and the effect of multimorbidity on all-cause mortality in older adults. *Mayo Clinic Proceedings*, *92*(3), 376–382. https://doi.org/10.1016/j.mayocp.2016.12.004

McEachern, B. M., Jackson, J., Yungblut, S., & Tomasone, J. R. (2019). Barriers and facilitators to implementing Exercise is Medicine Canada on Campus groups. *Health Promotion Practice*, *20*(5), 751–759. https://doi.org/10.1177/1524839919830923

Pellerine, L. P., Bray, N. W., Fowles, J. R., Furlano, J. A., Morava, A., Nagpal, T. S., & O'Brien, M. W. (2022). The influence of motivators and barriers to exercise on attaining physical activity and sedentary time guidelines among Canadian undergraduate students. *International Journal of Environmental Research and Public Health*, *19*(19), Article 12225. https://doi.org/10.3390/ijerph191912225

Rapport, F., Hutchings, H., Doel, M. A., Wells, B., Clement, C., Mellalieu, S., Shubin, S., Brown, D., Seah, R., Wright, S., & Sparkes, A. (2018). How are university gyms used by staff and students? A mixed-method study exploring gym use, motivation, and communication in three UK gyms. *Societies*, *8*(1), Article 15. https://doi.org/10.3390/soc8010015

Rigolon, A., Browning, M. H. E. M., McAnirlin, O., & Yoon, H. (V). (2021). Green space and health equity: A systematic review on the potential of green space to reduce health disparities. *International Journal of Environmental Research and Public Health*, *18*(5), Article 2563. https://doi.org/10.3390/ijerph18052563

Rivera, P. A., Nys, B. L., & Fiestas, F. (2021). Impact of COVID-19 induced lockdown on physical activity and sedentary behavior among university students: A systematic review. *Medwave*, *21*(8), Article e8456. https://doi.org/10.5867/medwave.2021.08.8456

Saffer, H., Dave, D., Grossman, M., & Leung, L. A. (2013). Racial, ethnic, and gender differences in physical activity. *Journal of Human Capital*, *7*(4), 378–410. https://doi.org/10.1086/671200

Sallis, R. E. (2009). Exercise is medicine and physicians need to prescribe it! *British Journal of Sports Medicine*, *43*(1), 3–4. https://doi.org/10.1136/bjsm.2008.054825

Silva, R. M. F., Mendonça, C. R., Azevedo, V. D., Memon, A. R., Noll, P. R. E. S., & Noll, M. (2022). Barriers to high school and university students' physical activity: A systematic review. *PLOS ONE*, *17*(4), Article e0265913. https://doi.org/10.1371/journal.pone.0265913

Stanford, K., Pomeroy, A., Bates, L. C., Tamminga, K., Chai, T., Moore, J. B., Brookey, L., & Stoner, L. (2020). Exercise Is Medicine® on Campus during COVID-19: Necessary adaptations and continuing importance. *Translational Journal of the American College of Sports Medicine*, *5*(12), Article e000157. https://doi.org/10.1249/tjx.0000000000000157

Thornton, J. S., Frémont, P., Khan, K., Poirier, P., Fowles, J., Wells, G. D., & Frankovich, R. J. (2016). Physical activity prescription: A critical opportunity to address a modifiable risk factor for the prevention and management of chronic disease: A position statement by the Canadian Academy of Sport and Exercise Medicine. *British Journal of Sports Medicine*, *50*(18), 1109–1114. https://doi.org/10.1136/bjsports-2016-096291

Torriani-Pasin, C., Palma, G. C. dos S., Makhoul, M. P., Antonio, B. de A., Lara, A. R. F., da Silva, T. A., Caldeira, M. F., Júnior, R. P. A., Domingues, V. L., de Freitas, T. B., & Mochizuki, L. (2021). Adherence rate, barriers to attend, safety, and overall experience of a remote physical exercise program during the COVID-19 Pandemic for individuals after stroke. *Frontiers in Psychology*, *12*, Article 647883. https://doi.org/10.3389/fpsyg.2021.647883

Wang, Q., & Lan, Z. (2019). Park green spaces, public health and social inequalities: Understanding the interrelationships for policy implications. *Land Use Policy*, *83*, 66–74. https://doi.org/10.1016/j.landusepol.2019.01.026

Warburton, D. E. R., Nicol, C. W., & Bredin, S. S. D. (2006). Health benefits of physical activity: The evidence. *Canadian Medical Association Journal*, *174*(6), 801–809. https://doi.org/10.1503/cmaj.051351

Winters-Stone, K. M., Boisvert, C., Li, F., Lyons, K. S., Beer, T. M., Mitri, Z., Meyers, G., Eckstrom, E., & Campbell, K. L. (2022). Delivering exercise medicine to cancer survivors: Has COVID-19 shifted the landscape for how and who can be reached with supervised group exercise? *Supportive Care in Cancer*, *30*(3), 1903–1906. https://doi.org/10.1007/s00520-021-06669-w

HPJ HEALTHY POPULATIONS JOURNAL

Research Protocol

Organizational and Institutional Initiatives for the Recruitment, Retention, and Advancement of Black Nurses in the Canadian Health Care System: A Rapid Review Protocol

Keisha Jefferies, RN, PhD; Andrea Carson, PhD; Meaghan Sim, PhD, RD; Leah Boulos, MLIS; Tara Sampalli, PhD; and Gail Tomblin Murphy, PhD, RN, FAAN, FCAN, FCAHS
Research, Innovation & Discovery, Nova Scotia Health, Halifax, Nova Scotia, Canada

DOI: 10.15273/hpj.v3i2.11600

Abstract

Introduction: In response to protests for racial justice, several organizations and institutions have made public declarations denouncing anti-Black racism. One prominent sector emphasizing their commitment to addressing anti-Black racism is health care—more specifically, nursing. To address anti-Black racism, many Canadian organizations and institutions have announced initiatives to recruit, retain, and support the advancement of Black nurses. Our team is interested in charting these initiatives to inform future policy and program decisions related to the recruitment, retention, and advancement of Black nurses. **Objective:** The objective of this review is to identify and chart evidence of organizational and institutional initiatives related to the recruitment, retention, and advancement of Black nurses in Canada. **Inclusion criteria:** This rapid review will include sources focused on Black nurses in Canada. Further, this review is focused on the organizational or institutional initiatives that support or facilitate aspects of recruitment, retention, or advancement of Black nurses in the workforce in Canada. **Methods:** A comprehensive search, developed in collaboration with a library scientist, will be used to locate peer-reviewed and grey literature from select databases and repositories. Databases will be searched from time of inception, and language will be restricted to English and French sources. Title and abstract screening as well as full-text review will each be completed by two independent reviewers. Sources will be included if they meet the inclusion criteria for the population, concept, and context. Data will be extracted by two reviewers using an extraction tool. Data will be reviewed and consolidated before being presented narratively and visually.

Protocol Registration: The protocol has been registered with Open Science Framework (OSF) on March 1st, 2023.

Keywords: African descent, Black, Canada, nursing, health care, workforce

Introduction

Over the past three years, there has been a notable increase in anti-racism programs and initiatives to address anti-Black racism and other forms of racial discrimination in Canada (Patrick, 2022). Many of these programs and initiatives focus on increasing the representation of people of African descent in institutions and organizations (Egbedeyi et al., 2022). With evidence showing how racism has direct health implications (Salami et al., 2022; Williams et al., 2019), it is no surprise that the health sector is one area of focus for increasing representation (Canadian Nurses Association, 2009). In Canada, the nursing profession is one practitioner group that is working to address historical discriminatory practices that continue to impact the workforce and health care in Canada (Canadian Nurses Association, 2009). Examples of discriminatory practices include restrictions to nursing training programs and a lack of culturally appropriate content in curricula (Flynn, 2011; Jefferies, Martin-Misener, et al., 2022). Several of these practices continue today. Addressing the under-representation of Black nurses requires attending to important considerations related to the recruitment, retention, and advancement of Black nurses. Understanding existing mechanisms that facilitate recruitment, retention, and advancement will help address issues identified as exacerbating the nursing shortage resulting from burnout and moral injury (Tomblin Murphy et al., 2022).

Institutional and Organizational Commitments to Addressing Anti-Black Racism

During the height of the widespread 2020 protests for racial justice and the protection of Black lives, numerous organizations and institutions in Canada pledged their commitment to address anti-Black racism within their entities. The pledges spanned sectors including education, labour, and health care, with commitments including hiring considerations, internal/organizational reviews, and specific mechanisms to increase representation of Black professionals in these sectors. For example, several universities launched Black faculty cohort hires and designated seats in baccalaureate programs; provincial and federal funding has been designated for Black-led (and focused) research; organizations denounced anti-Black racism through public statements; and agencies have launched deployment initiatives. Notably, many nursing organizations and institutions made commitments to addressing anti-Black racism throughout the profession.

Nursing in Crisis

Nurses are one of the most trusted health care provider groups and make up a significant proportion of the health care workforce (Almost, 2021). Delivering care across a broad range of practice areas and settings, nurses are leaders in community and clinical care, education, research, administration, and policy. However, recent events and societal trends, including an aging population, prevalence of chronic conditions, and antiquated systems-level operations, as well as the COVID-19 pandemic, have put increased stress and strain on the nursing workforce (Tomblin Murphy et al., 2022). For decades, there has been concern related to the retention of nurses in the Canadian workforce (Tomblin Murphy et al., 2012). However, due to a combination of human resource issues as well as the deployment and distribution of nurses, this concern has reached crisis level (Tomblin Murphy et al., 2022).

Black Nurses in Canada

Evidence shows that existing literature related to Black nurses in Canada focuses on five main areas: historical situatedness of Black nurses, racism and discrimination, immigration, leadership and career progression, and diversity in the workforce (Jefferies, States, et al., 2022). Notably, racism in the nursing profession—and health care—is a reoccurring issue. Further, evidence suggests that Black nurses are under-represented in advanced practice nursing roles, leadership positions, and specialty care areas, while being overrepresented in entry-level positions, non-specialty care areas, and non-licensed clinical care roles such as continuing care assistants or personal support workers (Jefferies, Martin-Misener, et al., 2022; Premji & Etowa, 2014). Additionally, the issues for Black internationally educated nurses include barriers to licensing and registration as well as integration into the nursing workforce (Covell & Rolle Sands, 2020). Finally, regional differences highlight the necessity of context-specific evidence. For instance, in Nova Scotia, Black nurses report challenges with integration into the nursing profession due to various factors such as racism and institutional barriers (Etowa et al., 2009; Jefferies, Martin-Misener, et al., 2022).

Mobilization of Black Nurses

Activism and mobilization have always been central pillars among Black communities. However, the murder of George Floyd in 2020 ignited a movement among Black nurses in multiple jurisdictions across Canada. Canada saw the emergence of several provincial and national organizations with a mandate to address anti-Black racism in the nursing profession. Some of these include the Canadian Black Nurses Network (CBNN), Black Nurses' Task Force (Registered Nurses' Association of Ontario [RNAO]), Pan-Canadian Association of Nurses of African Descent (PCANAD), the Canadian Black Nurses Alliance (CBNA), Ontario Black Nurses Network (OBNN), Black Nurses Association of Nova Scotia (BNANS), and the Coalition of African, Caribbean and Black Nurses in British Columbia (CACBN). Each of these organizations have unique mandates to address various aspects of anti-Black racism in nursing. Examples include the promotion of leadership among Black nurses (OBNN & CBNN) and a national voice and community of support (PCANAD & CBNA), as well as more local initiatives of lobbying at the provincial and institutional levels (CACBN, BNANS) and addressing issues in education (CBNA, BNANS, RNAO), research, and public forums (RNAO, PCANAD, CBNA).

Operational Definitions

For this review, there are two operational terms that require defining.

The population of interest for this review is *Black nurses*. There are two components to the population. The first is defining "Black," which encompasses people identified as being of African descent from various countries or regions such as continental Africa and the Caribbean, as well as the United States, Canada, and South America. It is important to note that the Black population (in Canada and elsewhere) is not a monolith. As a result, there are specific and important differences that constitute the mosaic that is the Black population (Cénat, 2022). The second component, "nurses," includes licensed and regulated nurses who completed an accredited nursing program. In Canada, there are four nursing designations that are recognized: licensed practical nurse (LPN), registered nurse (RN), registered psychiatric nurse (RPN), and nurse practitioner (NP; Almost, 2021). Lastly, this definition for Black nurses includes Black-identified nurses who may be referred to as immigrant nurses, visible minorities, or internationally educated nurses (IENs).

The second operational term is *initiative,* used to describe institutional or organizational strategies, guidelines, mechanisms, frameworks, practices, pathways, or channels, which are developed (or implemented) by entities that address the recruitment, retention, and/or advancement of Black nurses. Examples may include policies such as equitable admissions policies or workplace promotional channels.

With the launch of these programs and initiatives, there is an opportunity to learn from existing practices to inform the development of future strategies that are context specific. To this end, this review is not an effectiveness study, a systematic review, or an evaluation of programs. Rather, this review is intended to serve as an initial step in evidence synthesis by charting evidence on the recruitment, retention, and advancement for Black nurses in Canada. As described by Tricco et al. (2017), rapid reviews are a useful and desirable approach to knowledge synthesis, as they address several of the challenges in the research-to-policy/practice channel. For example, rapid reviews are useful in supporting policy decisions and practice changes that are time sensitive.

The objective of this rapid review is to explore and identify the type of available evidence that outlines organizational and institutional initiatives for strengthening the nursing workforce through the recruitment, retention, and advancement of Black nurses in Canada. Additionally, this review will chart the existing provincial and national Black nursing organizations focused on supporting Black nurses within health care systems. The findings from this review will inform a context-specific strategic initiative to address the recruitment, retention, and advancement of Black nurses in the nursing workforce within a health system in a region of Canada.

A preliminary search of MEDLINE, the Cochrane Database of Systematic Reviews, and *JBI Evidence Synthesis* was conducted, and no current or underway systematic reviews or scoping reviews on the topic were identified. This highlights an opportunity to chart the existing evidence on this issue to continue to inform policy decisions and initiative development. Importantly, this rapid review expands a recently published scoping review that charted evidence pertaining to Black nurses in Canada (Jefferies, States, et al., 2022).

Review Question

This rapid review is guided by one broad question and two sub-questions. The main review question is as follows: What is the current available evidence regarding the organizational and institutional initiatives for the recruitment, retention, and advancement of Black nurses in the health care system in Canada?

The review sub-questions include the following:

1. What organizational or institutional practices, frameworks, and mechanisms exist for the recruitment, retention, and advancement of Black nurses in Canada?
2. In what ways are Black nurses organizing and mobilizing in Canada?

Eligibility criteria

Population

The population of interest for this rapid review include nurses identified as Black or of African descent. Examples include nurses described as African Canadian, Caribbean Canadian, Black Canadian, African Nova Scotian, or Black, as well as nurses described as migrants, immigrants, or newcomers and as Black or of African descent. Finally, sources that involve multiple ethnic or racial groups will be considered for inclusion if they include data that are disaggregated by race or ethnicity.

Concept

The concept of interest for this review is organizational and institutional initiatives used to recruit, retain, and promote Black nurses in the nursing workforce and health care system in Canada. Specifically, the concept encompasses initiatives such as practices, strategies, mechanisms, frameworks, and programs. Examples of such initiatives may include but are not limited to equitable admissions policies, designated hiring procedures or affirmative action policies, and deployment initiatives, as well as professional development or promotional pathways or channels.

Context

Due to the stated objective of informing the development of initiatives for a specific jurisdiction in Canada, the context for this review is restricted to Canada. However, as will be described in more detail below, the search of sources will span two regions. Importantly, the search of grey literature will be limited exclusively to Canada, while the peer-reviewed search will include Canada, the rest of North America, and the United Kingdom. The expansion of the peer-reviewed literature search is based on the authors' knowledge of existing topic-specific peer-reviewed and grey literature in Canada.

Sources will be excluded from this review if they do not meet the a priori inclusion criteria put forth in this protocol. Particularly, sources that do not focus on organizational or institutional practices that support the recruitment, retention, or advancement of Black-identified nurses will be excluded.

Types of Sources

The types of sources for this review include two broad categories: peer-reviewed and grey literature. In terms of published peer-reviewed literature, all quantitative study designs including experimental, quasi-experimental, analytical observational studies, and descriptive observational will be considered. Additionally, qualitative studies such as phenomenology, grounded theory, ethnography, qualitative description, action research, and feminist research will be considered for inclusion. Further, systematic and scoping reviews will be considered. Finally, as noted, the search of peer-reviewed literature will include sources from North America and the United Kingdom.

In terms of grey literature, text and opinion papers as well as organizational and institutional policies or reports will also be considered for inclusion in this rapid review. The search of grey literature will be limited to Canada.

Methods

This rapid review will be conducted by a team of scientists with expertise in systematic and rapid review methodology. The review team will draw on rapid review methodology guidelines (Ganann et al., 2010; Tricco et al., 2017).

Search Strategy

The search strategy (Appendix A), developed in collaboration with a librarian scientist, aims to locate published and unpublished studies. The search for this review was influenced by three key sources (Ayiku et al., 2017; Cheung et al., 2020; Jefferies, States, et al., 2022). Importantly, this search builds on a comprehensive review, created for this population, developed by a library scientist (Jefferies, States, et al., 2022). The words contained in the titles and abstracts of relevant articles and the index terms used to describe the articles were used to develop a full search strategy. Ancestry tracing, which involves scanning the reference list of all included sources of evidence, will be used to screen for additional studies. Additionally, forward citation tracing will be performed. Sources published in English and French will be included and databases will be searched from inception. The databases to be searched include PubMed, Embase (Elsevier), CINAHL with Full Text (EBSCO), APA PsycInfo (EBSCO), and Scopus (Elsevier).

Sources of grey literature include online repositories and organizational and institutional websites such as nursing organizations, health agencies, and schools of nursing, which have described practices for the recruitment, retention, and/or advancement of Black nurses. The grey literature search will be limited to Canada only. Examples of organizational websites include those of the Registered Nurses' Association of Ontario, Canadian Nurses Association, Canadian Black Nurses Alliance, Pan-Canadian Association of Nurses of African Descent, Coalition of African, Caribbean and Black Nurses in British Columbia, and the Ontario Black Nurses' Network. Examples of institutional websites include those of Toronto Metropolitan University, York University, University of Toronto, Dalhousie University, University of Regina, McGill University, and the University of Alberta.

Source of Evidence Selection

Following the search, all identified citations will be collated and uploaded into Covidence and duplicates removed. Following a pilot test of approximately 5% of the included sources using the extraction tool, titles and abstracts will be screened by two independent reviewers against the inclusion criteria. Potentially relevant sources will be retrieved in full and their citation details imported into Covidence. The full text of selected citations will be assessed in detail against the inclusion criteria by two independent reviewers. Any disagreements between reviewers at the title and abstract screening or the full-text review will be resolved by a third reviewer. Reasons for exclusion of sources at the full text stage will be recorded and appended in the final report. The results of the search and the study inclusion process will be reported in full in the final review report and presented in a Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Review (PRISMA-ScR) flow diagram (Page et al., 2021). Sources meeting the inclusion criteria at the full text stage will advance to the extraction stage of the review.

Data Extraction

Covidence will be used to organize and complete data extraction. Data will be extracted from included sources by two independent reviewers using the data extraction tool (Appendix B). Consensus of extracted data points will be performed by a third reviewer. Data items to be extracted will include specific details about the participants, concept, and context. The data extraction tool, and thus the data points of interest, may be modified and revised as extraction progresses. Any deviations from the protocol will be detailed in the review report.

Data Charting and Presentation

Data charting will involve a framework that will be used in combination with an iterative approach to evidence synthesis and charting. Importantly, data charting will not include a critical appraisal of sources, as this is not the intention of this review. Rather, this review will chart the existing evidence on the organizational and institutional practices for the recruitment, retention, and advancement of Black nurses in the workforce in Canada.

The presentation of data will be framed by the review objective and questions. Data will be presented narratively and visually, using tables and figures where appropriate. Data presentation will include a description of the type of sources, the location or setting of sources, and the identified organizational or institutional practice. Particularly, the review will disaggregate the identified practices according to recruitment, retention, or advancement mechanisms.

Acknowledgements

The authors would like to acknowledge the QEII Health Sciences Centre Foundation as well as the Research, Innovation, and Discovery team at Nova Scotia Health.

Funding

This research is funded by a QEII Foundation Translated Research into Care (TRIC) Grant.

Conflicts of Interest

There is no conflict of interest in this project.

References

Almost, J. (2021, February). *Regulated nursing in Canada: The landscape in 2021*. Canadian Nurses Association. https://hl-prod-ca-oc-download.s3-ca-central-1.amazonaws.com/CNA/2f975e7e-4a40-45ca-863c-5ebf0a138d5e/UploadedImages/documents/Regulated-Nursing-in-Canada_e_Copy.pdf

Ayiku, L., Levay, P., Hudson, T., Craven, J., Barrett, E., Finnegan, A., & Adams, R. (2017). The MEDLINE UK filter: Development and validation of a geographic search filter to retrieve research about the UK from OVID MEDLINE. *Health Information and Libraries Journal, 34*(3), 200–216. https://doi.org/10.1111/hir.12187

Canadian Nurses Association. (2009, January). *Sustaining the workforce by embracing diversity* [Policy brief].

Cénat, J. M. (2022). Who is Black? The urgency of accurately defining the Black population when conducting health research in Canada. *CMAJ, 194*(27), E948–E949. https://doi.org/10.1503/cmaj.220274

Cheung, A., Popoff, E., & Szabo, S. (2020). Using text-mining to develop a US-specific geographic search filter to facilitate systematic reviews in Ovid MEDLINE. *Cochrane Database of Systematic Reviews, 2020*(9, Suppl 1), 319. https://doi.org/10.1002/14651858.CD202001

Covell, C. L., & Rolle Sands, S. (2020). Does being a visible minority matter? Predictors of internationally educated nurses' workplace integration. *Canadian Journal of Nursing Research, 53*(4), 366–375. https://doi.org/10.1177/0844562120939795

Egbedeyi, O., El-Hadi, H., Madzima, T. R., Semalulu, T., Tunde-Byass, M., & Swaleh, R. (2022). Assessing the need for Black mentorship within residency training in Canada. *CMAJ, 194*(42), E1455–E1459. https://doi.org/10.1503/cmaj.212124

Etowa, J. B., Sethi, S., & Thompson-Isherwood, R. (2009). The substantive theory of surviving on the margin of a profession. *Nursing Science Quarterly, 22*(2), 174–181. https://doi.org/10.1177/0894318409332781

Flynn, K. (2011). *Moving beyond borders: A history of Black Canadian and Caribbean women in the diaspora*. University of Toronto Press.

Ganann, R., Ciliska, D, & Thomas, H. (2010). Expediting systematic reviews: Methods and implications of rapid reviews. *Implementation Science, 5*, Article 56. https://doi.org/10.1186/1748-5908-5-56

Jefferies, K., Martin-Misener, R., Tomblin Murphy, G., Gahagan, J., & Thomas Bernard, W. (2022). African Nova Scotian nurses' perception and experiences of leadership: A qualitative study informed by Black feminist theory. *CMAJ*, *194*(42), 1437–1447. https://doi.org/10.1503/cmaj.220019

Jefferies, K., States, C., MacLennan, V., Helwig, M., Gahagan, J., Thomas Bernard, W., Macdonald, M., Tomblin Murphy, G., & Martin-Misener, R. (2022). Black nurses in the nursing profession in Canada: A scoping review. *International Journal for Equity in Health, 21*, Article 102. https://doi.org/10.1186/s12939-022-01673-w

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., … Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ*, *372*, n71. https://doi.org/10.1136/bmj.n71

Patrick, K. (2022). A focus on the health of Black people and anti-Black racism in health care in Canada. *CMAJ*, *194*(41), E1420–E1421. https://doi.org/10.1503/cmaj.221501

Premji, S., & Etowa, J. B. (2014). Workforce utilization of visible and linguistic minorities in Canadian nursing. *Journal of Nursing Management, 22*(1), 80–88. https://doi.org/10.1111/j.1365-2834.2012.01442.x

Salami, B., Idi, Y., Anyieth, Y., Cyuzuzo, L., Denga, B., Alaazi, D., & Okeke-Ihejirika, P. (2022). Factors that contribute to the mental health of Black youth. *CMAJ*, *194*(41), E1404–E1410. https://doi.org/10.1503/cmaj.212142

Tomblin Murphy, G., Birch, S., MacKenzie, A., Alder, R., Lethbridge, L., & Little, L. (2012). Eliminating the shortage of registered nurses in Canada: An exercise in applied needs-based planning. *Health Policy, 105*(2–3), 192–202. https://doi.org/10.1016

/j.healthpol.2011.11.009

Tomblin Murphy, G., Sampalli, T., Bourque Bearskin, L., Chasen, N., Cummings, G., Rose, A. E., Etowa, J., Grinspun, D., Jones, E. W., Lavoie-Tremblay, M., MacMillan, K., MacQuarrie, C., Martin-Misener, R., Oulton, J., Ricciardelli, R., Silas, L., Thorne, S., & Villeneuve, M. (2022, May). *Investing in Canada's nursing workforce post-pandemic: A call to action* [Policy brief]. Royal Society of Canada. https://rsc-src.ca/sites/default/files/Nursing%20PB_EN.pdf

Tricco, A. C., Langlois, E. V., & Straus, S. E. (Eds.). (2017). *Rapid reviews to strengthen health policy and systems: A practical guide*. World Health Organization. https://apps.who.int/iris/bitstream/handle/10665/258698/9789241512763-eng.pdf?sequence=1&isAllowed=y

Williams, D. R., Lawrence, J. A., & Davis, B. A. (2019). Racism and health: Evidence and needed research. *Annual Review of Public Health, 40,* 105–125. https://doi.org/10.1146/annurev-publhealth-040218-043750

Appendix A

Search Strategy

Database: Ovid MEDLINE All
Date: January 30, 2023

1	exp African Continental Ancestry Group/ or African Americans/	95,158
2	Minority Groups/	17,367
3	1 or 2	109,812
4	exp Nurses/	97,093
5	3 and 4	522
6	((Black or African or Afro* or Coloured or Colored or Caribbean or West Indian or West Indies or "of colour" or "of color" or minority or bipoc or bame) and (nurse or nursing or nurses)).ti,ab,kw,kf.	9,060
7	5 or 6	9,364
8	exp North America/	1,665,073
9	(Canad* or "British Columbia" or "British Colombian" or Alberta or Albertan or Saskatchewan or Saskatchewanian or Manitoba or Manitoban or Ontario or Ontarian or Quebec or Quebecer or Quebecois or "New Brunswick" or "New Brunswicker" or "Nova Scotia" or "Nova Scotian" or "Prince Edward Island" or "Prince Edward Islander" or Newfoundland or Newfoundlander or Labrador or "Northwest Territories" or "Northwest Territorian" or Yukon or Yukoner or Nunavut or Nunavummiut).ti,ab,kw,kf.	198,550
10	(america* or united states or usa or "u.s.a." or "u.s." or alabama* or montgomery or birmingham or alaska* or juneau or anchorage or arizona* or phoenix or arkansa* or little rock or california* or sacramento or los angeles or colorad* or denver or connecticut* or hartford or bridgeport or delaware* or dover or wilmington or florid* or tallahassee or jacksonville or miami or georgia* or atlanta or hawai?i* or honolulu or idaho* or boise or illinois* or springfield or chicago or indiana* or iowa* or des moines or kansas or kansan or topeka or wichita or kentuck* or frankfort or louisville or louisian* or baton rouge or new orleans or maine? or augusta or portland or maryland* or annapolis or baltimore or massachusetts* or boston or michigan or lansing or detroit or minnesota* or st paul or minneapolis or mississippi* or jackson or missouri* or jefferson city or montana* or billings or nebraska* or omaha or nevada* or carson city or las vegas or new hampshir* or concord or new jersey* or trenton or newark or new mexic* or santa fe or albuquerque or new york* or albany or north carolin* or raleigh or north dakota* or bismarck or fargo or ohio* or columbus or oklahoma* or oregon* or salem or portland or pennsylvania* or harrisburg or philadelphia or puerto ric* or rhode island* or providence or south carolin* or columbia or charleston or south dakota* or sioux falls or tennessee* or nashville or texas or texan or austin or houston or utah* or salt lake city or vermont* or montpelier or burlington or virginia* or richmond or washington* or olympia or seattle or west virginia* or wisconsin* or madison or milwaukee or wyoming* or cheyenne or district of columbia).ti,ab,kw,kf.	1,873,175

11	(mexico or mexican or aguascalientes or baja california or campeche or chiapas or chihuahua or coahuila or colima or durango or guanajuato or guerrero or hidalgo or jalisco or michoacan or morelos or nayarit or nuevo leon or oaxaca or puebla or queretaro or quintana roo or san luis potosi or sinaloa or sonora or tabasco or tamaulipas or tlaxcala or veracruz or yucatan or zacatecas).ti,ab,kw,kf.	72,812
12	exp United Kingdom/	387,984
13	(english not ((published or publication* or translat* or written or language* or speak* or literature or citation*) adj5 english)).ti,ab,kw,kf.	47,760
14	("g.b." or britain* or (british* not "british columbia") or uk or "u.k." or united kingdom* or (england* not "new england") or london* or northern ireland* or northern irish* or scotland* or scottish* or ((wales or "south wales") not "new south wales") or welsh*).ti,ab,kw,kf.	332,720
15	or/8–14	3,534,775
16	7 and 15	5,308
17	exp Workforce/	80,359
18	(workforce* or work force* or worker? or staffing or labo?r supply or labo?r supplies or manpower or womanpower or human resource* or hiring or hire? or recruit* or retention or retain* or "entry to practice" or professional development).ti,ab,kw,kf.	1,169,123
19	or/17–18	1,224,605
20	16 and 19	1,225

Appendix B

Data Extraction Instrument

Date:	
Reviewer:	
Extraction Components	**Response (*insert "N/A" if not applicable or "N/R" if not reported).**
Article Title:	
Year of Publication:	
Authors:	
DOI/Web Address:	
Article Citation (Vancouver Style):	
Article Type (i.e., Research, Policy, Commentary):	
Article Aim/Purpose:	
Article Questions/Objectives:	
Theoretical Framework (if presented/applicable):	
Study Design (if presented/applicable):	
Methods (Data Collection and Analysis—if applicable):	
<u>Study Population</u> (including participant description, e.g., African Canadian, Black, African Nova Scotian, immigrant) and <u>Sample Demographics</u> (Size, etc.; if presented/applicable): *Specify terminology used to describe participants	
Context (including setting and location, e.g., region, country, province).	
Concept (practice, mechanism, framework, initiative). *See taxonomy below	
• Organization/Institution (e.g., SON, college)	
• Mechanism Type (Recruitment/Retention)	
• Initiative Name & Description	
• Induction Date	
• Anticipated or Actual Outcome/Impact	
• Continuity Plan	
Study Results/Key Findings (if presented/applicable). Themes/Sub-themes— Level of Significance/Confidence Intervals—	
Recommendations/Implications	

Note. Instrument adapted from Jefferies, States, et al. (2022).

HPJ HEALTHY POPULATIONS JOURNAL

Research Protocol

Frailty in Older Populations of Arabic-Speaking Countries: Protocol for a Scoping Review

Amany Aly[1], MHA; Stephanie J. Kendall[1,2], BSc; Chris MacKnight[1,3], MD, MSc, FRCPC, FACP; Olga Theou[1,3], PhD; and Scott A. Grandy[1,2,3], PhD
[1] Dalhousie University
[2] Beatrice Hunter Cancer Research Institute, Halifax, Nova Scotia, Canada
[3] Nova Scotia Health Authority, Nova Scotia, Canada

DOI: 10.15273/hpj.v3i2.11520

Abstract

Introduction: With the globally aging population, the impact of frailty is expected to increase, and frailty has come into focus as a challenging manifestation of aging. Although frailty has been thoroughly investigated in developed countries, it has been understudied in developing countries. Like other countries worldwide, Arabic-speaking countries (ASCs) are experiencing an increase in the aging population; thus, the risk of frailty increases, and it becomes imperative to address the limitations of diagnosis, treatment, and prevention of frailty in this area of the world. **Objective:** This protocol describes a scoping review that will investigate what is known about frailty in older adults living in ASCs. The aim is to synthesize and map the literature addressing the concept of frailty, its association with other geriatric conditions, and measurement tools used to identify or assess frailty among this subpopulation in this part of the world. **Methods:** This review will employ Joanna Briggs Institute guidelines (JBI). Studies considered for this review must involve the concept of frailty among older adults living in the Arabic-speaking world. **Conclusion/Discussion:** This scoping review protocol outlines the specific methodologies to improve the overall quality of the finalized scoping review. The finalized scoping review will present an overview of the current literature on frailty in older adults living in ASCs and summarize the knowledge gaps in frailty assessment and interventions.

Frailty is not a natural consequence of aging; it is a multi-dimensional construct incorporating biological, social, and psychological factors associated with many poor outcomes (National Institute on Aging, n.d.). Although there is no consensus on a definition of frailty, many geriatricians and gerontologists view frailty as a syndrome (referred to as the frailty phenotype approach), which is the presence of three or more of the five criteria: unintentional weight loss, low energy, slow gait, reduced grip strength, and reduced physical activity (Fried et al., 2001). Frailty can also be viewed as an age-associated accumulative decline in tissue and organ function (referred to as the frailty index approach), which typically leads to an increased vulnerability to stressors (e.g., infection, acute illness, surgery; Rockwood & Mitnitski, 2007). It is not only a significant risk factor for premature mortality and morbidity in older adults, but it is also associated with a broad range of adverse outcomes such as falls (Cheng & Chang, 2017), disability (Makizako et al., 2015), depression (Brown et al., 2014), lower quality of life (Rizzoli et al., 2013), dementia (Gray et al., 2013), and hospitalization (Fried & Mor, 1997).

Given frailty's complex nature, interventions that mediate biological, socio-economic, and environmental factors contributing to frailty should be considered for pre-frail and frail older adults. Thus, measuring and screening for frailty is essential. With no international standard measurement for frailty, multiple frailty measurements exist and exhibit varying levels of quality. Currently, there is no consensus on which frailty measurement tool is the most accurate or reliable.

With the globally aging population, the impact of frailty is expected to increase as a challenging manifestation of aging (Howlett et al., 2021). Health care providers and decision-makers in developed countries recognize that frailty will likely become a problematic concern even with a highly advanced and supportive health care system (Hajek et al., 2018; Han et al., 2019; Hoogendijk et al., 2019; Kojima, 2019; Mitnitski et al., 2005). In addition to the health care burden of caring for frail people, there is an individual burden on frail older adults and their caregivers, including low quality of life, depression, and loneliness (Gale et al., 2018). Strategies to prevent and slow the progression of frailty are crucial (Chan et al., 2012; Kim & Lee, 2013; Takano et al., 2017). However, in low- and middle-income countries, frailty is less acknowledged. Many health care providers may not address or may misdiagnose a patient's frailty level during a clinical investigation (Siriwardhana et al., 2018). Such shortcomings are likely because more research is needed to investigate, identify, and measure frailty among older adults in these countries. Despite the expected increase in life expectancy requiring more comprehensive health care services, most primary care providers in developing countries receive little to no training on health conditions associated with aging and late-life challenges (Nguyen et al., 2015). Moreover, in most developing countries, health care systems are not publicly funded, and patients must pay for most health care services. Additionally, there may be an underestimation of the importance of identifying or predicting frailty compared to other chronic diseases or emergencies (Sibai & Yamout, 2012). With the increase in the aging population, the risk of frailty increases, and it is imperative to address the limitations of diagnosis, treatment, and prevention of frailty in these areas of the world.

Like other developing countries, Arabic-speaking countries (ASCs) are experiencing a demographic transition and are facing challenges in relation to caring for an aging population (Obermeyer, 1992). By 2050, the proportion of older adults (aged 60 years or more) in ASCs is estimated to be 19%, almost triple the average in 2010 (Yount & Sibai, 2009). These countries, where Arabic is the official language, are located in the region of the Middle East and North Africa (MENA). Precisely 12 countries, namely Bahrain, Egypt, Jordan, Kuwait, Oman, Qatar, Saudi Arabia, Lebanon, United Arab Emirates (UAE), Syria, Yemen, and Tunisia (Omri et al., 2015) will be considered for this panel analysis. Although these countries have a shared history, religion, and culture, there is a great variety within this history, climate, and culture that can affect the health care and health of aging people. Moreover, the concept of culture in ASCs reflects a medium level of the Human Development Index, which examines life aspects such as education and life expectancy (Kabasakal & Bodur, 2002). This index articulated that life expectancy for people living in ASCs was low compared to other parts of the world. Therefore, this scoping review will consider publications investigating frailty for people aged 60 years or more living in the ASCs.

Reviews have yet to articulate the frailty measurements used to identify or screen for frailty in ASCs, which could reliably predict these subpopulation outcomes. Furthermore, knowing which tools have been used to measure and/or screen for frailty in this part of the world and among different nations will support what has been established in international studies.

Based on an initial search of the

Cochrane Database of Systematic Reviews, PROSPERO, and *JBI Evidence Synthesis*, no reviews are underway or have been conducted. A scoping review will elucidate the current gaps in what has been known about frailty in ASCs. The objective of the proposed protocol is to improve the quality of the final manuscript, improve examination quality, and minimize author bias.

Methodology

This is a scoping review protocol of literature commentary on frailty among older adults living in ASCs. The review aims to outline what is known about frailty in ASCs. The updated JBI scoping review methodology will guide the proposed protocol review (Peters et al., 2015). This protocol details the review's inclusion and exclusion criteria and identifies which and how data will be extracted and presented in alignment with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR; Peters et al., 2021). The following scoping review will highlight and explain deviations from the protocol. A quality appraisal will not be done, as this review aims to map all research activities in this concept.

Research Question

The review will address the following questions:

1. What has been reported on frailty and its related domains (e.g., prevalence, sex differences, association with comorbidities or other health) among people aged 60 years and older who live in ASCs?
2. What frailty tools are used to identify or measure frailty among older adults in ASCs?

Inclusion Criteria

Participants

The review will include studies involving frail older adults (aged 60 years and above) diagnosed or assessed for frailty by a researcher or health care professional in ASCs. While frailty can occur in younger adults, researchers selected the specific age criterion because geriatric research is not as comprehensive in ASCs (Hussein & Ismail, 2017). Researchers plan to highlight gaps in the literature to guide future research. Further, an aged population is often considered to be 65 years or above; however, on average, individuals living in ASCs have a lower life expectancy, and, as such, an older adult is defined as 60 years or older (Sweed & Maemon, 2014). The studies should include participants who were investigated, evaluated, or assessed for frailty independently or in association with other syndromes, conditions, or diseases.

Concept

The concept of the review is to summarize the information about frailty in ASCs. This includes any studies that describe or assess frailty and tools used for assessment within any settings in ASCs. Included studies may present but are not limited to qualitative, quantitative, diagnostic, and clinical data.

Context

This review will consider publications that include the term "frailty" and recruited participants from ASCs. Study cohorts of participants from the Middle East and North African regions (MENA) will be considered—specifically, from the countries Bahrain, Egypt, Jordan, Kuwait, Oman, Qatar, Saudi Arabia, Lebanon, United Arab Emirates (UAE), Syria, Yemen, and Tunisia. Studies recruiting participants from MENA countries where Arabic is not the sole official language (e.g., Algeria and Morocco; Fishman, 2017) or countries located outside of the MENA region (e.g., Iran, Turkey, Niger, Senegal, Mali and Cyprus) will not be considered for this scoping review. The review will only consider reports published in English or Arabic. The review will consider the investigation, assessment, correlations, and interventions performed in any setting (e.g., community-dwelling, acute care, hospital, primary care) in any stated country.

Exclusion Criteria

Studies focusing on other aging conditions and not frailty, such as studies looking at geriatric medicine, treatment of diseases, or aging aspects that do not involve "frailty" will be excluded.

Types of Sources

The research will be conducted on published studies and grey literature. The review will include experimental and quasi-experimental study designs, randomized controlled trials, non-randomized controlled trials, pre-post studies, and interrupted time-series studies. Observational study designs such as descriptive, analytical, case study, and cross-sectional studies will be included. Researchers will seek to contact the authors of the included studies if more information is required.

Methods

This proposed review will use the *JBI Manual for Evidence Synthesis* (Peters et al., 2015). Based on a pilot search conducted on July 25, 2022, there are at least 27 reports that meet the inclusion criteria.

Search Strategy

A comprehensive search strategy was developed in collaboration with a research librarian at Dalhousie University and followed JBI's three-step search strategy. The search strategy followed the Peer Review of Electronic Search Strategies (PRESS) guidelines to generate keywords (McGowan et al., 2016). The strategy is presented in Appendix A. The keywords be used to search for unpublished studies and grey literature.

Information Sources

Researchers will use the electronic databases MEDLINE (Ovid), Embase, Cumulative Index to Nursing and Allied Health Literature (CINAHL), PsycInfo, and Scopus to search for relevant sources. Additionally, researchers will use Google Scholar to consider journals and websites in the Middle East, such as the *Middle East Journal of Age and Ageing* and *Geriatrics & Gerontology International*. The search will be restricted to the English language using words that can be used interchangeably and keywords (Appendix A).

Study/Source of Evidence Selection

The first author conducted the initial search, and the second author imported the search results into Covidence (www.covidence.org; see Appendix B for the electronic database search table). Two reviewers will independently screen the titles and abstracts from the retrieved studies and assess the acquired full-text publications for eligibility. Any disagreements regarding eligibility will be resolved by discussion among the two reviewers, and a third reviewer will resolve disputes if needed. The recommendations of the PRISMA-ScR (Page et al., 2021) checklist will be followed in the selection process.

Data Extraction

A data charting form will be used to electronically capture relevant information from each included study. The extracted data will include the following fields: authors, year of publication, aim, population, setting, design, data collection method, data analysis, conclusion, study outcomes, and relevant findings (Appendix C).

Data Analysis and Presentation

The results will be mapped using the PRISMA-ScR reporting guidelines for scoping reviews (Tricco et al., 2018). This review aims to present an overview and a narrative interpretation of all studies included to identify the evidence gaps. The results will be presented in two ways. Firstly, a narrative summary of the studies' extent, nature, and distribution is included. This analysis will provide an overview and point to significant knowledge gaps about the term "frailty" in ASCs. Results will be classified under specific conceptual categories: study characteristics including, for example, country of origin, study population, setting, and study design. Secondly, content analysis will be conducted to map the different tools used to measure or identify frailty, interventions to improve frailty, and reported outcomes (e.g., assessment strategies, recommendations, and results).

Conclusion

This protocol will map the current literature regarding what has been known about frailty in ASCs. The protocol will improve the final scoping review manuscript by increasing the methodologies' transparency. The final review intends to identify the prevalence, measurement tools, risk factors, and type of interventions for the frail older population in these countries and make recommendations for future research. The review will follow the JBI guidelines and use the PRISMA-ScR reporting guidelines. Researchers believe the review results will identify gaps in the frailty field, thus improving awareness of frailty in ASCs.

References

Brown, P. J., Roose, S. P., Fieo, R., Liu, X., Rantanen, T., Sneed, J. R., Rutherford, B. R., Devanand, D. P., & Avlund, K. (2014). Frailty and depression in older adults: A high-risk clinical population. *The American Journal of Geriatric Psychiatry*, *22*(11), 1083–1095. https://doi.org/10.1016/j.jagp.2013.04.010

Chan, D.-C. D., Tsou, H.-H., Yang, R.-S., Tsauo, J.-Y., Chen, C.-Y., Hsiung, C. A., & Kuo, K. N. (2012). A pilot randomized controlled trial to improve geriatric frailty. *BMC Geriatrics, 25*(12), Article 58. https://doi.org/10.1186/1471-2318-12-58

Cheng, M.-H., & Chang, S.-F. (2017). Frailty as a risk factor for falls among community dwelling people: Evidence from a meta-analysis. *Journal of Nursing Scholarship*, *49*(5), 529–536. https://doi.org/10.1111/jnu.12322

Fishman, J. A. (2017). National languages and languages of wider communication in the developing nations 1. In Wilfred Whiteley (Ed.), *Language use and social change: Problems of multiculturalism with special reference to Eastern Africa* (pp. 27–56). Routledge. https://doi.org/10.4324/9781315104409

Fried, L. P., Tangen, C. M., Walston, J., Newman, A. B., Hirsch, C., Gottdiener, J., Seeman, T., Tracy, R., Kop, W. J., Burke, G., & McBurnie, M. A. (2001). Frailty in older adults: Evidence for a phenotype. *The Journals of Gerontology: Series A*, *56*(3), M146–M157. https://doi.org/10.1093/gerona/56.3.m146

Fried, T. R., & Mor, V. (1997). Frailty and hospitalization of long-term stay nursing home residents. *Journal of the American Geriatrics Society*, *45*(3), 265–269. https://doi.org/10.1111/j.1532-5415.1997.tb00938.x

Gale, C. R., Westbury, L., & Cooper, C. (2018). Social isolation and loneliness as risk factors for the progression of frailty: The English Longitudinal Study of Ageing. *Age and Ageing*, *47*(3), 392–397. https://doi.org/10.1093/ageing/afx188

Gray, S. L., Anderson, M. L., Hubbard, R. A., LaCroix, A., Crane, P. K., McCormick, W., Bowen, J. D., McCurry, S. M., & Larson, E. B. (2013). Frailty and incident dementia. *Journals of Gerontology: Series A*, *68*(9), 1083–1090. https://doi.org/10.1093/gerona/glt013

Hajek, A., Bock, J.-O., Saum, K.-U., Matschinger, H., Brenner, H., Holleczek, B., Haefeli, W. E., Heider, D., & König, H.-H. (2018). Frailty and healthcare costs—Longitudinal results of a prospective cohort study. *Age and Ageing*, *47*(2), 233–241. https://doi.org/10.1093/ageing/afx157

Han, L., Clegg, A., Doran, T., & Fraser, L. (2019). The impact of frailty on healthcare resource use: A longitudinal analysis using the Clinical Practice Research

Datalink in England. *Age and Ageing*, *48*(5), 665–671. https://doi.org/10.1093/ageing/afz088

Hoogendijk, E. O., Afilalo, J., Ensrud, K. E., Kowal, P., Onder, G., & Fried, L. P. (2019). Frailty: Implications for clinical practice and public health. *The Lancet*, *394* (10206), 1365–1375. https://doi.org/10.1016/S0140-6736(19)31786-6

Howlett, S. E., Rutenberg, A. D., & Rockwood, K. (2021). The degree of frailty as a translational measure of health in aging. *Nature Aging*, *1*(8), 651–665. https://doi.org/10.1038/s43587-021-00099-3

Hussein, S., & Ismail, M. (2017). Ageing and elderly care in the Arab region: Policy challenges and opportunities. *Ageing International, 42*(3), 274–289. https://doi.org/10.1007/s12126-016-9244-8

Kabasakal, H., & Bodur, M. (2002). Arabic cluster: A bridge between East and West. *Journal of World Business*, *37*(1), 40–54. https://doi.org/10.1016/S1090-9516(01)00073-6

Kim, C.-O., & Lee, K.-R. (2013). Preventive effect of protein-energy supplementation on the functional decline of frail older adults with low socioeconomic status: A community-based randomized controlled study. *Journals of Gerontology: Series A, 68*(3), 309–316. https://doi.org/10.1093/gerona/gls167

Kojima, G. (2019). Increased healthcare costs associated with frailty among community-dwelling older people: A systematic review and meta-analysis. *Archives of Gerontology and Geriatrics*, *84*, Article 103898. https://doi.org/10.1016/j.archger.2019.06.003

Makizako, H., Shimada, H., Doi, T., Tsutsumimoto, K., & Suzuki, T. (2015). Impact of physical frailty on disability in community-dwelling older adults: A prospective cohort study. *BMJ Open*, *5*(9), Article e008462. https://doi.org/10.1136/bmjopen-2015-008462

McGowan, J., Sampson, M., Salzwedel, D. M., Cogo, E., Foerster, V., & Lefebvre, C. (2016). PRESS Peer Review of Electronic Search Strategies: 2015 guideline statement. *Journal of Clinical Epidemiology, 75*, 40–46*.* https://doi.org/10.1016/j.jclinepi.2016.01.021

Mitnitski, A., Song, X., Skoog, I., Broe, G. A., Cox, J. L., Grunfeld, E., & Rockwood, K. (2005). Relative fitness and frailty of elderly men and women in developed countries and their relationship with mortality. *Journal of the American Geriatrics Society*, *53*(12), 2184–2189. https://doi.org/10.1111/j.1532-5415.2005.00506.x

National Institute on Aging. (n.d.). *Geroscience: The intersection of basic aging biology, chronic disease, and health*. https://www.nia.nih.gov/research/dab/geroscience-intersection-basic-aging-biology-chronic-disease-and-health

Nguyen, T. N., Cumming, R. G., & Hilmer, S. N. (2015). A review of frailty in developing countries. *The Journal of Nutrition, Health & Aging*, *19*(9), 941–946. https://doi.org/10.1007/s12603-015-0503-2

Obermeyer, C. M. (1992). Islam, women, and politics: The demography of Arab countries. *Population and Development Review, 18*(1), 33–60. https://doi.org/10.2307/1971858

Omri, A., Daly, S., Rault, C., & Chaibi, A. (2015). Financial development, environmental quality, trade and economic growth: What causes what in MENA countries. *Energy Economics*, *48*, 242–252. https://doi.org/10.1016/j.eneco.2015.01.008

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., … Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ, 372*, n71. https://doi.org/10.1136/bmj.n71

Peters, M. D. J., Godfrey, C. M., McInerney, P., Baldini Soares, C., Khalil, H., & Parker, D. (2015). *The Joanna Briggs Institute reviewers' manual 2015: Methodology for JBI scoping reviews*. Joanna Briggs Institute.

Peters, M. D. J., Marnie, C., Tricco, A. C., Pollock, D., Munn, Z., Alexander, L., McInerney, P., Godfrey, C. M., & Khalil, H. (2021). Updated methodological guidance for the conduct of scoping reviews. *JBI Evidence Implementation, 19*(1), 3–10. https://doi.org/10.1097/xeb.0000000000000277

Rizzoli, R., Reginster, J.-Y., Arnal, J.-F., Bautmans, I., Beaudart, C., Bischoff-Ferrari, H., Biver, E., Boonen, S., Brandi, M.-L., Chines, A., Cooper, C., Epstein, S., Fielding, R. A., Goodpaster, B., Kanis, J. A., Kaufman, J.-M., Laslop, A., Malafarina, V., Mañas, L. R., ... Bruyère, O. (2013). Quality of life in sarcopenia and frailty. *Calcified Tissue International*, *93* (2), 101–120. https://doi.org/10.1007/s00223-013-9758-y

Rockwood, K., & Mitnitski, A. (2007). Frailty in relation to the accumulation of deficits. *Journals of Gerontology: Series A*, *62*(7), 722–727. https://doi.org/10.1093/gerona/62.7.722

Siriwardhana, D. D., Hardoon, S., Rait, G., Weerasinghe, M. C., & Walters, K. R. (2018). Prevalence of frailty and prefrailty among community-dwelling older adults in low-income and middle-income countries: A systematic review and meta-analysis. *BMJ Open*, *8*(3), Article e018195. https://doi.org/10.1136/bmjopen-2017-018195

Sibai, A. M., & Yamout, R. (2012). Family-based old-age care in Arab countries: Between tradition and modernity. In H. Groth & A. Sousa-Poza (Eds.), *Population dynamics in Muslim countries*: *Assembling the jigsaw* (pp. 63–76). Springer. https://doi.org/10.1007/978-3-642-27881-5_5

Sweed, H., & Maemon, M. (2014). Egypt—Ageing population. *The Egyptian Journal of Geriatrics and Gerontology, 1*(1), 1–9. https://doi.org/10.21608/ejgg.2014.5330

Takano, E., Teranishi, T., Watanabe, T., Ohno, K., Kitaji, S., Sawa, S., Kanada, Y., Toba, K., & Kondo, I. (2017). Differences in the effect of exercise interventions between prefrail older adults and older adults without frailty: A pilot study. *Geriatrics & Gerontology International, 17*(9), 1265–1269. https://doi.org/10.1111/ggi.12853

Tricco, A. C., Lillie, E., Zarin, W., O'Brien, K. K., Colquhoun, H., Levac, D., Moher, D., Peters, M. D. J., Horsley, T., Weeks, L., Hempel, S., Akl, E. A., Chang, C., McGowan, J., Stewart, L., Hartling, L., Aldcroft, A., Wilson, M. G., Garritty, C., ... Straus, S. E. (2018). PRISMA extension for scoping reviews (PRISMA-ScR): Checklist and explanation. *Annals of Internal Medicine*, *169*(7), 467–473. https://doi.org/10.7326/M18-0850

Yount, K. M., & Sibai, A. M. (2009). Demography of aging in Arab countries. In P. Uhlenberg, (Ed.), *International handbook of population aging* (pp. 277–315). Springer. https://doi.org/10.1007/978-1-4020-8356-3_13

Appendix A

Search Strategy

1	(Frailty* OR Frail* OR Aging* OR Vulnerable*)
2	(Elderly* OR Older Adult* OR Over 60* OR Senior* OR Aged* OR Old*)
3	1 AND 2
4	(Frailty measurement* OR Frailty Tool* OR Frailty Index* OR Frailty Assessment*)
5	(EFS OR 'Edmonton Frailty*') OR (mFI OR 'modified Frailty Index*') OR (FP OR ' Frailty phenotype*') OR (FI OR 'Frailty Index*') OR (MFC OR 'Modified Fried Index*' OR 'Modified Fried Criter*') OR (REFS OR 'Reported Edmonton Frail') OR (MFST-HP OR 'Maastrich Frailty*') OR (CFS OR 'Clinical Frailty Scale*') OR (CSHA-CFS OR 'Chinese-Canadian Study of Health and Aging Clinical Frailty Scale') OR FRAIL scale OR 'PRISMA-7' OR (GFI OR 'Groningen Frail*') OR 'Comprehensive Geriatric Assessment*' OR 'Rockwood Geriatric Frail*' OR 'Winograd Index*' OR 'Simplified Frailty Index*' OR (Hip-MFS OR 'Hip-Multidimensional Frailty Score')
6	3 AND 5
7	(Arab* adj2 (World* OR language OR speaking OR countr*)) OR ((Middle East OR Gulf) adj2 countr*) OR Arabic* OR North Africa* OR Yemen OR Iraq OR Egypt OR Bilad Al-Sham OR Syria OR Lebanon OR Jordan OR Palestine OR United Arab Emirates* OR Bahrain OR Oman OR Saudi arabi* OR Kuwait OR Qatar OR Libya OR Tunisia OR Algeria OR moroc*
8	6 AND 7

Appendix B

Electronic Database Search Table

Date of search	**Electronic database**	**Keyword used to search**	**Number of studies retrieved**	**Number of studies selected**

Appendix C

Data Collection Charting Form

Study information	
Study Author(s) and date	
Title of the study	
Publication	
Aim of the study	
Study setting	
Study population	
Study design	
Data collection method	
Data analysis	
Conclusion	
Study outcomes/recommendations	
Most relevant findings/comments	

HPJ HEALTHY POPULATIONS JOURNAL

Research Article

Using Social Media to Better Understand Parents' Experiences Managing Teething Pain

Kathryn O'Donnell[1], DDS; Christine T. Chambers[2, 3, 4], RPsych, PhD; Jennifer A. Parker[4], PhD; Justine Dol[4], PhD; and Mary McNally[1], DDS, MA
[1] Faculty of Dentistry, Dalhousie University
[2] Faculty of Science, Dalhousie University
[3] Faculty of Medicine, Dalhousie University
[4] Centre for Pediatric Pain Research, IWK Health Centre, Halifax, Nova Scotia, Canada

DOI: 10.15273/hpj.v3i2.11594

Abstract

Teething in infants is a natural process that is associated with a variety of signs and symptoms. Many teething pain management strategies exist, yet there is a lack of research investigating which strategies are used by parents and whether they are evidence based. Using an established social media initiative, this study sought to better understand parents' experiences managing teething pain and to determine which strategies are evidence based. **Methods:** Parents' experiences with managing teething pain were gathered through a Facebook post in partnership with researchers and a Canadian digital publisher, YummyMummyClub.ca. This Facebook post, part of a larger social media initiative called #ItDoesntHaveToHurt, asked the following question: "What do you do when you think your baby has teething pain?" Comments underwent descriptive thematic analysis to identify common management approaches. An evidence review of literature was undertaken to determine if the most frequently used pain management strategies reported by parents are supported by research. **Results:** The post received 163 comments. Analysis identified that the most frequently mentioned strategies were frozen/chilled objects, over-the-counter oral analgesics, frozen fruits/vegetables, oral anesthetic gels, and teething necklaces. The evidence review findings suggest a lack of research in the area of teething pain management. Professional dental associations recommend rubbing the gums with a clean finger or using chilled teething toys and over-the-counter analgesics as effective management strategies. Evidence indicates that oral anesthetic gels and teething necklaces are unsafe. **Conclusion:** Parents use a variety of teething pain management strategies for their infants, many of which are unsafe and not supported by evidence. What information is used by parents and how they select teething pain management strategies is an area that requires further research.

Keywords: primary tooth eruption, pain management, pediatric pain, qualitative, knowledge translation, Facebook

Teething is a natural physiological process that occurs in infants when the primary teeth move from their pre-eruptive positions in the alveolar bone to their post-eruptive positions in the oral cavity (Memarpour et al., 2015). Teething usually begins around six months of age and continues until around 30–36 months of age when the final primary tooth erupts (Meer & Meer, 2011). The physiological process is often accompanied by undesirable local and systemic signs and symptoms including general irritability, increased salivation, crying, increased biting, runny nose, chin rash, and sleep disturbances (Holt, 2000; Meer & Meer, 2011; Ramos-Jorge et al., 2011; Wake et al., 2000). Symptoms vary from infant to infant, and there is often disagreement regarding which of these symptoms can be attributed to teething, as some of these features may be explained by other undiagnosed non-teething etiologies such as a flu virus or other minor infections (McIntyre & McIntyre, 2002; Wake et al., 2000). Although controversial, systemic symptoms such as fever and diarrhea are also often attributed to teething (Macknin et al., 2000; Memarpour et al., 2015). Mild temperature elevation has been found to be associated with teething and is likely to be mistaken or misreported as a fever (Macknin et al., 2000; Memarpour et al., 2015). This may contribute to parents' conceptions that teething causes a fever. Several studies have found no association between tooth eruption and systemic symptoms, such as temperature elevation, fever, and diarrhea (Memarpour et al., 2015; Wake et al., 2000).

In recent years, there has been a significant amount of research investigating the signs and symptoms associated with teething, yet there has been little research addressing the management of these signs and symptoms (McIntyre & McIntyre, 2002; Memarpour et al., 2015). Generally accepted pain management strategies recommended by health professionals include chilled teething rings; chewing on frozen food items (e.g., ice cubes, frozen bananas, sliced fruit, vegetables); cold or frozen pacifiers; rubbing gums with a clean finger, cool spoon, or wet gauze; and reassurance (McIntyre & McIntyre, 2002). However, it is unclear which of these strategies have been demonstrated to reduce teething pain. Pharmacological pain management strategies directed toward achieving analgesia, anesthesia, or sedation are also used to control teething pain, including ibuprofen, acetaminophen, and teething gels containing local anesthetics, such as benzocaine and lidocaine (McIntyre & McIntyre, 2002). In recent years, teething products that contain local anesthesia have been contraindicated for various reasons (Markman, 2009). The U.S. Food and Drug Administration (FDA) has issued numerous statements (FDA, 2011, 2018) to warn parents of the risks of benzocaine oral products. According to the FDA, these products provide little to no benefit for treating teething pain, and they can cause methemoglobinemia, a blood disorder in which an abnormal amount of methemoglobin is produced. This condition leads to lack of oxygen delivery to cells and can be life-threatening. In 2014, the FDA issued a safety statement to warn parents about the risks of lidocaine in oral teething products, as it can result in seizures, severe brain injury, or heart problems if ingested by infants and children (FDA, 2014). Additionally, the use of amber teething necklaces has become more widespread, despite warnings from Health Canada about the risk of strangulation and foreign body aspiration. There have been recent published reports of death and non-fatal infant strangulation cases, secondary to amber teething necklaces (Abdulsatar et al., 2018; Cox et al., 2017).

Currently, there is little research investigating what strategies have been adopted for use by parents during the teething process and whether these strategies are supported by research as effective measures of pain management without contraindications or risk to the child's health and well-being. Parents are using unsafe teething remedies including amber teething necklaces, despite a lack of evidence regarding efficacy and warnings against their use (Abdulsatar et al., 2018). There is a need for further investigation into what teething pain management strategies caregivers choose and why. A key step is to gather information from parents regarding their experiences and the strategies they employ to manage teething pain.

In recent years, social media has become an increasingly popular platform to investigate and explore children's health (Tougas et al., 2018), and parents are increasingly using social media communities to help inform their decisions about health (Frey et al., 2022). Social media studies that have explored these areas have focused more on content and engagement of shared information than on whether the information being shared is backed by evidence (Tougas et al., 2018).

The aim of this study was to use parent-reported experiences shared on a popular online social media platform that were collected as part of an established social media initiative, #ItDoesntHaveToHurt, to gain a better understanding of parents' experiences managing teething pain and to determine whether parents' practices align with the research evidence and clinical practice guidelines.

Methods

Our research focused on two key questions: (a) What teething pain management strategies are being used by parents? And (b) what evidence exists to support these strategies? Two approaches were used to address the research questions: (a) A qualitative analysis of social media comments left by parents on a public Facebook post that was posted by a popular online parenting magazine regarding teething pain management as part of the #ItDoesntHaveToHurt initiative, and (b) a Level 1 evidence review of pain management strategies for teething pain.

Social Media Qualitative Analysis

A Facebook post about teething pain management was posted to the Yummy Mummy Club (YMC) Facebook page on May 2, 2016 (YMC, 2016). The Facebook post was part of a Canadian Institutes of Health Research-funded social media initiative and science-media partnership called It Doesn't Have to Hurt (It Doesn't Have to Hurt, n.d.). This initiative was created in partnership with YMC, a leading Canadian online magazine for parents that reaches millions of readers worldwide every month (Canadian Institutes of Health Research, 2021). It Doesn't Have to Hurt spanned 12 months (September 2015–September 2016) of targeted dissemination and discussion of content about children's pain via blog posts, YouTube videos, Facebook posts, Twitter parties, and Instagram images, posted and promoted on the YMC website and social media channels. Several Facebook posts were made through the YMC Facebook page that asked parents to comment on different topics regarding child pain. This study focused on one specific post that asked parents to comment on teething pain management strategies.

The Facebook post asked, "What do you do when you think your baby has teething pain?" Parents were asked to answer the question in the comment section attached to the post. Each person who commented was entered into a draw to win a $75 CAD Visa gift card as an incentive. A descriptive thematic analysis method was undertaken to systematically describe and summarize comments from parents to the YMC Facebook post regarding their experiences managing teething pain. This analytic approach involved six phases: (a) familiarization with the data, (b) generation of initial codes, (c) search for themes, (d) review of themes, (e) definition and naming of themes, and (f) summarization of findings (Braun & Clarke, 2006).

The Facebook comments (n=163) were transferred to a Microsoft Excel spreadsheet. The comments were reviewed (Author 1) and code words were generated, each representing a specific teething pain management strategy reported in the comments section of the Facebook post. Researchers did not have any relationship to the participants, and the comments were de-identified prior to conducting the descriptive thematic analysis. Comments were iteratively reviewed and coded until saturation was reached. Once an extensive list of code words had been generated and saturation occurred, the codes were reviewed and interpreted to identify common themes.

Level 1 Evidence Review

Based on the findings of the qualitative analysis, the most frequently mentioned teething pain management strategy themes were subsequently investigated in a literature search to identify whether they are supported by scientific evidence. This evidence search was limited to Level 1 evidence, which included systematic reviews as well as evidence-informed clinical practice guidelines based on systematic reviews (Melnyk & Fineout-Overholt, 2005). These types of studies integrate findings of multiple studies and provide a clear and comprehensive overview of available evidence that often informs evidence-based clinical practice for health and social service providers. The evidence search (Author 1) was conducted using PubMed and the Cochrane Database of Systematic Reviews. Key individual search terms included “teething rings,” “teething objects,” “teething toys,” “primary tooth eruption,” “teething necklace,” and “teething gel.” The Boolean operator “AND” was used to combine the terms “teething” with “fruit,” “teething” with “vegetables,” and “teething” with “pain.” On PubMed, filters were applied to limit the search to “systematic reviews” and “books and documents.” All other types of studies were excluded from the search. The Cochrane Database of Systematic Reviews did not require any filters for article type, as the library itself is limited to systematic reviews. The original search was conducted in January 2020 and updated again on September 5, 2022. Clinical practice guidelines and recommendations from professional associations were investigated through the Canadian Dental Association (CDA), American Dental Association (ADA), and American Academy of Pediatric Dentistry (AAPD) websites.

Results

Social Media Qualitative Analysis

The Facebook post received 163 comments, 108 likes, and 47 shares. Based on Facebook analytics, it is estimated that the post reached 4,229 unique Facebook users. There were over 20 different teething pain management strategies identified in the comment section of the Facebook post. The most common identified teething pain management strategy themes were the following: frozen/chilled objects, over-the-counter oral analgesics, frozen/chilled fruits and vegetables, oral anesthetic gels, and teething necklaces. Table 1 summarizes generated themes with their corresponding codes and example quotes from the Facebook post comment section.

Level 1 Evidence Review

The literature search revealed no clinical practice guidelines or systematic reviews to support any teething pain management strategies. However, several recommendations related to teething pain management strategies were identified through professional dental associations. Recommendations from the CDA include rubbing the gums with a clean finger, rubbing the gums with the back of a small, cool spoon, and using over-the-counter analgesics (CDA, n.d.). The CDA advises against oral anesthetic numbing gels and teething biscuits, and advises parents to not ignore a fever, as it is likely being caused by something other than teething. The ADA recommends rubbing the gums with a clean finger, moist gauze, or a small, cool spoon, as well as having the child chew on a clean teether made of solid rubber and not liquid-filled (MouthHealthy, n.d.). The AAPD advice regarding teething pain includes use of plastic and rubber chew toys, use of cold objects such as teething rings, massaging the gums, and use of over-the-counter oral analgesics (AAPD, 2021). The CDA, ADA, and AAPD all advise against teething necklaces and benzocaine-containing numbing gels. The FDA also warns parents of the risks of benzocaine-containing oral products and the risks of strangulation or choking associated with teething necklaces (FDA, 2018).

As described, qualitative findings indicate that parents are using a variety of teething pain management strategies, some of which are not evidence based and not supported by professional dental associations. Table 2 outlines where parent-used strategies align with CDA, ADA, and AAPD recommendations.

Table 1
Generated Themes on Parents' Strategies for Teething Pain Management, Drawn From Facebook Post Comments

Themes	Codes	Example quotes
Frozen/chilled fruits and vegetables	Frozen/chilled fruits	*“I put chopped **bananas** and **strawberries** in the freezer my son loves to chew on it and the cold eased his pain.”*
	Frozen/chilled vegetables	*“Nuby Nibblers stuffed with frozen treats like **cucumbers**…”*
Over-the-counter analgesics	Tylenol	*“… **Tylenol** worked best for my little guy!”*
	Advil	*“**Advil,** silicone teething necklace, cold carrot. But mostly advil.”*
Oral anesthetic gels	Orajel	*“I get out the baby **Orajel** and massage their little gums!”*
	Anbesol	*“I found **anbesol** worked good for my kids…”*
Teething necklaces	Amber teething necklace	*“… I tried an **amber necklace** and found that for him it worked wonders…”*
	Silicone teething necklace	*“I used frozen washcloths and those **silicone teething rings**. Frozen fruit in a mesh feeder for a treat, too!”*
Frozen/chilled objects	Frozen/chilled teething ring	*“With my first I used **frozen teething rings**, that was 7 years ago though, everything’s changed. It was so effective though that I will try the same with our new little guy…”*
	Frozen/wet washcloth	*“I gave my son a **cold facecloth** to chew on #ItDoesntHaveToHurt”*

Table 2

Frequently Used Teething Pain Management Strategies Recommended (✓), Contraindicated (X), and Neither Recommended nor Contraindicated (-) by Professional Dental Associations

Pain management strategy	CDA	ADA	AAPD
Frozen/chilled objects	✓	✓	✓
Over-the-counter analgesics	✓	-	✓
Frozen/chilled fruits and vegetables	-	-	-
Oral anesthetic gels	X	X	X
Teething necklaces	X	X	-

Note. CDA = Canadian Dental Association, ADA = American Dental Association, and AAPD = American Academy of Pediatric Dentistry.

Discussion

Overall, this study found that parents are using a wide range of teething pain management strategies and that teething pain management is an area that requires further research.

Some of the strategies that parents reported using, such as oral benzocaine numbing gels and teething necklaces, are now contraindicated. It must be recognized that data from the Facebook post was collected in 2016, and in 2018 the FDA issued its second statement regarding the risks of benzocaine-containing oral products and a statement to warn parents of the risks of teething necklaces. In 2018, Health Canada stopped authorizing benzocaine products for use in children under the age of two. New labelling requirements were introduced, and in August 2020, Health Canada issued a stop-sale for benzocaine products that had not updated their labelling (Government of Canada, 2020). There is still a concern that health care professionals are recommending these products, despite the FDA warnings and Health Canada actions (Government of Canada, 2020). Future research should explore the frequency of parents' use of benzocaine-containing oral products and teething necklaces to manage teething pain since these changes in recommendations, after the FDA statement was issued and Health Canada updated labelling requirements. Other teething pain management strategies used by parents such as frozen/chilled objects and over-the-counter analgesics are recommended by the CDA, ADA, and AAPD as a method to reduce infants' teething pain.

A key area for future research should involve investigating where parents and health care providers are finding their sources of teething pain management recommendations. There are several sources of information available, both on the internet and through health care professionals. A study that compared teething information on the internet with advice from pediatricians concluded that websites should not replace advice from health care professionals, but that high-quality websites can be used as a tool to help enrich educational and counselling efforts (Haznedaroglu & Mentes, 2016). However, evidence also suggests that parents often seek out health information on the Internet, particularly for infants and young children, suggesting that online strategies such as science-media partnerships or open access research may be a way to reach parents with evidence-based information where they are already seeking it.

The findings from this study show a general lack of research in the area of teething pain management. Further primary research and systematic reviews of existing primary literature regarding teething pain management strategies are required in order to reach conclusions on which strategies are safe and effective for managing teething pain. Social media campaigns may be an effective way to translate evidence-based information regarding teething pain management to parents and to help raise awareness regarding safety issues that exist with certain teething pain management strategies.

Limitations of the study include a population sample that was limited to social media users who engaged with the YMC Facebook post. The study did not capture responses from groups such as caregivers who do not have access to social media, or caregivers who choose to look elsewhere for health information. Given that the post was in partnership with the YMC, which is a magazine for moms, it is likely that the data represented strategies used mainly by mothers and may not capture strategies that are used by other types of caregivers. Information on demographics such as age, race, ethnicity, gender, sexuality, and employment status of YMC followers was not accessible. Another limitation of the study is that the Facebook post was created and published in 2016, prior to the FDA statements made in 2018 regarding risks of strangulation associated with amber teething necklaces and the risks of benzocaine-containing numbing gels. It wasn't until August 2020 that Health Canada issued a stop-sale for benzocaine products that had not updated their labelling to align with current labelling requirements. Although further research is required, it is likely that these updates would influence parents' decisions to limit the use of amber teething necklaces and benzocaine-containing numbing gels for pain management. Despite these limitations, the input offered by these engaged parents serves to raise awareness about what strategies they are using, the lack of evidence-based information that is available to parents regarding teething pain management, and the importance of using platforms such as social media to disseminate evidence-based knowledge.

Conclusion

Parents report using a variety of teething pain management strategies, some of which are supported by recommendations from professional dental organizations and some of which are contraindicated. Overall, there is a lack of research evidence about which—if any—of the strategies parents reported are effective in managing infant teething pain, and further investigation is required in order to draw conclusions about the safety and efficacy of different strategies. This research methodology using a social media platform also provides an innovative and promising approach to conducting patient-oriented research.

Acknowledgements

The authors would like to acknowledge the following individuals as important contributors to this research: the research team and the parent partner panel who developed the 2016 YMC Facebook post, as well as the Facebook post participants.

Funders: The #ItDoesntHaveToHurt initiative and research was supported by a Knowledge to Action Grant from the Canadian Institutes of Health Research (#336666). C.T. Chambers holds a Tier 1 Canada Research Chair, and her lab is supported by grants from the Canada Foundation for Innovation. C.T. Chambers's research is supported by the Canadian Institutes of Health Research.

Conflict of Interest

The authors declare no known conflicts of interest.

References

Abdulsatar, F., Taheri, S., & Miller, M. (2018). Use of unsafe teething remedies in a mid-size city: A survey. *Pediatrics & Child Health, 23*(Suppl 1), e54. https://doi.org/10.1093/pch/pxy054.135

American Academy of Pediatric Dentistry. (2021). Perinatal and infant oral health care. *The reference manual of pediatric dentistry* (pp. 277–281). https://www.aapd.org/media/policies_guidelines/bp_perinataloralhealthcare.pdf

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Canadian Dental Association. (n.d.). *Dental development*. Retrieved August 8, 2022, from http://www.cda-adc.ca/en/oral_health/cfyt/dental_care_children/development.asp

Canadian Institutes of Health Research. (2021, December 6). *It doesn't have to hurt.* Government of Canada. Retrieved August 8, 2022, from https://cihr-irsc.gc.ca/e/49821.html

Cox, C., Petrie, N., & Hurley, K. F. (2017). Infant strangulation from an amber teething necklace. *Canadian Journal of Emergency Medicine, 19*(5), 400–403. https://doi.org/10.1017/cem.2016.342

Frey, E., Bonfiglioli, C., Brunner, M., & Frawley, J. (2022). Parents' use of social media as a health information source for their children: A scoping review. *Academic Pediatrics, 22*(4), 526–539. https://doi.org/10.1016/j.acap.2021.12.006

Government of Canada. (2020, October 15). *Public advisory: Benzocaine products should not be used in children under two years of age*. Retrieved August 8, 2022, from https://healthycanadians.gc.ca/recall-alert-rappel-avis/hc-sc/2020/74129a-eng.php

Haznedaroglu, E., & Mentes, A. (2016). The Internet versus pediatricians as a source of infant teething information for parents in Turkey. *Clinics, 71*(8), 430–434. https://doi.org/10.6061/clinics/2016(08)04

Holt, R. D. (2000). Symptoms associated with teething. *Evidence-Based Dentistry, 2*(3), Article 68. https://doi.org/10.1038/sj.ebd.6400047

It Doesn't Have to Hurt. (n.d.). *#ItDoesntHaveToHurt*. Retrieved August 8, 2022, from https://itdoesnthavetohurt.ca/campaigns/itdoesnthavetohurt/

Macknin, M. L., Piedmonte, M., Jacobs, J., & Skibinski, C. (2000). Symptoms associated with infant teething: A prospective study. *Pediatrics, 105*(4), 747–752. https://doi.org/10.1542/peds.105.4.747

Markman, L. (2009). Teething: Facts and fiction. *Pediatrics in Review, 30*(8), e59–e64. https://doi.org/10.1542/pir.30-8-e59

McIntyre, G. T., & McIntyre, G. M. (2002). Teething troubles? *British Dental Journal, 192*(5), 251–255. https://doi.org/10.1038/sj.bdj.4801349

Meer, Z., & Meer, A. (2011). Teething trouble and its management in children. *International Journal of Dental Clinics, 3*(2), 75–77.

Melnyk, B. M., & Fineout-Overholt, E. (2005). *Evidence-based practice in nursing and healthcare: A guide to best practice*. Lippincott Williams & Wilkins.

Memarpour, M., Soltanimehr, E., & Eskandarian, T. (2015). Signs and symptoms associated with primary tooth eruption: A clinical trial of nonpharmacological remedies. *BMC Oral Health, 15*, Article 88. https://doi.org/10.1186/s12903-015-0070-2

MouthHealthy. (n.d.). *Teething*. American Dental Association. Retrieved September 1, 2022, from https://www.mouthhealthy.org/en/az-topics/t/teething

Ramos-Jorge, J., Pordeus, I., A., Ramos-Jorge, M., & Paiva, S. M. (2011). Prospective longitudinal study of signs and symptoms associated with primary tooth eruption. *Pediatrics, 128*(3), 471–476. https://doi.org/10.1542/peds.2010-2697

Tougas, M. E., Chambers, C. T., Corkum, P., Robillard, J. M., Gruzd, A., Howard, V., Kampen, A., Boerner, K. E., & Hundert, A. S. (2018). Social media content about children's pain and sleep: Content and network analysis. *JMIR Pediatrics and Parenting, 1*(2), Article e11193. https://doi.org/10.2196/11193

U.S. Food and Drug Administration. (2011, April 7). *FDA drug safety communication: Reports of a rare, but serious and potentially fatal adverse effect with the use of over-the-counter (OTC) benzocaine gels and liquids applied to the gums or mouth*. https://www.fda.gov/drugs/drug-safety-and-availability/fda-drug-safety-communication-reports-rare-serious-and-potentially-fatal-adverse-effect-use-over

U.S. Food and Drug Administration. (2014, June 26). *FDA drug safety communication: FDA recommends not using lidocaine to treat teething pain and requires new Boxed Warning*. https://www.fda.gov/drugs/drug-safety-and-availability/fda-drug-safety-communication-fda-recommends-not-using-lidocaine-treat-teething-pain-and-requires

U.S. Food and Drug Administration. (2018, May 23). *Risk of serious and potentially fatal blood disorder prompts FDA action on oral over-the-counter benzocaine products used for teething and mouth pain and prescription local anesthetics*. https://www.fda.gov/drugs/drug-safety-and-availability/risk-serious-and-potentially-fatal-blood-disorder-prompts-fda-action-oral-over-counter-benzocaine

Wake, M., Hesketh, K., & Lucas, J. (2000). Teething and tooth eruption in infants: A cohort study. *Pediatrics, 106*(6), 1374–1379. https://doi.org/10.1542/peds.106.6.1374

Yummy Mummy Club [YMC]. (2016, May 2). *We're giving away another $75 Visa gift card! What's one rite of passage every single baby goes through? Teething pain*. Facebook.https://www.facebook.com/YMCBuzz/photos/a.283477661054/10154289020806055/?type=3

HPJ HEALTHY POPULATIONS JOURNAL

Literature Review

Infographics and/or Pictograms and Medication Adherence: A Scoping Review

Abdullah Chanzu, BSc[1, 4]; Molly Wells, BSc[2, 4]; Natasha Vitkin, MPH, MSc[3, 4]; and Sarah Nersesian, MSc [1,4]

[1] Faculty of Medicine, Dalhousie University
[2] Faculty of Science, Dalhousie University
[3] Faculty of Health Sciences, Simon Fraser University
[4] Designs that Cell, Halifax, Nova Scotia, Canada

DOI: 10.15273/hpj.v3i2.11553

Abstract

Introduction: Medication adherence is the act of following medication instructions from a health care provider. Infographics and pictograms are visual science communication tools that have been shown to improve medication adherence. **Objective:** To synthesize and critically evaluate literature surrounding the use of infographics and pictograms in medication adherence. **Methods:** We conducted a literature search on PubMed, Ovid MEDLINE, CINAHL, Web of Science, and PsycInfo with the purpose of identifying literature published between the years 2000 and 2022. Primary research articles were included for quantitative analysis if they explored/reported the following topics and/or outcomes: (a) infographics and/or pictograms as the exposure of interest and (b) adherence, comprehension, or health outcomes as the outcome measures. **Results:** 30 studies were included in the results. Outcome measures assessed included (a) comprehension and understanding of factors surrounding medication adherence, (b) medication adherence, and (c) health outcomes. Our review of the studies showed that 87.5% of studies measuring outcome (a), 78.2% of those measuring outcome (b), and 100% of those measuring outcome (c) found improvements when using infographics or pictograms. **Conclusion:** Our review supports the use of infographics and pictograms as a means of improving medication adherence among a diverse set of demographics, illnesses, and treatments. **Practice Implications:** Infographics and pictograms are useful tools to improve medication adherence. When these tools are designed carefully, they increase the accessibility of medication information in a wide range of patient populations.

Introduction

Medication adherence, also known as medication compliance, is the act of following medication instructions from a health care provider with respect to dosage, timing, and frequency (Cramer et al., 2008). Patient understanding is an important contributor to medication adherence (Ebrahimabadi et al., 2019). Despite numerous advancements in drug development, over 50% of patients with chronic illnesses fail to follow their medication regimen, resulting in substantial morbidity and mortality (Cutler et al., 2018). In addition to the detrimental effects on patient wellness, poor medication adherence to prescribed treatment for chronic illnesses costs up to $290 billion annually in the United States (Chongpornchai et al., 2021). Lack of patient understanding of how their prescribed medication works to combat their illness remains a significant contributor to medication nonadherence (Ebrahimabadi et al., 2019). For example, it is estimated that 20% of maternal deaths are caused by severe anemia (Galloway & McGuire, 1994). Programs to alleviate anemia have largely been ineffective due to poor adherence to iron supplementation (Galloway & McGuire, 1994).

Background

Many strategies have been implemented to increase patient understanding of factors related to adherence, including brief counselling time with a health care provider (De Tullio et al., 1987), use of electronic medication delivery devices for monitoring and feedback (Nides et al., 1993), and multi-component care plans involving a team of caregivers (Garcia-Aymerich et al., 2007). Garcia-Aymerich et al. found improvements when using a multi-component intervention involving the integration of education and treatment among levels of care with a team of caregivers. Furthermore, De Tullio et al. (1987) witnessed improvements in adherence when patients were provided with three- to five-minute in-person counselling sessions with a health care provider. Additionally, benefits in medication adherence were noted when using an electronic medication delivery device that provided patients with feedback on their medication-taking behaviour; brief sessions with health educators were administered prior to the use of these devices (Nides et al., 1993). These interventions highlight the importance of patient education in improving medication adherence, yet remain challenging to implement due to time constraints, budget considerations, possible language barriers, and health care and technology accessibility concerns.

Visual communication offers a promising method to provide cost-efficient, accessible patient information. Two commonly used visual communication tools include infographics (information graphics; graphics paired with short text) and pictograms (graphics to represent ideas or text; Chanzu et al., 2023). These tools harness the brain's ability to process visual information rapidly (Otten et al., 2015). Visual communication tools can communicate health risk data through graphs and illustrations, allow information to be visualized, and can be adapted to various formats (Ebrahimabadi et al., 2019), such as those of different cultural contexts, health care settings, and languages. They have been postulated to improve the recall of information and enhance comprehension when used as a tool to improve medication adherence, both in combination with text and independently (Dowse & Ehlers, 2005); however, a comprehensive scoping literature review on infographics and medication adherence was lacking, according to the first author's search. The objective of this scoping literature review is to summarize and observe trends in the available literature surrounding the use of infographics and/or pictograms in medication adherence.

Methods

Search Strategy

We conducted a scoping literature review on the use of infographics and/or pictograms and their impact on medication adherence. Our methods were guided by Arksey and O'Malley's (2005) scoping review framework. According to Munn et al. (2018), scoping reviews are useful for examining evidence on emerging topics, rather than on more established topics that can be addressed in the form of more specific questions. Given the emerging nature of the literature around the topic of using infographics and/or pictograms to increase medication adherence, a scoping literature review was deemed to be appropriate. The first round of literature searches was conducted in July 2020, using the search terms outlined in Table 1. An updated review was conducted in July 2022 by AC, with the inclusion of eligible articles published since the first round of searches in July 2020. We consulted a librarian at the University of Guelph to derive the search strings (Table 1).

Table 1
Search Strings for Literature Search

Database	Search String
PubMed	(infographic* OR pictogram* OR picto*) AND (adheren* OR complian*) AND (medic* OR drug* OR supplemen* OR pharmacotherap*)
Ovid MEDLINE	(infographic* OR pictogram* OR picto*) AND (adheren* OR complian*) AND (medic* OR drug* OR supplemen* OR pharmacotherap*)
CINAHL	(infographic* OR pictogram* OR picto*) AND (adheren* OR complian*) AND (medic* OR drug* OR supplemen* OR pharmacotherap*)
Web of Science	(infographic* OR pictogram* OR picto*) AND (adheren* OR complian*) AND (medic* OR drug* OR supplemen* OR pharmacotherap*)
PsycInfo	(infographic* OR pictogram* OR picto*) AND (adheren* OR complian*) AND (medic* OR drug* OR supplemen* OR pharmacotherap*)

Literature searches were conducted on the following databases: PubMed, Ovid MEDLINE, CINAHL, Web of Science, and PsycInfo. In the July 2020 search, the publication date filter range of 2000 to 2020 was set to isolate results to recent publications in the relatively new field of research on the uses and effects of infographics and/or pictograms, and to ensure relevance to currently accepted science communication, medical, and health care principles. The July 2022 search was limited to articles published since the July 2020 search to July 2022.

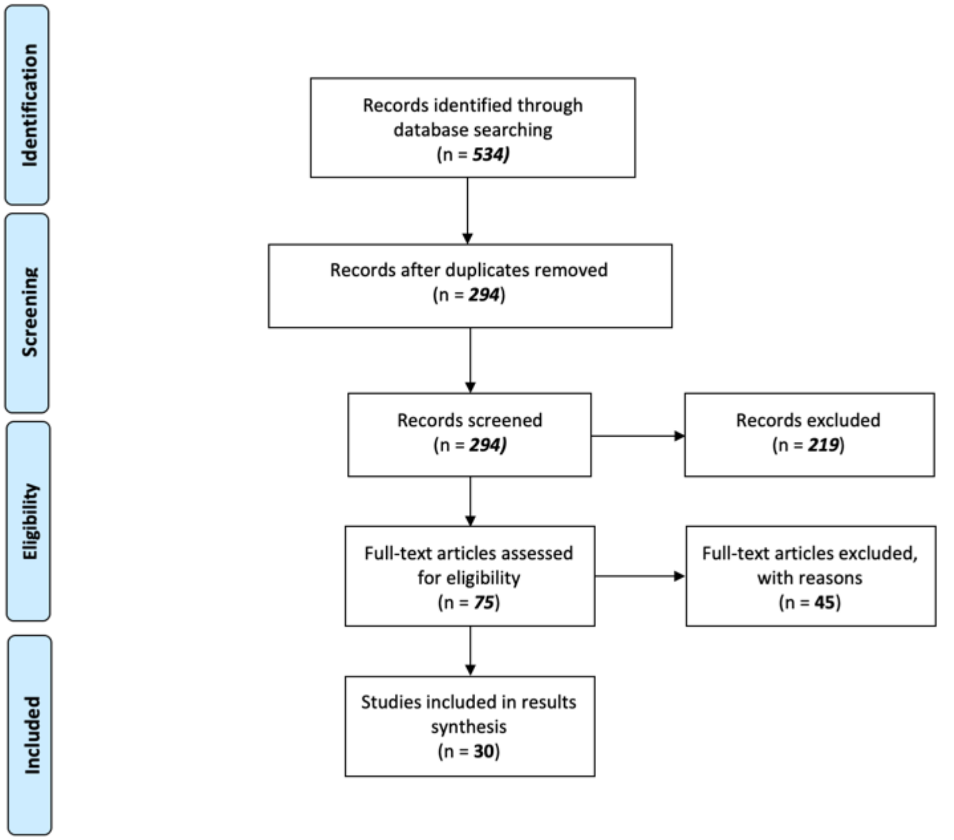
Selection Criteria & Data Extraction

Our search strategy initially yielded 534 results (436 in the July 2020 search, 98 in the July 2022 search; Figure 1). Mainly, Mendeley was used to remove duplicate articles, after which 294 results (201 from the July 2020 search, 93 from the July 2022 search) remained. Some databases did not permit limits on month of publication in searches—as a result, articles previously included and/or articles published between January 2020 and June 30, 2020, were manually removed after the second search, as they were already considered in the July 2020 search. Primary research articles were considered for inclusion if (a) infographics and/or pictograms were the exposure of interest and (b) adherence, comprehension, or health outcomes were an outcome of interest. After a full reading, quantitative studies were excluded if they lacked a control/comparator group. Data from qualitative studies were excluded to allow exploration of the statistical significance or insignificance of results from quantitative studies.

Initial screening was conducted by the first author by reviewing titles and abstracts. Subsequent full readings were conducted by the first author to further refine the collection of included studies. Author, publication year, sample size, age range, study design, study setting/location, intervention, control, outcome, and statistical significance were extracted from each included article by AC. A Microsoft Excel spreadsheet was used to collect and analyze this data. Articles with outcome measures for the following (or synonymous terms) were collected for our analysis: adherence, comprehension/understanding, and health outcomes. In accordance with Arksey and O'Malley's (2005) scoping review framework, studies were not formally assessed for their quality.

Figure 1

PRISMA Flow Chart Showing the Process of Inclusion and Exclusion of Articles



Note. Flow chart adapted from Moher et al. (2009).

Results

Study Designs and Settings

We reviewed 30 studies that explored the impact of infographics or pictograms on medication adherence and that met our inclusion criteria. These studies were conducted in the following countries: Jordan, South Africa, Thailand, Indonesia, Canada, United States, Poland, Iran, India, Egypt, Pakistan, Germany, Australia, and Sweden, as well as the region of Korea. Almost one quarter (23.3%) were conducted in the United States. Studies were published between 2007 and 2022.

Study Outcomes

Measures of Adherence and Health Outcomes

Among the overall sample of studies, a variety of tools were used to measure medication or treatment adherence. Some studies utilized the 8-point Morisky Medication Adherence Scale (MMAS-8) which is based on yes/no questions and a 5-point Likert scale (Moon et al., 2017; see Appendix A). MMAS-8 is effective for measuring a patient’s medication-taking behaviour, but not for providing an explanation of adherence or nonadherence (Tan et al., 2014). Due to the questionnaire method associated with MMAS-8, it is a simple and low-cost method for measuring patient adherence (Moon et al., 2017). However, this runs the risk of introducing biases associated with self-report measurement. Three studies (Chan & Hassali, 2014; Ebrahimabadi et al., 2019; Negarandeh et al., 2013) utilized MMAS-8 to measure treatment adherence. Among these studies, two (Ebrahimabadi et al., 2019; Negarandeh et al., 2013) out of three (66.7%) displayed improved adherence. A larger sample of studies utilizing MMAS-8 would be necessary to accurately measure the significance of this result.

Some studies utilized pill counts to measure adherence (Appendix A). Though there is a risk of someone tampering with the contents of the pill bottle without consuming the medication, this technique provides an objective measure of the amount of medication consumed over the treatment period. Finally, direct health outcome measures, such as blood tests, were used in some studies. These measures offer additional usefulness in measuring adherence by showing whether the predicted effects were observed. Five studies (Chongpornchai et al., 2021; Dowse & Ehlers, 2005; Kalichman et al., 2013; Maximos et al., 2021; Patiag et al., 2020) utilized pill bottle counts to measure medication adherence. Four (80%; Chongpornchai et al., 2021; Dowse & Ehlers, 2005; Kalichman et al., 2013; Patiag et al., 2020) of these studies showed improved adherence among participants. To accurately compare this measurement to the overall sample of studies, a larger sample of studies utilizing pill counts may be necessary.

Infographics and Pictograms Were Shown to Enhance Comprehension of Factors Surrounding Medication Adherence in Some Studies

Given the ability of visual tools to communicate complex information in an accessible way, we were interested in exploring whether comprehension or understanding of medication-related factors, such as medication side effects and regimen, improved in individuals exposed to infographics or pictograms. Eight of the included articles (Artmann et al., 2022; Branda et al., 2022; Browne et al., 2019; Dowse et al., 2014; Dowse & Ehlers, 2005; Hynes et al., 2022; Mohamed et al., 2021; Wilby et al., 2011) studied comprehension or understanding of these factors as an outcome measure in some capacity. Seven of these studies (87.5%; Branda et al., 2022; Browne et al., 2019; Dowse et al., 2014; Dowse & Ehlers, 2005; Hynes et al., 2022; Mohamed et al., 2021; Wilby et al., 2011) showed an overall improvement in comprehension or understanding when experimental groups receiving pictograms were compared against control groups.

Wilby et al. (2011) found that participants of the group receiving pictograms were able to report and recall information about their HIV medications significantly more frequently than their control counterparts. Furthermore, these levels of understanding were attributed to pictograms being provided in tandem with verbal explanation, highlighting that explaining the meaning of a pictogram optimizes its instructional effects (Wilby et al., 2011). This study emphasizes the relevance and importance of combining text and pictograms to communicate information.

Browne et al. (2019) conducted a study on limited literacy HIV patients in South Africa and noted a rise in mean side effect recognition from 45.9% to 95.7% of the experimental group participants in the three-month period when pictograms were administered. In contrast, the control group only presented a rise from 50.0% to 56.0% of group participants (Browne et al., 2019). Recognition of these side effects is crucial in maintaining adherence over an extended period.

Three studies (Dowse et al., 2014; Dowse & Ehlers, 2005; Mansoor & Dowse, 2006) considered the use of infographics or pictograms among the Xhosa population of South Africa. The Xhosa population has historically been classified as a limited literacy population (Dowse et al., 2014). For this reason, they were studied to explore the efficacy of pictograms as adherence-improving tools among limited literacy populations. All three studies showed that pictograms improved medication adherence (Dowse & Ehlers, 2005; Mansoor & Dowse, 2006) or self-efficacy (Dowse et al., 2014), which is a precursor to medication adherence, among the study samples. Two of the studies (Dowse et al., 2014; Dowse & Ehlers, 2005) showed that the use of infographics among the study sample led to statistically significant improvements in comprehension of medication and/or medication instructions. This provides further evidence that infographics and/or pictograms may offer benefit when treating populations with limited literacy levels. Further research on limited literacy populations could provide more conclusive evidence on the efficacy of pictograms and adherence in this scope.

Infographics or Pictograms Were Shown to Improve Medication Adherence in Some Studies

Twenty-three (Almomani et al., 2018; Braich et al., 2011; Chan & Hassali, 2014; Chongpornchai et al., 2021; Dowse et al., 2014; Dowse & Ehlers, 2005; Ebrahimabadi et al., 2019; Hynes et al., 2022; Kalichman et al., 2013; Mansoor & Dowse, 2006; Maximos et al., 2021; Merks et al., 2019; Merks et al., 2021; Mohamed et al., 2021; Monroe et al., 2018; Nahrisah et al., 2020; Näslund et al., 2019; Negarandeh et al., 2013; Park, 2011; Patiag et al., 2020; Phimarn et al., 2019; Shenoi et al., 2021; Yin et al., 2008) of the included studies considered medication adherence, or a similar term, as an outcome measure, with the exposure being infographics or pictograms in some capacity. Of these studies, 18 (78.2%) displayed significant improvements in adherence (Almomani et al., 2018; Braich et al., 2011; Chongpornchai et al., 2021; Dowse & Ehlers, 2005; Ebrahimabadi et al., 2019; Hynes et al., 2022; Kalichman et al., 2013; Mansoor & Dowse, 2006; Merks et al., 2021; Mohamed et al., 2021; Nahrisah et al., 2020; Näslund et al., 2019; Negarandeh et al., 2013; Phimarn et al., 2019; Shenoi et al., 2021; Yin et al., 2008), or improved self-efficacy (Dowse et al., 2014; Park, 2011), which is a precursor to adherence, among groups counselled with infographics or pictograms.

Braich et al. (2011) measured adherence to cataract medication following surgical procedures by conducting postoperative oral tests. On Test 3, conducted on the 28th day following surgery, experimental group 2, who received pictogram counselling and take-home pictograms, scored significantly better than both experimental group 1, who only received pictogram counselling, and the control group who received verbal counselling (Braich et al., 2011; see Appendix A for more details). This study supports pictograms as portable tools that can be used for patient education even outside of the clinical setting, in order to improve medication adherence over extended periods of time (Braich et al., 2011).

Seven studies (Almomani et al., 2018; Braich et al., 2011; Dowse & Ehlers, 2005; Kalichman et al., 2013; Monroe et al., 2018; Negarandeh et al., 2013; Phimarn et al., 2019) considered the use of pictograms among participants with marginal or low literacy levels. Five (71.4%) of these studies (Braich et al., 2011; Dowse & Ehlers, 2005; Kalichman et al., 2013; Negarandeh et al., 2013; Phimarn et al., 2019) showed that pictogram counselling was beneficial to improving adherence (or increasing intentions to partake in adherent behaviours) in participants with marginal or low literacy levels, when compared to groups that received usual counselling without the use of pictograms or infographics (see Appendix B for intervention and control/comparator groups).

Five of the 23 studies (Chan & Hassali, 2014; Maximos et al., 2021; Merks et al., 2019; Monroe et al., 2018; Patiag et al., 2020) (21.7%) under this category displayed marginal or insignificant improvements in adherence levels or medication-taking behaviours when the groups receiving pictograms were compared to controls. Monroe et al. (2018) found that adherence levels were higher for HIV medication compared to medication for comorbid hypertension or diabetes, though the sample size was too low to find a significant effect of pictograms on adherence. None of the studies showed that pictograms decreased adherence levels when compared with control or comparison groups.

Infographics or Pictograms May Improve Health Outcomes

Improved health outcomes are the ultimate objective of improved adherence to medication. Six of the included studies (Bengtsson et al., 2021; Bhardwaj et al., 2022; Mohamed et al., 2021; Moin et al., 2021; Nahrisah et al., 2020; Näslund et al., 2019) measured health outcomes as a result of participants being exposed to infographics or pictograms. All these studies (100%) showed statistically significant improvements in health outcomes in the infographic or pictogram-exposed groups (refer to Appendix A for health outcomes studied). It is noted that, in the Bhardwaj et al. (2022) study, a statistically significant difference pre- and post-intervention was only noted in males, and not female participants.

Nahrisah et al. (2020) conducted a study in which all participants were pregnant women with anemia being administered iron tablets in the pre-test phase. In the post-test phase, 100% of women in the intervention group receiving infographic counselling recovered from anemia during the third trimester of pregnancy, while only 12.9% of women in the control group did (Nahrisah et al., 2020). This shows that the intervention group adhered to their supplementation more than the controls (Nahrisah et al., 2020). Nahrisah et al. outline evidence that infographics have efficacy specifically pertaining to an iron deficiency situation—that is, improved treatment adherence among patients using infographics could offer a direct benefit in improving health outcomes among patients with anemia.

Näslund et al. (2019) analyzed the effects of pictorial representations of asymptomatic atherosclerotic disease on the risk of adverse cardiovascular events, measured through the Framingham risk score (FRS) and European systematic coronary risk evaluation (Näslund et al., 2019). The FRS decreased in the intervention group, while increasing in the control group, suggesting that risk of cardiovascular disease decreased in the intervention group (Näslund et al., 2019). Total and low-density lipoprotein cholesterol levels, typically implicated in cardiovascular disease, showed greater reduction in the intervention group compared to the control group (Näslund et al., 2019). This study utilized an intervention of pictorial information accompanied with written text, which is analogous to the structure of an infographic.

Discussion

Our review reveals the benefits of using infographics and/or pictograms as a patient education tool to improve comprehension of health information and medication adherence and contribute to health outcomes. These findings align with the health belief model, which suggests that improving an individual's understanding of the perceived threats of an illness and benefits of treatment results in improving the likelihood of their engaging in health-promoting behaviour (Sacchetti et al., 2014). Implementing visual communication within educational tools further increases the likelihood of meaningful patient education, in accordance with cognitive load theory, which postulates that working memory has a finite capacity (Paas et al., 2010) and information presented through short text and images is better recalled than long text materials (Martin et al., 2019). Our review showed trends of improved understanding of illness-related factors leading to improved health behaviours, as included studies exhibit that groups counselled with infographics or pictograms displayed marked improvements in medication adherence compared to their respective control groups. These trends are consistent with other literature; for example, in their recent systematic review, Sletvold et al. (2020) found that pictograms significantly improved medication adherence among patients.

Our review suggests that including text in visual aids improves patient comprehension, as in some studies, pictograms alone were insufficient to improve patient understanding. Indeed, in a literature review on the use of pictorial aids in medication instructions, Katz et al. (2006) reported that using pictograms in conjunction with complementary textual or verbal instruction improves their efficacy. This was a consistent finding among our review and supports the use of infographics to pair accessible text with clear visuals rather than pictograms alone. We suggest that future studies explore this aspect by comparing images, images with text, and some form of control group to further understand if differences exist between these various categories.

Despite advances in the availability of health care information due to the internet, poor medication adherence remains a substantial and costly issue across health care settings. It has been shown that 10% of hospital visits among older adults are attributed to treatment nonadherence, with each patient requiring three extra hospital visits per year in the U.S. (Cutler et al., 2018). The resultant annual health care costs average $2000 per person, which can be a significant economic burden, particularly among patients of low socio-economic status (Cutler et al., 2018). Thus, visually effective patient educational tools such as infographics and/or pictograms could help with reducing the morbidity, mortality, and economic burden on patients. This would also result in time and cost savings across all levels of the health care system.

Current popular methods for improving medication adherence, such as multi-component care plans (Garcia-Aymerich et al., 2007) and electronic medication delivery devices (Nides et al., 1993), can be inaccessible and costly to patients of low socio-economic status. Our results suggested that pictograms were beneficial educational tools among those with marginal or low literacy levels, who have lower working memory capacities than those with higher literacy levels (Castro-Caldas et al., 1998). These improvements suggest that infographics and/or pictograms are a particularly useful tool for populations with low literacy levels in order to transcend health literacy barriers and mitigate the negative health outcomes associated with these barriers. Furthermore, infographics and pictograms offer a cost-effective and customizable method for health care providers to effectively communicate health information. For example, health care providers can create infographics themselves or work with a graphic designer to create them at a fraction of the cost of developing a mobile app or leading a patient counselling group.

Given our findings, we encourage future studies on the effects of infographics on medication adherence and health outcomes when administered in a long-term manner through take-home infographics—specifically, printing and distributing the infographics to individuals and studying how they impact medication adherence when distributed to be utilized beyond the health care setting, following counselling. Additionally, we note that Bhardwaj et al. (2022) found gender differences in their study. We encourage future reviews and other studies to explore whether gender differences persist and the reasons for these differences.

Strengths and Limitations

Our review contributes to a topic that is currently lacking in literature. Our review also covered a vast array of literature spanning several geographical regions, cultures and demographics, and illnesses, showing that our results could be applied to many populations, treatments, and health care settings. Additionally, our review analyzed studies that used a variety of tools to measure their outcomes. This can be viewed as both a strength and a limitation. We excluded studies that did not have a control/comparator group, studies that presented qualitative data, and studies that were conducted in languages other than English. This may have resulted in reduced coverage of the body of literature. Furthermore, our review was conducted by a single reviewer (the first author)—dual independent reviewers are suggested for systematic reviews (Waffenschmidt et al., 2019), though the current body of literature does not make this suggestion specifically for scoping reviews. Future studies or reviews may benefit from a risk of bias assessment, though our review did not include one, since these assessments are typically not performed when conducting scoping reviews (Munn et al., 2018). Finally, as a consequence of following Arksey and O'Malley's (2005) scoping review framework, we did not assess the quality of the studies included in our review.

Conclusion

Infographics and pictograms offer great potential as a patient education tool for improving medication adherence among a diverse set of demographics, illnesses, and treatments. These visual communication tools are of particular benefit to improve illness and medication understanding among those with low literacy levels. Text and illustrations presented through infographics can also be adapted to various contexts, thus transcending culture and language barriers.

Practice Implications

The findings of our review have practical implications. Infographics are relatively new in the health care practice and serve as a novel way to address patient education issues such as literacy barriers and budget constraints. Our findings on the benefits of infographics on patient comprehension and understanding, medication adherence, and health outcomes suggest they could be a favourable and efficient way to improve medication adherence in various settings. Therefore, it is important that health care professionals and scientists devise ways to integrate infographics into standard clinical practice.

Acknowledgments

We would like to thank Jacqueline Kreller-Vanderkooy, a librarian at the University of Guelph, who was consulted during the creation of the search strategy.

References

Almomani, B. A., Mokhemer, E., Al-Sawalha, N. A., & Momany, S. M. (2018). A novel approach of using educational pharmaceutical pictogram for improving inhaler techniques in patients with asthma. *Respiratory Medicine, 143*, 103–108. https://doi.org/10.1016/j.rmed.2018.09.004

Arksey, H., & O'Malley, L. (2005). Scoping studies: Towards a methodological framework. *International Journal of Social Research Methodology, 8*(1), 19–32. https://doi.org/10.1080/1364557032000119616

Artmann, A., Rahn, A. C., Köpke, S., Thomalla, G., Heesen, C., & Alegiani, A. C. (2022). Risk communication in acute stroke patients – From qualitative data to a pilot randomised controlled trial. *ZEFQ: Journal of Evidence and Quality in Health Care, 169*, 19–27. https://doi.org/10.1016/j.zefq.2022.01.001

Bengtsson, A., Norberg, M., Ng, N., Carlberg, B., Grönlund, C., Hultdin, J., Lindahl, B., Lindahl, B., Nordin, S., Nyman, E., Wennberg, P., Wester, P., & Näslund, U. (2021). The beneficial effect over 3 years by pictorial information to patients and their physician about subclinical atherosclerosis and cardiovascular risk: Results from the VIPVIZA randomized clinical trial.

American Journal of Preventive Cardiology, 7, Article 100199. https://doi.org/10.1016/j.ajpc.2021.100199

Bhardwaj, B., Singh, J., & Singh, T. (2022). Impact of patient guidance handouts on outcomes of FESS. *Indian Journal of Otolaryngology and Head & Neck Surgery, 74*(1), 23–31. https://doi.org/10.1007/s12070-020-02133-z

Braich, P. S., Almeida, D. R., Hollands, S., & Coleman, M. T. (2011). Effects of pictograms in educating 3 distinct low-literacy populations on the use of postoperative cataract medication. *Canadian Journal of Ophthalmology, 46*(3), 276–281. https://doi.org/10.1016/j.jcjo.2011.05.004

Branda, M. E., Kunneman, M., Meza-Contreras, A. I., Shah, N. D., Hess, E. P., LeBlanc, A., Linderbaum, J. A., Nelson, D. M., Mc Donah, M. R., Sanvick, C., Van Houten, H. K., Coylewright, M., Dick, S. R., Ting, H. H., & Montori, V. M. (2022). Shared decision-making for patients hospitalized with acute myocardial infarction: A randomized trial. *Patient Preference and Adherence, 16*, 1395–1404. https://doi.org/10.2147/PPA.S363528

Browne, S. H., Barford, K., Ramela, T., & Dowse, R. (2019). The impact of illustrated side effect information on understanding and sustained retention of antiretroviral side effect knowledge. *Research in Social and Administrative Pharmacy, 15*(4), 469–473. https://doi.org/10.1016/j.sapharm.2018.05.012

Castro-Caldas, A., Petersson, K. M., Reis, A., Stone-Elander, S., & Ingvar, M. (1998). The illiterate brain. Learning to read and write during childhood influences the functional organization of the adult brain. *Brain, 121*(6), 1053–1063. https://doi.org/10.1093/brain/121.6.1053

Chan, H.-K., & Hassali, M. A. (2014). Modified labels for long-term medications: Influences on adherence, comprehension and preferences in Malaysia. *International Journal of Clinical Pharmacy, 36*(5), 904–913. https://doi.org/10.1007/s11096-014-0003-1

Chanzu, A., Wells, M., Vitkin, N., & Nersesian, S. (2023). The importance of iron supplementation in pregnant women: An infographic. *Healthy Populations Journal, 3*(2).

Chongpornchai, J., Phornprapa, N., & Sratthaphut, I. (2021). Effectiveness of motion infographic media on the improvement of knowledge and medical adherence in human immunodeficiency virus patients. *Indian Journal of Pharmacy, 83*(3), 562–568. https://doi.org/10.36468/pharmaceutical-sciences.806

Cramer, J. A., Roy, A., Burrell, A., Fairchild, C. J., Fuldeore, M. J., Ollendorf, D. A., & Wong, P. K. (2008). Medication compliance and persistence: Terminology and definitions. *Value in Health, 11*(1), 44–47. https://doi.org/10.1111/j.1524-4733.2007.00213.x

Cutler, R. L., Fernandez-Llimos, F., Frommer, M., Benrimoj, C., & Garcia-Cardenas, V. (2018). Economic impact of medication non-adherence by disease groups: A systematic review. *BMJ Open, 8*(1), Article e016982. https://doi.org/10.1136/bmjopen-2017-016982

De Tullio, P. L., Kirking, D. M., Arslanian, C., & Olson, D. E. (1987). Compliance measure development and assessment of theophylline therapy in ambulatory patients. *Journal of Clinical Pharmacy and Therapeutics, 12*(1), 19–26.

Dowse, R., Barford, K., & Browne, S. H. (2014). Simple, illustrated medicines information improves ARV knowledge and patient self-efficacy in limited literacy South African HIV patients. *AIDS Care, 26*(11), 1400–1406. https://doi.org/10.1080/09540121.2014.931559

Dowse, R., & Ehlers, M. (2005). Medicine labels incorporating pictograms: Do they influence understanding and adherence? *Patient Education and Counseling, 58*(1), 63–70. https://doi.org/10.1016/j.pec.2004.06.012

Ebrahimabadi, M., Rezaei, K., Moini, A., Fournier, A., & Abedi, A. (2019). Infographics or video; Which one is more effective in asthmatic patients' health? A randomized clinical trial. *Journal of Asthma, 56*(12), 1306–1313. https://doi.org/10.1080/02770903.2018.1536143

Galloway, R., & McGuire, J. (1994). Determinants of compliance with iron supplementation: Supplies, side effects, or psychology? *Social Science & Medicine, 39*(3), 381–390. https://doi.org/10.1016/0277-9536(94)90135-x

Garcia-Aymerich, J., Hernandez, C., Alonso, A., Casas, A., Rodriguez-Roisin, R., Anto, J. M., & Roca, J. (2007). Effects of an integrated care intervention on risk factors of COPD readmission. *Respiratory Medicine, 101*(7), 1462–1469. https://doi.org/10.1016/j.rmed.2007.01.012

Hynes, L., Durkin, K., Ewell, T., Lilly, C., Williford, D. N., Ahrabi-Nejad, C., Noel, D., Kothari, V., Skoner, D., & Duncan, C. L. (2022). Pictorial versus written asthma action plans for youth: Initial impact on regimen knowledge, medication adherence, symptom control, and family satisfaction. *Journal of Asthma, 59*(9), 1885–1898. https://doi.org/10.1080/02770903.2021.1968427

Kalichman, S. C., Cherry, C., Kalichman, M. O., Amaral, C., White, D., Grebler, T., Eaton, L. A., Cruess, D., Detorio, M. A., Caliendo, A. M., & Schinazi, R. F. (2013). Randomized clinical trial of HIV treatment adherence counseling interventions for people living with HIV and limited health literacy. *Journal of Acquired Immune Deficiency Syndrome, 63*(1), 42–50. https://doi.org/10.1097/QAI.0b013e318286ce49

Katz, M. G., Kripalani, S., & Weiss, B. D. (2006). Use of pictorial aids in medication instructions: A review of the literature. *American Journal of Health-System Pharmacy, 63*(23), 2391–2397. https://doi.org/10.2146/ajhp060162

Mansoor, L. E., & Dowse, R. (2006). Medicines information and adherence in HIV/AIDS patients. *Journal of Clinical Pharmacy and Therapeutics, 31*(1), 7–15. https://doi.org/10.1111/j.1365-2710.2006.00696.x

Martin, L. J., Turnquist, A., Groot, B., Huang, S. Y. M., Kok, E., Thoma, B., & van Merriënboer, J. J. G. (2019). Exploring the role of infographics for summarizing medical literature. *Health Professions Education, 5*(1), 48–57. https://doi.org/https://doi.org/10.1016/j.hpe.2018.03.005

Maximos, M., Smith, K., Harris, V., McFarlane, T., Blay, J., Hahn, K., & Chang, F. (2021). A randomized controlled trial to assess the influence of a picture-based antiemetic medication calendar on medication-taking behavior in adults receiving chemotherapy. *Journal of Oncology Pharmacy Practice, 28*(8), 1763–1770. https://doi.org/10.1177/10781552211041680

Merks, P., Świeczkowski, D., Balcerzak, M., Drelich, E., Białoszewska, K., Cwalina, N., Zdanowski, S., Krysiński, J., Gromadzka, G., & Jaguszewski, M. (2019). Patients' perspective and usefulness of pictograms in short-term antibiotic therapy – Multicenter, randomized trial. *Patient Preference and Adherence, 13*, 1667–1676. https://doi.org/10.2147/PPA.S214419

Merks, P., Świeczkowski, D., Balcerzak, M., Religioni, U., Drelich, E., Krysiński, J., Hering, D., & Jaguszewski, M. (2021). Patient counselling service with the use of pictograms as the example of pharmacist intervention to improving compliance and medicine safety. *Cardiology Journal, 28*(6), 879–886. https://doi.org/10.5603/CJ.a2021.0022

Mohamed, H. F., Allam, M. M., Hamdy, N. A., Ghazy, R. M., & Emara, R. H. (2021). A community pharmacy-based intervention in the matrix of type 2 diabetes mellitus outcomes (CPBI-T2DM): A cluster randomized controlled trial. *Clinical Medicine Insights: Endocrinology and Diabetes, 14*. https://doi.org/10.1177/11795514211056307

Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., & The PRISMA Group. (2009). Preferred Reporting Items for Systematic reviews and Meta-Analyses: The PRISMA statement. *PLOS Medicine, 6*(7), Article e1000097. https://doi.org/10.1371/journal.pmed.1000097

Moin, M., Saadat, S., Rafique, S., Maqsood, A., Lal, A., Vohra, F., Alam, M. K., & Ahmed, N. (2021). Impact of oral health educational interventions on oral hygiene status of children with hearing loss: A randomized controlled trial. *BioMed Research International, 2021*, Article 5185613. https://doi.org/10.1155/2021/5185613

Moon, S. J., Lee, W.-Y., Hwang, J. S., Hong, Y. P., & Morisky, D. E. (2017). Accuracy of a screening tool for medication adherence: A systematic review and meta-analysis of the Morisky Medication Adherence Scale-8. *PLOS ONE, 12*(11), Article e0187139. https://doi.org/10.1371/journal.pone.0187139

Monroe, A. K., Pena, J. S., Moore, R. D., Riekert, K. A., Eakin, M. N., Kripalani, S., & Chander, G. (2018). Randomized controlled trial of a pictorial aid intervention for medication adherence among HIV-positive patients with comorbid diabetes or hypertension. *AIDS Care, 30*(2), 199–206. https://doi.org/10.1080/09540121.2017.1360993

Munn, Z., Peters, M. D. J., Stern, C., Tufanaru, C., McArthur, A., & Aromataris, E. (2018). Systematic review or scoping review? Guidance for authors when choosing between a systematic or scoping review approach. *BMC Medical Research Methodology, 18*, Article 143. https://doi.org/10.1186/s12874-018-0611-x

Nahrisah, P., Somrongthong, R., Viriyautsahakul, N., Viwattanakulvanid, P., & Plianbangchang, S. (2020). Effect of integrated pictorial handbook education and counseling on improving anemia status, knowledge, food intake, and iron tablet compliance among anemic pregnant women in Indonesia: A quasi-experimental study. *Journal of Multidisciplinary Healthcare, 13*, 43–52. https://doi.org/10.2147/JMDH.S213550

Näslund, U., Ng, N., Lundgren, A., Fhärm, E., Grönlund, C., Johansson, H., Lindahl, B., Lindahl, B., Lindvall, K., Nilsson, S. K., Nordin, M., Nordin, S., Nyman, E., Rocklöv, J., Vanoli, D., Weinehall, L., Wennberg, P., Wester, P., & Norberg, M. (2019). Visualization of asymptomatic atherosclerotic disease for optimum cardiovascular prevention (VIPVIZA): A pragmatic, open-label, randomised controlled trial. *The Lancet, 393*(10167), 133–142. https://dx.doi.org/10.1016/S0140-6736(18)32818-6

Negarandeh, R., Mahmoodi, H., Noktehdan, H., Heshmat, R., & Shakibazadeh, E. (2013). Teach back and pictorial image educational strategies on knowledge about diabetes and medication/dietary adherence among low health literate patients with type 2 diabetes. *Primary Care Diabetes, 7*(2), 111–118. https://doi.org/10.1016/j.pcd.2012.11.001

Nides, M. A., Tashkin, D. P., Simmons, M. S., Wise, R. A., Li, V. C., & Rand, C. S. (1993). Improving inhaler adherence in a clinical trial through the use of the Nebulizer Chronolog. *CHEST, 104*(2), 501–507. https://doi.org/10.1378/chest.104.2.501

Otten, J. J., Cheng, K., & Drewnowski, A. (2015). Infographics and public policy: Using data visualization to convey complex information. *Health Affairs, 34*(11), 1901–1907. https://doi.org/

10.1377/hlthaff.2015.0642

Paas, F., van Gog, T., & Sweller, J. (2010). Cognitive load theory: New conceptualizations, specifications, and integrated research perspectives. *Educational Psychology Review, 22*(2), 115–121. https://doi.org/10.1007/s10648-010-9133-8

Park, M. (2011). Effects of interactive pictorial education on community dwelling older adult's self efficacy and knowledge for safe medication. *Journal of Korean Academy of Nursing, 41*(6), 795–804. https://doi.org/10.4040/jkan.2011.41.6.795

Patiag, M. C., Deveux, S., & Farrar Highfield, M. E. (2020). Do errorless methods improve discharge medication instruction and adherence? *Rehabilitation Nursing, 45*(6), 358–366. https://doi.org/10.1097/rnj.0000000000000237

Phimarn, W., Ritthiya, L., Rungsoongnoen, R., Pattaradulpithuk, W., & Saramunee, K. (2019). Development and evaluation of a pictogram for Thai patients with low literate skills. *Indian Journal of Pharmaceutical Sciences, 81*(1), 89–98. https://doi.org/10.4172/pharmaceutical-sciences.1000483

Sacchetti, E., Vita, A., Siracusano, A., & Fleischhacker, W. (2014). *Adherence to antipsychotics in schizophrenia*. Springer. http://doi.org/10.1007/978-88-470-2679-7

Shenoi, R. S., Rajguru, J. G., Parate, S. R., Ingole, P. D., Khandaitkar, S. R., & Karmarkar, J. S. (2021). Compliance of postoperative instructions following the surgical extraction of impacted lower third molars. *Indian Journal of Dental Research, 134*(1), 87–91. https://doi.org/10.4103/ijdr.IJDR_323_20

Sletvold, H., Sagmo, L. A. B., & Torheim, E. A. (2020). Impact of pictograms on medication adherence: A systematic literature review. *Patient Education and Counseling, 103*(6), 1095–1103. https://doi.org/10.1016/j.pec.2019.12.018

Tan, X., Patel, I., & Chang, J. (2014). Review of the four item Morisky Medication Adherence Scale (MMAS-4) and eight item Morisky Medication Adherence Scale (MMAS-8). *Innovations in Pharmacy, 5*(3). https://doi.org/10.24926/iip.v5i3.347

Waffenschmidt, S., Knelangen, M., Sieben, W., Bühn, S., & Pieper, D. (2019). Single screening versus conventional double screening for study selection in systematic reviews: A methodological systematic review. *BMC Medical Research Methodology, 19*, Article 132. https://doi.org/10.1186/s12874-019-0782-0

Wilby, K., Marra, C. A., da Silva, J. H., Grubisic, M., Harvard, S., & Lynd, L. D. (2011). Randomized controlled trial evaluating pictogram augmentation of HIV medication information. *Annals of Pharmacotherapy, 45*(11), 1378–1383. https://doi.org/10.1345/aph.1Q091

Yin, H. S., Dreyer, B. P., van Schaick, L., Foltin, G. L., Dinglas, C., & Mendelsohn, A. L. (2008). Randomized controlled trial of a pictogram-based intervention to reduce liquid medication dosing errors and improve adherence among caregivers of young children. *JAMA Pediatrics, 162*(9), 814–822. https://doi.org/10.1001/archpedi.162.9.814

Appendix A

Characteristics of Included Studies

Study reference	***Study country***	***Study design***	***Sample size***	***Measures of adherence or other outcomes***	***Outcome***	***Significant? (p < 0.05)***
Almomani et al., 2018	Jordan	RCT	219; 109 intervention, 110 control	Self-reported adherence scale	Significant improvement between intervention and control	Yes, $p < 0.001$ and $p = 0.007$
Artmann et al., 2022	Germany	RCT	60; 20 in each of three groups	Questionnaire	Visual representations were superior in terms of understandability of the numbers communicated, though not statistically significant	No
Bengtsson et al., 2021	Sweden	RCT	Pictorial information group: 1749 Control group: 1783	FRS and SCORE for health outcomes on cardiovascular risk	FRS and SCORE improved	Yes, $p = 0.047$ and 0.022 for FRS and SCORE, respectively
Bhardwaj et al., 2022	India	RCT	Intervention: 23 Control: 23	Health outcomes: endoscopic appearance, edema, other parameters	There was a negative correlation between the compliance of nasal saline irrigation with edema, crusting, and discharge	Yes, $p < 0.0001$
Braich et al., 2011	Canada	RCT	225; 75 in each group	Measurement of each patient's eyedrop bottle at baseline and on postoperative day 28	EG2 displayed long-term (measured at 28 days) improvements in treatment adherence, compared with EG1	Yes, $p < 0.001$
Branda et al., 2022	USA	RCT	Intervention: 53 Control: 53	Patient knowledge, conflict with decision made	Patient knowledge of the expected survival benefit from taking medications was significantly higher in the intervention group compared to usual care ($p < 0.0001$)	Yes, $p < 0.0001$
Browne et al., 2019	South Africa	RCT	116	Interviews testing side effect	Improved side effect recognition	Yes, $p < 0.0001$

				and illness-related knowledge—intended to simulate a busy, under-resourced clinic where informational material could be handed to a patient with little or no explanation		
Chan & Hassali, 2014	Malaysia	RCT	110 (35 in standard group, 40 in font-enlarged group, 35 in pictogram-incorporated label group)	8-item Morisky Medication Adherence Scale (MMAS-8) – using a 5-point Likert scale for a variety of questions	Did not find significant improvements in patient adherence	No, p = 0.010 within-group; p = 0.573, 0.069 between-group
Chongpornchai et al., 2021	Thailand	Randomized experimental study	Intervention: 44 Control: 44	Knowledge questionnaire and self-reported adherence questionnaire	Higher knowledge and higher percentage of medical adherence than those in the control group in all tests	Yes, through pill count method
Dowse et al., 2014	South Africa	RCT	116 at baseline, 64 at six-month follow-up	22-question knowledge test evaluating information about medication	Improved comprehension	Yes, p = 0.022
Dowse & Ehlers, 2005	South Africa	RCT	87; 41 in control group and 46 in experimental group	Self-reported adherence and pill count (with greater emphasis on pill count in the overall calculation of adherence)	Improved medication adherence and understanding of instructions	Yes, p < 0.01 for medication adherence and for understanding
Ebrahimabadi et al., 2019	Iran, USA	RCT	80	8-item Morisky Medication Adherence Scale (MMAS-8)—using a 5-point Likert scale for a variety of questions	Infographic group displayed improved long-term medication adherence, compared to video group	Yes, p < 0.05

Hynes et al., 2022	USA	RCT	Intervention: 22 Control: 23	Medication adherence: electronic monitoring sensor attached to the youth’s prescribed daily controller medication	Youth AAP knowledge was higher for the pictorial AAP (intervention) group compared to the written AAP (control) group	Yes, p = 0.017
Kalichman et al., 2013	USA	RCT	446 (148 in pictograph-guided group, 157 in standard adherence group, 141 in general improvement group)	HIV RNA viral load and monthly-unannounced telephone-based pill counts	Those with low marginal literacy levels scored better in adherence tests	Yes, p < 0.05
Mansoor & Dowse, 2006	South Africa	RCT	120	Self-reported adherence and tablet count (heavily weighted toward the tablet count measure)	Significant improvements in medication adherence in the short term	Yes, p < 0.05
Maximos et al., 2021	Canada	RCT	Intervention: 37 Control: 26	Patient understanding: Medication Understanding and Use Self-Efficacy Scale (MUSE) Adherence: number of doses taken of a prescribed agent divided by the number of doses prescribed, expressed as a percentage Pill counts were utilized	No significant difference in adherence, perceived regimen complexity, or MUSE between intervention and control	No
Merks et al., 2019	Poland	RCT	64 (32 in control group, 32	Semi-structured interview based on questionnaires	No significant improvement in adherence in intervention group	No, p < 0.34

			in study group)			
Merks et al., 2021	Poland	Multi-centre, prospective study with control arm	Pictogram group (intervention): 104; Standard care (control): 117	Questionnaire about medication behaviour	Use of pictograms significantly improved medication adherence in the following areas: not omitting doses, not crushing tablets, number of tablets per day	Yes, not omitting doses ($p < 0.00001$), not crushing tablets ($p = 0.004$), number of tablets/day ($p = 0.49$), time of use ($p = 0.001$)
Mohamed et al., 2021	Egypt	Cluster RCT	Intervention-first group: 46 Usual care-first group: 48	Health outcomes measured through clinical and physical activity assessments; Adherence and knowledge through questionnaire	With intervention: significant decrease in SBP, DBP, waist circumference, BMI, FBG, HbA1C, total cholesterol, LDL, and triglyceride levels. Significant improvements in score of knowledge and adherence	Yes, $p = 0.008$ and 0.04 for SBP and DBP, respectively $p = 0.001$ for waist circumference, BMI, total cholesterol, LDL, triglyceride levels $p < 0.001$ for FBG and HbA1C $p < 0.020$ for knowledge $p < 0.001$ for adherence
Moin et al., 2021	Pakistan	RCT	Group 1 (pictorial): 20 Group 2 (video): 20 Group 3 (control): 19	Plaque and gingival scores in all participants in the three groups	Significant reduction in mean gingival score for all groups (preintervention vs. postintervention) Among males—larger reduction in pictorial group than video and control group	Insignificant between groups in females ($p = 0.095$) Significant between groups in males ($p = 0.001$)
Monroe et al., 2018	USA	RCT	46; 23 per group	Adherence to Refills and	Statistically insignificant improvement in	No, $p = 0.07$

				Medications Scale (ARMS)	comorbid medication adherence	
Nahrisah et al., 2020	Indonesia	Quasi-experimental pretest-posttest control group design	140	Objective measurements of hemoglobin and hematocrit concentrations	Improved hemoglobin and hematocrit levels, knowledge of anemia score, and other measures (i.e., improved health outcomes and adherence)	Yes, p < 0.001
Näslund et al., 2019	Sweden	RCT	3532; 1783 in control group, 1749 in intervention group	Blood samples of various risk factors of cardiovascular disease, FRS, SCORE	Improved measures of health outcomes—e.g., reduced poor cholesterol levels	Yes, p = 0.0017 FRS, p = 0.0010 SCORE
Negarandeh et al., 2013	Iran	RCT	127; 40 in control group, 44 in pictorial group, 43 in teach back group	8-item Morisky Medication Adherence Scale (MMAS-8)—using a 5-point Likert scale for a variety of questions	Improved adherence compared to control	Yes, p < 0.001
Park, 2011	Korea	Quasi-experimental pretest-posttest design	136	Self-Efficacy for Appropriate Medication Use Scale (SEAMS)	Significantly increased self-efficacy scores	Yes, p < 0.001
Patiag et al., 2020	USA	Quasi-experimental pretest-posttest design	18 in pretest phase; 11 in posttest phase	Medication adherence score sheet involving pill count, as well as differences in prescribed and consumed doses	No significant improvement in medication dose adherence	No, p > 0.05
Phimarn et al., 2019	Thailand	Four-phased (Phase IV was an RCT)	21 in phase I; 20 in phase II; 30 in phase III; 67 each in experimental and control group	Amount of medication remaining compared against amount prescribed	Improved medication adherence and understanding	Yes, p < 0.033

Shenoi et al., 2021	India	Clinical trial	39	Closed-ended questionnaire	Compliance was significantly higher among Group B (intervention) than Group A (control)	Yes, $p < 0.0001$
Wilby et al., 2011	Canada	RCT	72; 39 in control group, 33 in treatment group	Patients were asked the question “What can you tell me about this medication?” and evaluated on their response	Improved comprehension and recall	Yes, $p < 0.0001$
Yin et al., 2008	USA	RCT	227; 113 in intervention group, 114 in control group	Participants were asked to measure the dose as they would at home—deviation from prescribed dose by 20% or more was marked as nonadherent	Adherence was highest in intervention group	Yes, $p = 0.002$ and 0.006

Appendix B

Intervention and Control/Comparator

Study reference	***Intervention***	***Control/comparator***
Almomani et al., 2018	Inhaler with pictogram	Inhaler without pictogram
Artmann et al., 2022	Visualized representations (pictogram or cube diagram)	Text representation
Bengtsson et al., 2021	Pictorial information with additional prevention materials provided to participants and physicians	No pictorial information provided to participants and physicians
Bhardwaj et al., 2022	Verbal explanation and practical demonstration, pictorial handouts	Verbal explanation and practical demonstration
Braich et al., 2011	EG1—taught with pictograms in the clinic EG2—taught with pictograms in the clinic and given take-home pictograms	Verbal instruction only
Branda et al., 2022	Acute myocardial infarction choice conversation tool (including pictograms)	Usual care
Browne et al., 2019	Standard care plus pictograms for side effect information	Standard care
Chan & Hassali, 2014	Pictogram-incorporated drug label	Text-only drug label
Chongpornchai et al., 2021	Motion infographic media	No motion infographic media
Dowse et al., 2014	Standard care + illustrated pictogram information sheet	Standard care
Dowse & Ehlers, 2005	Medicine labels incorporating pictograms	Text-only medicine labels
Ebrahimabadi et al., 2019	Infographic for people with asthma	Video for people with asthma
Hynes et al., 2022	Pictorial asthma action plan	Written asthma action plan
Kalichman et al., 2013	Pictograph-guided counselling	Standard adherence counselling (not pictograph-guided)
Mansoor & Dowse, 2006	Patient medicine information leaflet containing pictograms	Patient medicine information leaflet without pictograms
Maximos et al., 2021	Routine care with picture-based medication calendar	Routine care without picture-based calendar

Merks et al., 2019	Antibiotic with pictogram instructions on external label	Antibiotic with usual pharmacy instructions on external label
Merks et al., 2021	Patient counselling with pictograms	Standard care
Mohamed et al., 2021	Pictorial training for 45 minutes in first visit, and 15 minutes in weekly visits	Usual care
Moin et al., 2021	Group 1: Pictorial educational information for brushing techniques Group 2: Video education information for brushing techniques	Group 3: No education information for brushing techniques
Monroe et al., 2018	Pictorial aid for comorbid medication	Standard clinic visit discharge medication list
Nahrisah et al., 2020	Pictorial handbook for pregnant women with iron deficiency anemia	Routine antenatal care (without pictorial handbook)
Näslund et al., 2019	Pictorial representations of ultrasound results and nurse call to confirm understanding	Not informed
Negarandeh et al., 2013	Pictogram education tool	Teach back education or no education
Park, 2011	Interactive pictorial education	No intervention
Patiag et al., 2020	Pictorial medication card for patients with cognitive challenges	Preintervention: no pictorial medication card for patients with cognitive challenges
Phimarn et al., 2019	Pictogram for low literate Thai patients	Standard medication label
Shenoi et al., 2021	Verbal + pictorial postoperative care instructions	Verbal postoperative care instructions
Wilby et al., 2011	Pictogram-enhanced medication information for HIV medications	Standard counselling
Yin et al., 2008	Pictogram medication counselling	Standard medication counselling

HEALTHY POPULATIONS JOURNAL

Literature Review

Facilitating Equitable Subacute-to-Home Transitions for Patients Receiving Palliative and/or End-of-Life Care: A Literature Review

Madeline McCoy[2], BSc, MSc; Ladees Al Hafi[2], BSc; Ariane Downar[2]; Taylor Shorting[2], BA; Krystal Kehoe MacLeod[2, 5], PhD; Shirley H. Bush[1, 2, 3, 4], MBBS, MRCGP, FAChPM; Aria Wills[2], BSc; Geneviève Lalumière[4], RN, BScN, MN; Jill Rice[1, 2, 3, 4], MD, MHSc, CCFP (PC); and Sarina R. Isenberg[1, 2, 3, 6], MA, PhD
[1] Division of Palliative Care, Department of Medicine, University of Ottawa
[2] Bruyère Research Institute, Ottawa, Ontario, Canada
[3] Ottawa Hospital Research Institute, Ottawa, Ontario, Canada
[4] Bruyère Continuing Care, Ottawa, Ontario, Canada
[5] Department of Family Medicine, University of Ottawa
[6] School of Epidemiology and Public Health, University of Ottawa

DOI: 10.15273/hpj.v3i2.11589

Abstract

Introduction: As people in subacute facilities approach the end of life, the focus of their care often shifts to comfort as they seek to return home. Interventions that aim to improve hospital-to-home transitions do not generally focus on subacute care. **Objective:** To summarize the existing literature on subacute-to-home transitions for individuals receiving palliative care near the end of life, and to explore whether these interventions are targeted toward marginalized groups to improve their transition experience. **Methods:** We searched the MEDLINE, Embase, HealthSTAR, and Cochrane Library electronic databases using terms related to end of life, palliative care, and transitions from subacute facilities to home. We identified 896 records and included 29 articles, 11 of which were intervention articles. We searched the 11 intervention articles for equity stratifiers. **Results:** Of the 29 included articles, four addressed transitions for end-of-life populations, three discussed family caregiver perspectives, and 11 were intervention studies, including regular home visit follow-ups, individualized transition care plans, and an individualized intervention with an advanced practice nurse. Subacute-to-home interventions showed positive outcomes such as reduced risk of hospital readmissions, reduced length of stays, and improved functional status. However, study limitations included small sample sizes, inconsistent definitions of outcomes, and incompletion due to COVID-19. No studies focused on marginalized groups. **Conclusion/Discussion:** While there was some literature supporting targeted interventions for subacute-to-home transitions for those receiving palliative care or end-of-life care, the included interventions did not target marginalized groups. Further research in these areas is required.

Introduction

In an aging population, increasing numbers of individuals experience extended periods with frailty and multimorbidity toward the end of life (Tunnard et al., 2021). Subacute settings provide specialized levels of care to patients with longer periods of frailty, deterioration, and complex conditions who do not require the intensity of care provided in acute settings (Menzies & Hanger, 2011; Reyes-Ortiz et al., 2015; Robert et al., 2021; Sinn et al., 2016; Tunnard et al., 2021; Walker et al., 2015). Subacute care aims to provide continuity of care for patients as an intermediate step between acute care and home (Robert et al., 2021). However, while interventions exist to improve the hospital-to-home transition, these have generally focused on acute care. There is a need to tailor interventions to this group of patients receiving subacute care, as they may seek to return home, when possible.

Subacute-to-home transitions can be distressing and logistically challenging, especially when patients are near the end of life. Problems with discharge quality, planning, and preparation contribute to poor subacute-to-home transition outcomes (Masel et al., 2014; Menzies & Hanger, 2011; Middleton et al., 2018; Robert et al., 2021; Rose et al., 2021; Zhang et al., 2017). For example, patients may not have access to appropriate resources such as information about equipment for the transition home or to support them in remaining at home (Premier's Council on Improving Healthcare and Ending Hallway Medicine, 2019). Patients and caregivers have reported that they are often unaware of available transitional care programs that assist with planning, preparation, and resource provision for transitions home from subacute facilities (Walker et al., 2015). When poorly handled, these transitions can have significant negative effects on the physical, psychosocial, and spiritual well-being of patients and family caregivers (Coleman et al., 2004; Killackey et al., 2020; Li et al., 2014; Saunders et al., 2019; Scott et al., 2020; Sinn et al., 2016; Tunnard et al., 2021; Wilson & Birch, 2018). Furthermore, without proper support, patients transitioning between care settings at the end of life may be vulnerable to medical complications (Killackey et al., 2020; Saunders et al., 2019; Wilson & Birch, 2018), hospital readmissions (Coleman et al., 2004; Li et al., 2014), and extended stays in subacute care (Reyes-Ortiz et al., 2015; Santa-Emma et al., 2002).

Harold Freeman's patient navigation model suggests that interventions should promote access to health care services (e.g., patient navigation services) for marginalized groups because they are at greatest risk of adverse outcomes connected to barriers in accessing care (Freeman & Rodriguez, 2011). For example, a previous systematic review reports that interventions addressing the transition from acute hospital-to-home care have often excluded participants with comorbidities and non-cancer diagnoses (Piraino et al., 2012). However, patients with non-cancer diagnoses are at greater risk for hospitalizations, emergency department visits, and death in-hospital following discharge, compared to patients diagnosed with cancer (Webber et al., 2020). Additionally, patients with linguistic minority status have a higher risk of hospital readmission after discharge in comparison to patients who speak English (Squires et al., 2022), and non-white patients have a higher risk of using acute care after discharge in comparison to white patients (Hall et al., 2015). Furthermore, inequities in access to palliative care and health outcomes have been observed between marginalized groups (i.e., groups with different demographic characteristics such as race/ethnicity, sex, gender, income level, linguistic minority status, geography, sexual orientation, etc.; Canadian Institute for Health Information, 2018; Isenberg et al., 2022; Johnson, 2013; Tyler et al., 2014; Yarnell et al., 2020; Yarnell et al., 2017). Accordingly, understanding subacute-to-home transitions necessitates an equity lens to explore the barriers to accessing care noted above.

Our research program on transitions from hospital to home in palliative care shows that the subacute-to-home transition is an important part of the care experience. Previous studies have systematically reviewed the literature on transitional care programs (from acute care to home) and outcomes such as rehospitalization (Albert, 2016; Killackey et al., 2020; Morkisch et al., 2020; Saunders et al., 2019; Scott et al., 2020), populations targeted by transitional care programs (Piraino et al., 2012), transitional care programs for older adults with frailty (Lee et al., 2022), and the experiences of health care providers in palliative care transitions from acute care to home (Killackey et al., 2020). Donabedian (1988, 2005) classifies variables under the categories of structure, processes, and outcome, which can be used to evaluate the effective delivery of health care and is a well-accepted approach to organizing indicators and outcomes. Similarly, leading and lagging indicators have been used (primarily in occupational health and safety research) to measure organizations' safety performance (Shea et al., 2016; Sheehan et al., 2016). In the context of our study, we used these categories to classify the indicators and outcomes that were found in this review. We were interested in the indicators and outcomes measured before and after the transition home from a subacute facility, as well as indicators that were reported about the organization of the health care system overall. Furthermore, we wanted to see how intervention articles had reported indicators or outcomes for marginalized groups (Freeman & Rodriguez, 2011).

To our knowledge, there has been only one systematic review focused on interventions that aim to improve subacute transitions, completed in Australia (Davis et al., 2016). The current literature review expands on this systematic review (Davis et al., 2016) by summarizing any literature on subacute-to-home transitions for people receiving palliative care and/or near the end of life, the populations they include, and the indicators and outcomes measured. We also explore whether these interventions have been targeted toward marginalized groups to improve their transition experience.

Objective

We aim to summarize the existing literature on the transition from subacute facilities to home for individuals receiving palliative care and/or near the end of life. We included studies that had any kind of comparator and outcomes reported. We also aim to explore whether any interventions included in this review have been targeted toward marginalized groups to improve their transition experience.

Methods

Search Strategy

We conducted three distinct, and yet complementary, searches (detailed below). As we searched the literature, we found that very few articles simultaneously used the term "subacute facilities" while focusing on end-of-life populations (in Searches 1 and 2). We expanded on Search 1 by including synonyms for "subacute facilities" in Search 2 and next by removing the term "end of life" in Search 3 to capture all subacute-to-home transitions beyond only those occurring at the end of life.

Search 1

We conducted a preliminary search of the MEDLINE (via Ovid) electronic database using terms related to "end of life" and palliative care, subacute care, and transition and discharge from subacute facilities to home. Search terms were developed with the assistance of a research librarian at the University of Ottawa who determined the best MeSH terms to use alongside text words when searching articles (see Appendix A for search terms used). Search 1 resulted in 70 articles to screen (see Figure 1 for PRISMA diagram).

Search 2

For Search 2 of the MEDLINE (via Ovid) electronic database, we included synonyms for subacute facilities in addition to our original search terms. In Search 1, we found that some studies used synonyms for subacute facilities and that countries outside Canada referred to subacute care using different terminology, such as "complex continuing care" and "rehabilitation care." We also screened the reference lists of articles from Search 1 to broaden our search for synonyms for subacute facilities. Additionally, we added the search term "frailty" to our search, since it often appeared in articles that focused on the palliative/end-of-life population (see Appendix A). Reference lists of included articles were screened to further identify any relevant articles. Search 2 resulted in 267 additional articles to screen.

Search 3

Our final search used the added synonyms for subacute care and the term "frailty"; however, we removed the term "end of life," as few articles had explored end-of-life populations and subacute-to-home transitions in Search 2 (see Appendix A). We searched electronic databases including Embase, HealthSTAR, and the Cochrane Library database via Ovid in addition to MEDLINE. Search 3 was conducted in February 2023 and resulted in 559 additional articles to screen.

Screening

We downloaded the search results into EndNote (Ver. 20.2.1, https://endnote.com/) and removed duplicate articles and articles not in English (see Figure 1). From 896 records that were identified from Searches 1–3, 526 records were excluded. Two reviewers (MM and LA) screened 370 included abstracts for relevancy and independently assessed 118 full text articles using the inclusion and exclusion criteria. Any conflicts were discussed with the rest of the authors.

Inclusion and Exclusion Criteria

Inclusion criteria are the following:

- discussed subacute-to-home transition ("home" refers to home, inpatient hospice, retirement home, or group home)
- written in English
- no date restriction
- focused on adults 18 years and older

Exclusion criteria are the following:

- written in a language other than English
- discussed a transition within a hospital/between units in a hospital, or a transition to a long-term care facility, or a transition from home to hospital
- discussed acute care transition or discharge

Data Extraction

Twenty-nine articles were included for data extraction. (See Figure 1). MM, LA, and AD performed data extraction, populating a data abstraction table in Microsoft Excel. Table headings included population, setting, date and country of publication, type of intervention (if applicable), methodology, main findings, and statistical outcomes.

Additionally, we assessed the intervention articles using an equity lens. MM screened the 11 full text articles for equity stratifiers (i.e., demographic characteristics such as race, ethnicity, Indigeneity, sex, gender, income level, linguistic minority status/language, and sexual orientation).

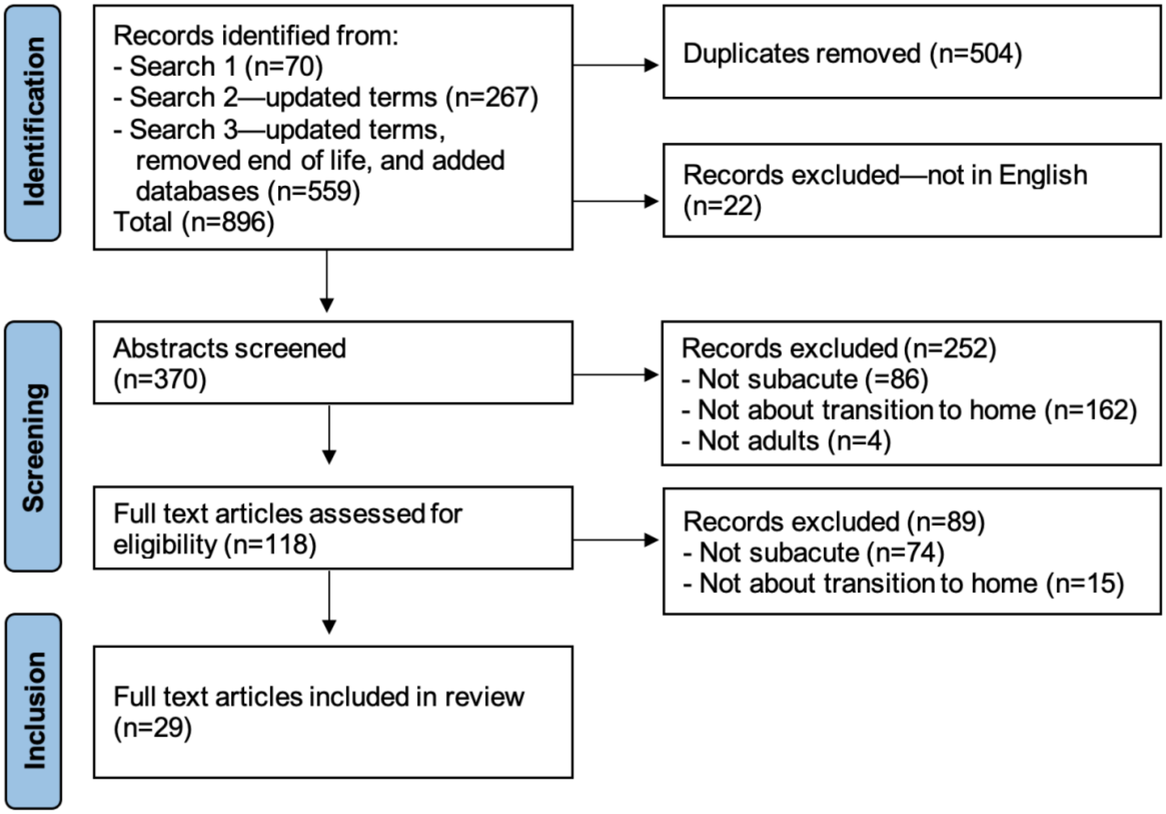
Analysis

Articles were summarized using a narrative synthesis approach. The population and interventions were discussed and structured into themes. The indicators and outcome measures from the included articles were also organized into the categories of structure, process or leading indicators, and outcome or lagging indicators. All authors interpreted the findings together.

The indicators that fall into the structure category are the organizational inputs and framework of the health care system or the "settings in which care occurs," (e.g., medical staff organization or resources; Donabedian, 1988, p. 1745; Donabedian, 2005; NHS England, 2021). Donabedian defined process measures as the activities performed in the health care system to deliver care that aims to achieve a desired outcome (e.g., referrals, admissions, or treatments; Donabedian, 1988, 2005; NHS England, 2021). Similarly, leading indicators are upstream or precursors to downstream outcomes (Shea et al., 2016; Sheehan et al., 2016). Outcomes are a measurement of health status, the end result of health care processes, and are often used as an indicator of how well a system is performing. Examples include mortality, hospital admissions, and patients' satisfaction with care (Donabedian, 1988, 2005; NHS England, 2021). Similarly, lagging indicators are downstream health effects or the end result of health care processes, and are the most common outcomes for researchers to measure (Shea et al., 2016; Sheehan et al., 2016).

Figure 1

PRISMA Diagram Depicting Search Process for Literature Review



Note. PRISMA diagram as per Page et al. (2021).

Results

Below we summarize the existing literature on subacute-to-home transitions via descriptions of the articles, including the study populations, interventions, and indicators/outcomes.

Description of Included Articles

The 29 articles were published between 1995 and 2023, with the majority (76%) published within the past 10 years. The articles originated from 11 different countries: 10 from the United States, five from Canada, three from Australia, two each from England, Japan, and Austria, and one each from Denmark, Germany, New Zealand, Switzerland, and Turkey. The number of participants in each article varied from one to 14,072 participants, and included various participant groups, such as patients, family caregivers, bereaved families, and health care providers. Most articles (n=22) did not specifically look at a certain disease population. However, when disease populations were reported, the articles included patients with cancer (Aso et al., 2022; Masel et al., 2014, 2015; Zhang et al., 2017), chronic illness (Lenaghan, 2019), dementia (Lenaghan, 2019), or hip fracture (Nikolaus et al., 1999).

The articles used various synonyms for subacute care such as inpatient rehabilitation facilities, long-term acute care, tertiary referral centres, inpatient intermediate care units, inpatient palliative care units, skilled nursing facilities, subacute geriatric units, transition care programs, or complex continuing care programs.

The patient population for most articles was aged 65 years or older. Studies reporting patient inclusion criteria generally included patients with a life expectancy of less than six months or a Palliative Performance Scale (PPS) score that was less than 50% (Reyes-Ortiz et al., 2015; Shinall et al., 2019). Four articles addressed transitions home for end-of-life populations (Aso et al., 2022; Reyes-Ortiz et al., 2015; Santa-Emma et al., 2002; Toles et al., 2021).

Three articles included the perspective of caregivers and family members (Aso et al., 2022; Menzies & Hanger, 2011; Toles et al., 2021).

See Appendix B for a summary of the included articles.

Interventions

From the combined searches, there was limited literature on the design and implementation of interventions that aid this transition. We found six categories of interventions for subacute-to-home transitions: (a) the use of nurses for home visits and coaching following the transition, (b) geriatric assessments and regular follow-ups by a geriatric team, (c) palliative care consultation services, (d) novel transitional care programs, (e) a novel transitional care program for older dialysis patients, and (f) a novel medicine adherence program for patients discharged home.

Interventions Involving Follow-Ups by Nurses Only

Two interventions involved nurses. One intervention incorporated nurse practitioners to provide transitional care services for high-risk patients within 72 hours of discharge from a skilled nursing facility (Rose et al., 2021). The elements of the transitional care services provided were medication reconciliation, physical exams, home assessments for fall hazards, community referrals, and communication with primary care providers (Rose et al., 2021). A second identified intervention (named QUEST) was an individualized interaction with an advanced practice nurse that integrated best practices from evidence-based transition models, such as the Transitional Care Model and Project RED (Re-Engineered Discharge; Lenaghan, 2019). In this interaction, an advanced practice nurse coached a population of older adults to follow QUEST by asking Questions, Understanding their treatment, becoming Educated about their illness and medications, knowing which Symptoms to report, and ensuring Timely post-hospital follow-ups (Lenaghan, 2019).

Interventions Involving Geriatric Assessments and Follow-Ups by a Geriatric Team

Two interventions consisted of geriatric assessments and follow-ups after the transition home by a geriatric team. The geriatric assessments were multidisciplinary and designed to evaluate an older person's functional abilities, health, cognition, and socioenvironmental circumstances (Nikolaus et al., 1999). One study assigned patients to one of three interventions: (a) comprehensive geriatric assessment and in-hospital and post-discharge follow-up treatment by an interprofessional home intervention team (three nurses, a physiotherapist, an occupational therapist, a social worker, and a secretary), (b) comprehensive geriatric assessment followed by usual care at home, or (c) assessment of activities of daily living and cognition followed by usual care in hospital and at home (Nikolaus et al., 1999). The second intervention was a model of care that involved regular geriatric follow-ups through home visits from a geriatric team (a geriatrician, a nurse, and a physical therapist) that was allocated to randomly selected patients who were discharged from a geriatric ward (Hansen et al., 1995). Patients were visited at one, three, eight, and 16 weeks after hospital discharge. During these visits, geriatric evaluation was performed, and adjustment of medical treatments was carried out as necessary (Hansen et al., 1995).

Interventions Involving Palliative Care Consultation Services

Two intervention articles involved the use of palliative care consultation services, whereby they examined discharge destination following the consultation service. One study compared the outcomes of early palliative care consultation versus late consultation on percentage of inpatient hospice admissions and length of hospitalization (Reyes-Ortiz et al., 2015). Early palliative care consultation was categorized as care received within three days or less after admission, and late palliative care consultation was received after three days (Reyes-Ortiz et al., 2015). The consultations included discussions about goals of care and the patient's treatment plan (Reyes-Ortiz et al., 2015). Secondly, there was an intervention that administered inpatient acute palliative care services across an urban-suburban three-hospital system (Santa-Emma et al., 2002). These services consisted of palliative care consultations that centred around clarifying goals of treatment, identification of plans for continuity of care, and focusing on end-of-life issues with patients and their families (Santa-Emma et al., 2002).

Interventions Involving Novel Transitional Care Programs

There were three novel transitional care intervention programs: the Sub-Acute care for Frail Elderly (SAFE) Unit, Connect-Home, and a Restorative Care program (Robert et al., 2021; Runacres et al., 2016; Toles et al., 2021). The Sub-Acute care for Frail Elderly Unit is a transitional care program that offered function-focused care and was designed to target the persisting capacity issues within hospitals in Ontario, Canada (Robert et al., 2021). The unit had a 450-bed nursing home where discharged patients accessed medical and restorative care provided by an interprofessional team of nurses, internists, geriatricians, physiotherapists, and social workers before returning to their homes (Robert et al., 2021). This intervention provided early discharge planning and cognitive screening upon arrival to further enhance patients' transition back to the community by addressing cognitive impairments (Robert et al., 2021).

The Connect-Home program was a two-step team-based process in which (a) skilled nursing facility staff created an individualized Transition Plan of Care to help the patient manage their illness at home, and (b) a Connect-Home Activation registered nurse then visited the patient at home to implement a written Transition Plan of Care and prepared patients and caregivers to manage serious illnesses at home (Toles et al., 2021).

Finally, the Restorative Care program targeted frail or older acute patients. A rehabilitation charge nurse identified those who would qualify for restorative care, and a discharge planner subsequently met with the caregivers to identify barriers to discharge (Runacres et al., 2016). At-home services for additional support were also provided (Runacres et al., 2016).

Novel Transitional Care Program for Older Dialysis Patients

One intervention focused on the transitions of older dialysis patients. Li et al (2007) reported the provision of in-patient rehabilitation with on-site dialysis; a simplified referral system; preferential admission of older dialysis patients; short daily dialysis sessions; integrated multidisciplinary care by experts in rehabilitation, geriatric medicine, and nephrology; and reciprocal continued medical education among staff (Li et al., 2007).

Novel Medication Adherence Program for Patients Discharged Home

One intervention used one-hour presentations to encourage pharmacists to simplify medication regimens before patients were discharged home (Elliott, 2012). The goal was to reduce the complexity of medication regimens for patients being discharged home to facilitate better adherence to medication (Elliott, 2012).

Interventions with an Equity Lens

When considering equity stratifiers included in intervention articles, all 11 intervention studies reported age and sex of their participants, four studies reported race or ethnicity of participants (Lenaghan, 2019; Reyes-Ortiz et al., 2015; Santa-Emma et al., 2002; Toles et al., 2021), one study reported religion of participants (Reyes-Ortiz et al., 2015), and one study reported language spoken by participants (Li et al., 2007). However, most studies summarized the characteristics of their participants in a demographics table, while two studies reported early versus late palliative care consults (Reyes-Ortiz et al., 2015) and discharge location (Runacres et al., 2016) by demographic group, but had no further interpretation of the findings.

Structure

One article included structures, which included characteristics of skilled nursing facilities from which patients were discharged (e.g., facility bed count and facility ownership status: unknown, for-profit, government, or non-profit; Hall et al., 2015).

Process or Leading Indicators

Process or leading indicators were measured prior to transitioning home from a subacute facility. Appendix C provides a summary of the overall frequency of process or leading indicators measured in the included articles.

Outcome or Lagging Indicators

Outcomes or lagging indicators were measured after patients transitioned home from a subacute facility. Appendix D provides a summary of the overall frequency of outcome or lagging indicators measured in the included articles.

Discussion

This literature review provides a description of the populations included in studies addressing the transition from subacute facilities to home. Interventions for subacute-to-home transitions, and the outcomes measured in association with subacute-to-home transitions, were also summarized.

Very few of these articles addressed transitions home for end-of-life populations, despite most articles being focused on older adults. A systematic review and meta-analysis looking at transitions from acute care to home for older adults concluded that there are very few interventions focused on the older population; however, older adults are at greater risk for hospital readmission following transitions home (Lee et al., 2022). Furthermore, only two articles discussed the caregiver and family perspective during these transitions (Aso et al., 2022; Menzies & Hanger, 2011). Another systematic review also found that perspectives from caregivers are under-reported in intervention studies and recommended that caregiver perspectives be included in future research (Davis et al., 2016). Caregivers and family members often take on most of the responsibility for organizing the transition home and can suffer from caregiver distress (Menzies & Hanger, 2011).

Interventions included in this literature review included equity stratifiers such as age, sex, religion, and language. However, for health care inequities to be addressed, studies must (a) identify inequities, (b) understand how access to health care or health outcomes differs between socio-demographic groups, and (c) understand the "root causes" of the inequity (Health Quality Ontario, n.d.; Isenberg et al., 2022). While the 11 intervention articles reported equity stratifiers, the interventions were not targeted toward marginalized groups to improve their transition experience. Harold Freeman's patient navigation model and previous research has suggested that patients in minority groups have a higher risk of experiencing negative outcomes such as more hospital readmissions or acute care use after discharge (Freeman & Rodriguez, 2011; Squires et al., 2022; Webber et al., 2020). Therefore, future subacute-to-home transition interventions should address the unique needs of patients from marginalized groups, similar to how some existing interventions have addressed specific disease populations (e.g., Li et al., 2007; Robert et al., 2021). This understanding can help to target inequitable access to palliative care and health outcomes stemming from systemic issues (Isenberg et al., 2022).

Consistent with previous systematic reviews of the literature on transitions from acute care to home, the interventions in our review of subacute-to-home transitions were implemented throughout the discharge process from subacute care (Saunders et al., 2019) and included planning for discharge and developing a care plan (Albert, 2016; Davis et al., 2016; Lee et al., 2022; Morkisch et al., 2020); preparing for discharge by organizing logistics and community services (Killackey et al., 2020; Scott et al., 2020); care team communication and collaboration (Albert, 2016; Davis et al., 2016; Killackey et al., 2020; Morkisch et al., 2020); follow-up (Albert, 2016; Lee et al., 2022); and medication management, symptom management, and patient education (Albert, 2016; Morkisch et al., 2020). There were some limitations with the included studies such as inconsistent definitions of intervention goals, missing data for the location of follow-up visits with a family physician, and missing data due to the COVID-19 pandemic (Lenaghan, 2019; Robert et al., 2021; Toles et al., 2021).

Similarly, consistent with previous systematic reviews (e.g., meta-analyses, narrative systematic reviews, reviews of randomized controlled trials), outcomes included readmission and rehospitalization (Lee et al., 2022; Morkisch et al., 2020; Piraino et al., 2012; Scott et al., 2020), mortality (Lee et al., 2022; Morkisch et al., 2020), quality of life (Lee et al., 2022; Morkisch et al., 2020), cognitive assessment (Piraino et al., 2012), depression (Piraino et al., 2012), and discharge location (Scott et al., 2020). The interventions seemed to benefit patients—for example, in reducing risk of hospital readmissions and length of stays (Hansen et al., 1995), as well as improving functional status (Santa-Emma et al., 2002). However, it is important to note that these interventions did not promote access to health care services for marginalized groups, which means there is a gap in understanding how interventions could impact these outcomes for these groups (Freeman & Rodriguez, 2011). A suggested next step would be to conduct randomized control studies to systematically assess if there are specific components of interventions that improve the subacute-to-home transition, especially for marginalized groups who are at greater risk for adverse outcomes.

Strengths and Limitations

The strength of this literature review is that it is the first review beyond the review by Davis et al. (2016) to summarize the literature on subacute-to-home transitions. Further, it is the first review to consider elements of equity alongside a review of interventions that aim to improve subacute-to-home transitions.

There are several limitations. We searched only a limited number of databases, so it is possible that relevant studies published in databases outside of our search may have been missed. With the limitation to English articles, any relevant articles in other languages were not included, which may affect the generalizability of the results. Further, we did not conduct quality and bias assessments of the articles. Additionally, the heterogeneity of study designs, interventions, and outcomes limited our ability to compare across studies.

Next Steps

The next stage of our project is to use findings from this literature review and focus groups to inform our co-design process for an intervention aimed at improving the subacute-to-home transition for people receiving a palliative approach to care. The synthesis of the populations, interventions, and indicators/outcomes included in the articles will be discussed in focus groups to gather suggestions on population selection, interventions, and indicators/outcomes to be included in a co-design process.

We will be implementing recruitment strategies in an effort to include a diverse representation of patients and caregivers in our focus groups and co-design process. We will be connecting with organizations that provide services and resources to various communities in the Ottawa (Ontario, Canada) region to learn how to best engage a diverse group of participants in our work. We hope to learn how future subacute-to-home transition interventions could address the unique needs of patients from marginalized groups.

Conclusion

Our study provides an initial review of the existing literature on subacute-to-home transitions and may be helpful to practitioners and administrators working to improve these transitions at their institutions. While there was some literature supporting targeted interventions for subacute-to-home transitions for those receiving palliative care or end-of-life care, there were noted limitations to these studies. Furthermore, the included intervention articles did not target marginalized groups.

Acknowledgements

We would like to thank Ms. Karine Fournier for assistance in the development of our search terms for the literature review and Dr. James Downar for helping us to frame the indicators and outcomes.

References

Albert, N. M. (2016). A systematic review of transitional-care strategies to reduce rehospitalization in patients with heart failure. Heart & Lung, 45(2), 100–113. https://doi.org/10.1016/j.hrtlng.2015.12.001

Aso, S., Hayashi, N., Sekimoto, G., Nakayama, N., Tamura, K., Yamamoto, C., Aoyama, M., Morita, T., Kizawa, Y., Tsuneto, S., Shima, Y., & Miyashita, M. (2022). Association between temporary discharge from the inpatient palliative care unit and achievement of good death in end-of-life cancer patients: A nationwide survey of bereaved family members. Japan Journal of Nursing Science, 19(3), Article e12474. https://doi.org/10.1111/jjns.12474

Canadian Institute for Health Information. (2018, April). In pursuit of health equity: Defining stratifiers for measuring health inequality. https://www.cihi.ca/sites/default/files/document/defining-stratifiers-measuring-health-inequalities-2018-en-web.pdf

Coleman, E. A., Smith, J. D., Frank, J. C., Min, S.-J., Parry, C., & Kramer, A. M. (2004). Preparing patients and caregivers to participate in care delivered across settings: The Care Transitions Intervention. Journal of the American Geriatrics Society, 52(11), 1817–1825. https://doi.org/10.1111/j.1532-5415.2004.52504.x

Davis, J., Morgans, A., & Stewart, J. (2016). Developing an Australian health and aged care research agenda: A systematic review of evidence at the subacute interface. Australian Health Review, 40(4), 420–427. https://doi.org/10.1071/AH15005

Donabedian, A. (1988). The quality of care: How can it be assessed? JAMA, 260(12), 1743–1748. https://doi.org/10.1001/jama.1988.03410120089033

Donabedian, A. (2005). Evaluating the quality of medical care. The Milbank Quarterly, 83(4), 691–729. https://doi.org/10.1111/j.1468-0009.2005.00397.x

Elliott, R. A. (2012). Reducing medication regimen complexity for older patients prior to discharge from hospital: Feasibility and barriers. Journal of Clinical Pharmacy and Therapeutics, 37(6), 637–642. https://doi.org/10.1111/j.1365-2710.2012.01356.x

Freeman, H. P., & Rodriguez, R. L. (2011). History and principles of patient navigation. Cancer, 117(S15), 3539–3542. https://doi.org/10.1002/cncr.26262

Hall, R. K., Toles, M., Massing, M., Jackson, E., Peacock-Hinton, S., O'Hare, A. M., & Colón-Emeric, C. (2015). Utilization of acute care among patients with ESRD discharged home from skilled nursing facilities. Clinical Journal of the American Society of Nephrology, 10(3), 428–434. https://doi.org/10.2215/cjn.03510414

Hansen, F. R., Poulsen, H., & Sørensen, K. H. (1995). A model of regular geriatric follow-up by home visits to selected patients discharged from a geriatric ward: A randomized controlled trial. Aging Clinical and Experimental Research, 7(3), 202–206. https://doi.org/10.1007/BF03324316

Health Quality Ontario. (n.d.). Quality Improvement Plan guidance: Using sociodemographic data for targeted improvement. https://www.hqontario.ca/Portals/0/documents/qi/qip/qip-guidance-sociodemographic-data-en.pdf

Isenberg, S. R., Bonares, M., Kurahashi, A. M., Algu, K., & Mahtani, R. (2022). Race and birth country are associated with discharge location from hospital: A retrospective cohort study of demographic differences for patients receiving inpatient palliative care. eClinical Medicine, 45, Article 101303. https://doi.org/10.1016/j.eclinm.2022.101303

Johnson, K. S. (2013). Racial and ethnic disparities in palliative care. Journal of Palliative Medicine, 16(11), 1329–1334. https://doi.org/10.1089/jpm.2013.9468

Killackey, T., Lovrics, E., Saunders, S., & Isenberg, S. R. (2020). Palliative care transitions from acute care to community-based care: A qualitative systematic review of the experiences and perspectives of health care providers. Palliative Medicine, 34(10), 1316–1331. https://doi.org/10.1177/0269216320947601

Lee, J. Y., Yang, Y. S., & Cho, E. (2022). Transitional care from hospital to home for frail older adults: A systematic review and meta-analysis. Geriatric Nursing, 43, 64–76. https://doi.org/10.1016/j.gerinurse.2021.11.003

Lenaghan, N. A. (2019). Transitional care and empowerment of the older adult. Geriatric Nursing, 40(2), 148–153. https://doi.org/10.1016/j.gerinurse.2018.07.005

Li, J., Young, R., & Williams, M. V. (2014). Optimizing transitions of care to reduce rehospitalizations. Cleveland Clinic Journal of Medicine, 81(5), 312–320. https://doi.org/10.3949/ccjm.81a.13106

Li, M., Porter, E., Lam, R., & Jassal, S. V. (2007). Quality improvement through the introduction of interdisciplinary geriatric hemodialysis rehabilitation care. American Journal of Kidney Diseases, 50(1), 90–97. https://doi.org/10.1053/j.ajkd.2007.04.011

Makam, A. N., Tran, T., Miller, M. E., Xuan, L., Nguyen, O. K., & Halm, E. A. (2019). The clinical course after long-term acute care hospital admission among older Medicare beneficiaries. Journal of the American Geriatrics Society, 67(11), 2282–2288. https://doi.org/10.1111/jgs.16106

Masel, E. K., Huber, P., Schur, S., Kierner, K. A., Nemecek, R., & Watzke, H. H. (2014). Predicting discharge of palliative care inpatients by measuring their heart rate variability. Annals of Palliative Medicine, 3(4), 244–249. https://doi.org/10.3978/j.issn.2224-5820.2014.08.01

Masel, E. K., Huber, P., Schur, S., Kierner, K. A., Nemecek, R., & Watzke, H. H. (2015). Coming and going: Predicting the discharge of cancer patients admitted to a palliative care unit: Easier than thought? Supportive Care in Cancer, 23(8), 2335–2339. https://doi.org/10.1007/s00520-015-2601-4

Menzies, O. H., & Hanger, H. C. (2011). Resource usage and outcomes in a facilitated discharge service in Christchurch, New Zealand. New Zealand Medical Journal, 124(1341), 29–37. https://journal.nzma.org.nz/journal-articles/resource-usage-and-outcomes-in-a-facilitated-discharge-service-in-christchurch-new-zealand

Middleton, A., Graham, J. E., Prvu Bettger, J., Haas, A., & Ottenbacher, K. J. (2018). Facility and geographic variation in rates of successful community discharge after inpatient rehabilitation among Medicare fee-for-service beneficiaries. JAMA Network Open, 1(7), Article e184332. https://doi.org/10.1001%2Fjamanetworkopen.2018.4332

Morkisch, N., Upegui-Arango, L. D., Cardona, M. I., van den Heuvel, D., Rimmele, M., Sieber, C. C., & Freiberger, E. (2020). Components of the transitional care model (TCM) to reduce readmission in geriatric patients: A systematic review. BMC Geriatrics, 20, Article 345. https://doi.org/10.1186/s12877-020-01747-w

Murmann, M., Sinden, D., Hsu, A. T., Thavorn, K., Eddeen, A. B., Sun, A. H., & Robert, B. (2023). The cost-effectiveness of a nursing home-based transitional care unit for increasing the potential for independent living in the community among hospitalized older adults. Journal of Medical Economics, 26(1), 61–69. https://doi.org/10.1080/13696998.2022.2156152

NHS England. (2021, September). Quality, service improvement and redesign: Providing participants with the know-how to design and implement more efficient and productive services. Retrieved from https://www.england.nhs.uk/wp-content/uploads/2021/09/Quality-service-improvement-and-redesign-programmes-providing-participants-with-the-know-how-to-design-and-imp.pdf

Nikolaus, T., Specht-Leible, N., Bach, M., Oster, P., & Schlierf, G. (1999). A randomized trial of comprehensive geriatric assessment and home intervention in the care of hospitalized patients. Age and Ageing, 28(6), 543–550. https://doi.org/10.1093/ageing/28.6.543

Ohta, R., Maeki, N., Maniwa, S., & Miyakoshi, K. (2021). Predicting factors of elderly patients' discharge to home after rehabilitation in rural Japan: A retrospective cohort study. Rural & Remote Health, 21(1), Article 6406. https://doi.org/10.22605/rrh6406

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., . . . Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. BMJ, 372, n71. https://doi.org/10.1136/bmj.n71

Piraino, E., Heckman, G. A., Glenny, C., & Stolee, P. (2012). Transitional care programs: Who is left behind? A systematic review. International Journal of Integrated Care, 12(July–September), Article e132. https://doi.org/10.5334/ijic.805

Premier's Council on Improving Healthcare and Ending Hallway Medicine. (2019, January). Hallway health care: A system under strain. Government of Ontario. http://www.health.gov.on.ca/en/public/publications/premiers_council/docs/premiers_council_report.pdf

Reyes-Ortiz, C. A., Williams, C., & Westphal, C. (2015). Comparison of early versus late palliative care consultation in end-of-life care for the hospitalized frail elderly patients. American Journal of Hospice & Palliative Medicine, 32(5), 516–520. https://doi.org/10.1177/1049909114530183

Robert, B., Sun, A. H., Sinden, D., Spruin, S., & Hsu, A. T. (2021). A case-control study of the Sub-Acute care for Frail Elderly (SAFE) Unit on hospital readmission, emergency department visits and continuity of post-discharge care. JAMDA, 22(3), 544–550. https://doi.org/10.1016/j.jamda.2020.07.020

Rodham, K., Boxell, E., McCabe, C., Cockburn, M., & Waller, E. (2012). Transitioning from a hospital rehabilitation programme to home: Exploring the experiences of people with complex regional pain syndrome. Psychology & Health, 27(10), 1150–1165. https://doi.org/10.1080/08870446.2011.647820

Rose, T., Frith, K., & Zimmer, R. (2021). Transitional care following a skilled nursing facility stay: Utilization of nurse practitioners to reduce readmissions in high risk older adults. Geriatric Nursing, 42(6), 1594–1596. https://doi.org/10.1016/j.gerinurse.2021.06.024

Runacres, F., Gregory, H., & Ugalde, A. (2016). Restorative care for palliative patients: A retrospective clinical audit of outcomes for patients admitted to an inpatient palliative care unit. BMJ Supportive & Palliative Care, 6(1), 97–100. https://doi.org/10.1136/bmjspcare-2014-000774

Santa-Emma, P. H., Roach, R., Gill, M. A., Spayde, P., & Taylor, R. M. (2002). Development and implementation of an inpatient acute palliative care service. Journal of Palliative Medicine, 5(1), 93–100. https://doi.org/10.1089/10966210252785051

Saunders, S., Killackey, T., Kurahashi, A., Walsh, C., Wentlandt, K., Lovrics, E., Scott, M., Mahtani, R., Bernstein, M., Howard, M., Tanuseputro, P., Goldman, R., Zimmermann, C., Aslakson, R. A., Isenberg, S. R., & American Academy of Hospice Palliative Medicine Research Committee Writing Group. (2019). Palliative care transitions from acute care to community-based care—A systematic review. Journal of Pain & Symptom Management, 58(4), 721–734. https://doi.org/10.1016/j.jpainsymman.2019.06.005

Scott, M., Shaver, N., Lapenskie, J., Isenberg, S. R., Saunders, S., Hsu, A. T., & Tanuseputro, P. (2020). Does inpatient palliative care consultation impact outcomes following hospital discharge? A narrative systematic review. Palliative Medicine, 34(1), 5–15. https://doi.org/10.1177/0269216319870649

Shea, T., De Cieri, H., Donohue, R., Cooper, B., & Sheehan, C. (2016). Leading indicators of occupational health and safety: An employee and workplace level validation study. Safety Science, 85, 293–304. https://doi.org/10.1016/j.ssci.2016.01.015

Sheehan, C., Donohue, R., Shea, T., Cooper, B., & De Cieri, H. (2016). Leading and lagging indicators of occupational health and safety: The moderating role of safety leadership. Accident Analysis and Prevention, 92, 130–138. https://doi.org/10.1016/j.aap.2016.03.018

Shinall, M. C., Jr., Wilson, J. E., Karlekar, M., & Ely, E. W. (2019). Facility placement as a barrier to hospice for older adult patients discharged from a palliative care unit. American Journal of Hospice & Palliative Medicine, 36(2), 93–96. https://doi.org/10.1177/1049909118791149

Sinn, C.-L. J., Tran, J., Pauley, T., & Hirdes, J. (2016). Predicting adverse outcomes after discharge from complex continuing care hospital settings to the community. Professional Case Management, 21(3), 127–136. https://doi.org/10.1097/NCM.0000000000000148

Squires, A., Ma, C., Miner, S., Feldman, P., Jacobs, E. A., & Jones, S. A. (2022). Assessing the influence of patient language preference on 30 day hospital readmission risk from home health care: A retrospective analysis. International Journal of Nursing Studies, 125, Article 104093. https://doi.org/10.1016/j.ijnurstu.2021.104093

Toles, M., Colón-Emeric, C., Hanson, L. C., Naylor, M., Weinberger, M., Covington, J., & Preisser, J. S. (2021). Transitional care from skilled nursing facilities to home: Study protocol for a stepped wedge cluster randomized trial. Trials, 22, Article 120. https://doi.org/10.1186/s13063-021-05068-0

Trillig, A. U., Ljuslin, M., Mercier, J., Harrisson, M., & Vayne-Bossert, P. (2022). "I am not the same man...": A case report of management of post-COVID refractory dyspnea. Journal of Palliative Medicine, 25(10), 1606–1609. https://doi.org/10.1089/jpm.2021.0605

Tunnard, I., Yi, D., Ellis-Smith, C., Dawkins, M., Higginson, I. J., & Evans, C. J. (2021). Preferences and priorities to manage clinical uncertainty for older people with frailty and multimorbidity: A discrete choice experiment and stakeholder consultations. BMC Geriatrics, 21, Article 553. https://doi.org/10.1186%2Fs12877-021-02480-8

Tyler, I., Amare, H., Hyndman, B., & Manson, H. (2014, October). Health equity assessment: Facilitators and barriers to application of health equity tools. Public Health Ontario. https://www.publichealthontario.ca/-/media/documents/h/2014/health-equity-barriers.pdf

Walker, R., Johns, J., & Halliday, D. (2015). How older people cope with frailty within the context of transition care in Australia: Implications for improving service delivery. Health & Social Care in the Community, 23(2), 216–224. https://doi.org/10.1111/hsc.12142

Webber, C., Hsu, A. T., Tanuseputro, P., Fitzgibbon, E., & Li, C. (2020). Acute care utilization and place of death among patients discharged from an inpatient palliative care unit. Journal of Palliative Medicine, 23(1), 54–59. https://doi.org/10.1089/jpm.2019.0162

Wilson, D. M., & Birch, S. (2018). Moving from place to place in the last year of life: A qualitative study identifying care setting transition issues and solutions in Ontario. Health & Social Care in the Community, 26(2), 232–239. https://doi.org/10.1111/hsc.12513

Yarnell, C. J., Fu, L., Bonares, M. J., Nayfeh, A., & Fowler, R. A. (2020). Association between Chinese or South Asian ethnicity and end-of-life care in Ontario, Canada. CMAJ, 192(11), E266–E274. https://doi.org/10.1503/cmaj.190655

Yarnell, C. J., Fu, L., Manuel, D., Tanuseputro, P., Stukel, T., Pinto, R., Scales, D. C., Laupacis, A., & Fowler, R. A. (2017). Association between immigrant status and end-of-life care in Ontario, Canada. JAMA, 318(15), 1479–1488. https://doi.org/10.1001/jama.2017.14418

Zengin, H., & Taşçi, I. (2021). Factors influencing the length of stay in the palliative care unit in patients discharged home: Results from a tertiary hospital in Turkey. Turkish Journal of Medical Sciences, 51(5), 2420–2426. https://doi.org/10.3906/sag-2101-307

Zhang, H., Barysauskas, C., Rickerson, E., Catalano, P., Jacobson, J., Dalby, C., Lindvall, C., & Selvaggi, K. (2017). The intensive palliative care unit: Changing outcomes for hospitalized cancer patients in an academic medical center. Journal of Palliative Medicine, 20(3), 285–289. https://doi.org/10.1089/jpm.2016.0225

Appendix A

Search Terms

Search 1 (MEDLINE via Ovid)

Terminal Care/Palliative Care/Palliative Medicine/Terminally Ill/palliative*/end of life*/(terminal* or end-stage* or end stage* or incurable or advanced) adj3 (disease* or ill* or care or cancer* or malignan*)/(terminal stage* or dying or (close adj2 death)

complex* continuing/rehabilitation care/Subacute Care/(Sub-acute* or Post-acute*)

Home Care Services/Home Nursing/Hospice Care/hospice* care/"Hospice and Palliative Care Nursing"/home*

AND/OR

patient transfer/ or transitional care/transition*/transfer*/patient discharge/(patient* adj3 discharg*)/hospital to home transition/(hospital* adj3 home* adj3 transition*)

Search 2 (MEDLINE via Ovid)

Terminal Care/Palliative Care/Palliative Medicine/Terminally Ill/palliative*/end of life*/(terminal* or end-stage* or end stage* or incurable or advanced) adj3 (disease* or ill* or care or cancer* or malignan*)/(terminal stage* or dying or (close adj2 death), or frail*)

complex* continuing/rehabilitation care/Subacute Care/(Sub-acute* or Post-acute*)

Home Care Services/Home Nursing/Hospice Care/hospice* care/"Hospice and Palliative Care Nursing"/home*

palliative care unit*, “tertiary academic referral cent*”, "tertiary referral cent*”, "Inpatient intermediate care unit*”, Inpatient intermediate care, transition*

AND/OR

patient transfer/ or transitional care/transition*/transfer*/patient discharge/(patient* adj3 discharg*)/hospital to home transition/(hospital* adj3 home* adj3 transition*)

Search 3 (MEDLINE, Embase, HealthSTAR, and the Cochrane Library database via Ovid)

Terminal Care/Palliative Care/Palliative Medicine/Terminally Ill/palliative*/(terminal* or end-stage* or end stage* or incurable or advanced) adj3 (disease* or ill* or care or cancer* or malignan*)/(terminal stage* or dying or (close adj2 death), or frail*)

complex* continuing/rehabilitation care/Subacute Care/(Sub-acute* or Post-acute*)

Home Care Services/Home Nursing/Hospice Care/hospice* care/"Hospice and Palliative Care Nursing"/home*

palliative care unit*, “tertiary academic referral cent*”, "tertiary referral cent*”, "Inpatient intermediate care unit*”, Inpatient intermediate care, transition*

AND/OR

patient transfer/ or transitional care/transition*/transfer*/patient discharge/(patient* adj3 discharg*)/hospital to home transition/(hospital* adj3 home* adj3 transition*)

Appendix B

Overview of Included Articles

Author(s)	Year	Country	Study design	Intervention (if applicable)	Indicators and/or Outcomes
Aso et al.	2022	Japan	Secondary analysis of data from a nationwide post-bereavement survey	n/a	• Good death inventory-short version • Family member's perception of the experiences of temporary discharge • Circumstances of the patient and family caregivers before and after temporary discharge
Elliott	2012	Australia	Observational study of patients discharged from two acute care wards and two subacute aged care wards	Pharmacists attended an hour-long education session on medication regime complexity and medication adherence after discharge home	• Discharge location • Length of stay in hospital • Number of medications on admission • Number of medications at discharge • Reasons pharmacists did not make changes to medication regimen complexity before discharge
Hall et al.	2015	USA	Retrospective cohort study older adults with end-stage renal disease, discharged from a skilled nursing facility	n/a	• Facility bed count, ownership status • Registered nurse/licensed practical nurse hours per resident day • Hospitalizations • Emergency department visits • Time to first acute care use after discharge • Deaths after discharge
Hansen et al.	1995	Denmark	Randomized controlled trial	Regular geriatric follow-up by home visits to selected patients discharged from a geriatric ward	• Type of care programs received by patients (e.g., home care, nurse visits, meal delivery) • Medical conditions • Falls • Readmissions
Lenaghan	2019	USA	Single group pre- and post-intervention survey, pilot	Individualized interaction with an advanced practice nurse that integrated	• Patients' level of empowerment (Senior Empowerment and Advocacy in Patient Safety

			study	best practices from evidence-based transition models, such as the Transitional Care Model (TCM) and Project RED (Re-Engineered Discharge)	(SEAPS) survey)
Li et al.	2007	Canada	Clinical and demographic data were collected prospectively on patients admitted to an inpatient geriatric hemodialysis rehabilitation program	Provision of in-patient rehabilitation with on-site dialysis, simplified referral system, short daily dialysis sessions, integrated multidisciplinary team of experts (rehabilitation, geriatric medicine, and nephrology), and reciprocal continued medical education among staff	• Did patients meet their rehabilitation goals (admission to discharge) • Place of discharge • Functional Independence Measure (FIM) score (admission to discharge)
Makam et al.	2019	USA	Retrospective cohort study using national Medicare data	n/a	• Time spent in an inpatient facility after long-term care admission • Receipt of an artificial life-prolonging procedure • Receipt of a palliative care physician consultation • All-cause mortality • Recovery
Masel et al.	2015	Austria	Prospective observational study to look at predictors of the feasibility of home discharge	n/a	• Estimation made by a nurse and a physician as to whether a patient would be discharged • Discharged from PCU • Mortality • Length of hospital stay before discharge/death
Masel et al.	2014	Austria	Prospective observational study to determine whether the measurement of heart rate	n/a	• Time before discharge • Heart rate variability (HRV) • Karnofsky performance status scale (KPS) • Palliative performance scale (PPS)

			variability (HRV) was correlated with the likelihood of discharge from the palliative care unit		• Time before death
Menzies & Hanger	2011	New Zealand	Survey completed by facilitated discharge team, Retrospective data analysis of patients' notes for reasons for referral to facilitated discharge program	n/a	• Reasons for referral to facilitated discharge program • Services provided to patients in the community • Support received (e.g., family education, management of carer stress, review of medication management, medication compliance, service coordination) • Readmissions 90 days post discharge • Death • Changed from home to residential care 90 days post discharge
Middleton et al.	2018	USA	Secondary data analysis of facility-level and geographic variation in rates of successful community discharges after inpatient rehabilitation	n/a	• Successful community discharge (Community Discharge IRF-QRP measure)—discharge from the inpatient rehabilitation facility to the community (i.e., home or self-care) and remain there without experiencing an unplanned rehospitalization or dying within the next 31 days
Murmann et al.	2023	Canada	A cost-effectiveness study of the Sub-Acute care for Frail Elderly (SAFE) Unit	n/a	• Institution-free days (180 days post-discharge) • Cost incurred for a patient in the SAFE unit (cost from admission to discharge)
Nikolaus et al.	1999	Germany	Randomized controlled trial	Patients were randomly assigned to one of three interventions: "(i) comprehensive geriatric assessment	• Functional status • Self-perceived health • Life satisfaction • Mortality • Hospital readmissions • Length of hospital stay

				and additional in-hospital and post-discharge follow-up treatment by an interdisciplinary home intervention team, (ii) comprehensive geriatric assessment with recommendations, followed by usual care at home or (iii) assessment of activities of daily living and cognition, followed by usual care in hospital and at home.”	• Visits to primary care physicians • Use of community services • Discharge location
Ohta et al.	2021	Japan	Retrospective cohort study of patients discharged from a rehabilitation facility	n/a	• Change in cognitive and motor components of a functional independence measure (at admission and discharge) • Discharge location
Reyes-Ortiz et al.	2015	USA	Secondary data analysis of palliative care consultation data	Compared the outcomes of early palliative care consultation versus late consultation on percentage of hospice admissions and length of hospitalization	• Early or late PC consultation • Length of stay in hospital • Discharge location • Death
Robert et al.	2021	Canada	Case-Control Study of the Sub-Acute care for Frail Elderly (SAFE) Unit	Examined the effectiveness of a transitional care program that offers early discharge planning and provides patients with a cognitive screening upon arrival to further enhance their transition back to the community by addressing cognitive impairments	• Length of stay • Emergency department visits • Hospital readmission • Follow-up with a family physician • Location of follow-up family physician visit(s) • Discharge location
Rodham et	2012	England	Qualitative	n/a	• Patients reported what

al.			methods to explore how participants coped with the transition from hospital to home (included interviews, participant diaries, and photos used to document the transition home)		had facilitated or hindered them after their transition home
Rose et al.	2021	USA	Survey to measure satisfaction with a transitional care program	Transitional care services were provided to participants including medication reconciliation, physical exams, home assessments for fall hazards, community referrals, and communication with primary care providers	• Hospital readmission • Follow up with a health care provider • Patients' satisfaction with their transition to home
Runacres et al.	2016	Australia	Retrospective clinical audit of consecutive patients admitted to restorative care program	The restorative care program targeted frail or older acute patients. A discharge planner met with the caregivers to identify barriers to discharge and at-home services for additional support.	• Duration of admission • Discharge destination • Death • Functional capacity (admission and discharge)
Santa-Emma et al.	2002	USA	Data was collected and analyzed from implementation of an inpatient acute palliative care services program	Implementation of inpatient acute palliative care services across three hospitals including palliative consults centred around clarifying goals of treatment, plans for continuity of care, and focusing on end-of-life issues with patients and their families	• Types of admissions and consultations • Mortality • Discharge location

Shinall et al.	2019	USA	Retrospective cohort using a prospectively collected database of patients from a tertiary academic referral centre	n/a	• Reason for palliative care consultation • Enrollment in hospice at discharge from the PCU
Sinn et al.	2016	Canada	Secondary data analysis of data from complex continuing care patients in Ontario assessed with the Resident Assessment Instrument–Minimum Data Set 2.0	n/a	• Death within 6 months • Readmission within 6 months • Incidence of or failure to improve possible depression
Toles et al.	2021	USA	Test the efficacy of Connect-Home, a successfully piloted transitional care intervention	Connect-Home is a two-step process: "(a) skilled nursing facility staff create an individualized Transition Plan of Care to manage the patient's illness at home; and (b) a Connect-Home Activation RN visits the patient's home to implement the written Transition Plan of Care."	• Preparedness for Discharge • Preparedness for caregiving • Quality of life • Patient function • Days of acute care use • Caregiver burden and distress at 30 and 60 days after discharge
Trillig et al.	2022	Switzerland	Case study of one patient with refractory dyspnea after COVID-19	n/a	• Advance care planning • Medication reviews • Discharge location
Tunnard et al.	2021	England	Parallel observational study design incorporating a discrete choice experiment (DCE)—preferences for hypothetical scenarios—	n/a	• Prioritization of attributes: Timing of communication, Topics to discuss, Timing and mode of communication with family, Communication with GP, and Distance to community hospital

			with cognitive interviews, and stakeholder consultations		
Walker et al.	2015	Australia	Qualitative in-depth interviews to examine how older people cope with frailty	n/a	• Experience in Transition Care Program • Experience after transitioning home
Webber et al.	2020	Canada	Observational, retrospective cohort study examining data from "patients discharged to the community from the inpatient palliative care unit at Bruyère Continuing Care in Ottawa, Ontario, Canada"	n/a	• Length of stay • Supports in the home • Mortality • Readmissions and emergency department visits within 30 days of discharge • Discharge location • Location of death
Zengin & Taşçi	2021	Turkey	Cross-sectional analysis of medical records from patients admitted to a palliative care unit	n/a	• Length of stay in PCU • Location of discharge
Zhang et al.	2017	USA	Retrospective review of oncology patients' medical records from the intensive palliative care unit	n/a	• Goals-of-care conversation • Do-not-resuscitate/do-not-intubate status • Survival • Hospital readmissions • Time to readmission

Appendix C

Frequency of Process or Leading Indicators in Included Articles

Indicator	Frequency	Author(s)
Palliative care consultation	4	(Makam et al., 2019) (Reyes-Ortiz et al., 2015) (Santa-Emma et al., 2002) (Shinall et al., 2019)
Length of stay in inpatient facility	3	(Makam et al., 2019) (Robert et al., 2021) (Santa-Emma et al., 2002)
Length of stay in a palliative care unit	3	(Runacres et al., 2016) (Webber et al., 2020) (Zengin & Taşçi, 2021)
Type of care programs and supports received by patients when they were discharged home	3	(Hansen et al., 1995) (Menzies & Hanger, 2011) (Webber et al., 2020)
Length of stay in hospital	3	(Elliott, 2012) (Masel et al., 2015) (Reyes-Ortiz et al., 2015)
Advanced care planning conversations	1	(Trillig et al., 2022)
Do-not-resuscitate/do-not-intubate status reviews	1	(Zhang et al., 2017)
Goals-of-care conversations	1	(Zhang et al., 2017)
Life-prolonging procedures	1	(Makam et al., 2019)
Medication reviews	1	(Trillig et al., 2022)
Number of medications on admission and at discharge	1	(Elliott, 2012)
Reasons medication regimen was not changed prior to discharge	1	(Elliott, 2012)
Nurse or physician estimation of whether a patient would be discharged	1	(Masel et al., 2015)
Patients' preparedness for discharge/family members' preparedness for caregiving	1	(Toles et al., 2021)
Patients' prioritization of conversations	1	(Tunnard et al., 2021)
Time before discharge	1	(Masel et al., 2014)

Appendix D

Frequency of Outcome or Lagging Indicators in Included Articles

Indicator	**Frequency**	**Author(s)**
Discharge location	14	(Elliott, 2012) (Li et al., 2007) (Masel et al., 2015) (Menzies & Hanger, 2011) (Nikolaus et al., 1999) (Ohta et al., 2021) (Reyes-Ortiz et al., 2015) (Robert et al., 2021) (Runacres et al., 2016) (Santa-Emma et al., 2002) (Shinall et al., 2019) (Trillig et al., 2022) (Webber et al., 2020) (Zengin & Taşçi, 2021)
Mortality/death rate	10	(Hall et al., 2015) (Makam et al., 2019) (Masel et al., 2015) (Menzies & Hanger, 2011) (Nikolaus et al., 1999) (Reyes-Ortiz et al., 2015) (Runacres et al., 2016) (Santa-Emma et al., 2002) (Sinn et al., 2016) (Webber et al., 2020)
Hospital/acute care readmission	8	(Hall et al., 2015) (Hansen et al., 1995) (Nikolaus et al., 1999) (Robert et al., 2021) (Rose et al., 2021) (Sinn et al., 2016) (Webber et al., 2020) (Zhang et al., 2017)
Cognitive and motor function	5	(Li et al., 2007) (Nikolaus et al., 1999) (Ohta et al., 2021) (Runacres et al., 2016) (Toles et al., 2021)
Emergency department visits after discharge	3	(Hall et al., 2015) (Robert et al., 2021) (Webber et al., 2020)
Patient satisfaction and experience transitioning home	3	(Rodham et al., 2012) (Rose et al., 2021) (Walker et al., 2015)

Visits to primary care physicians and community services after discharge	3	(Nikolaus et al., 1999) (Robert et al., 2021) (Rose et al., 2021)
Caregiver experience with transition home and stress	2	(Aso et al., 2022) (Toles et al., 2021)
Length of readmission stay	2	(Nikolaus et al., 1999) (Toles et al., 2021)
Cost incurred for a patient in the SAFE[1] Unit (cost from admission to discharge)	1	(Murmann et al., 2023)
Empowerment	1	(Lenaghan, 2019)
Falls	1	(Hansen et al., 1995)
Heart rate variability	1	(Masel et al., 2014)
Incidence of depression	1	(Sinn et al., 2016)
Institution-free days (within 180 days post-discharge)	1	(Murmann et al., 2023)
Karnofsky Performance Status Scale	1	(Masel et al., 2014)
Life satisfaction	1	(Nikolaus et al., 1999)
Location of death	1	(Webber et al., 2020)
Medical conditions	1	(Hansen et al., 1995)
Number of days until death before discharge from hospital	1	(Masel et al., 2014)
PPS status	1	(Masel et al., 2014)
Quality of life	1	(Toles et al., 2021)
Recovery rate (60 days without inpatient care after Long-Term Acute Care admission, such as hospitalization)	1	(Makam et al., 2019)
Rehabilitation	1	(Li et al., 2007)
Self-perceived health	1	(Nikolaus et al., 1999)
Successful discharge (remaining in the community for 31 days after discharge without unplanned re-hospitalization or death)	1	(Middleton et al., 2018)
Survival rate (time from palliative care unit admission to death)	1	(Zhang et al., 2017)
Time to readmission	1	(Zhang et al., 2017)
Whether good death was achieved (measured using the Good Death Inventory survey	1	(Aso et al., 2022)

HPJ HEALTHY POPULATIONS JOURNAL

Literature Review

Measurement and Design in Surveys of Teachers' Mental Health Literacy: A Scoping Review

Chris Gilham[1], PhD; Taylor G. Hill[2], MA; Emma C. Coughlan[2], BSc; Damian Page[3], MA; Chloe Vukosa[4]; Alyssa Spridgeon[4]; Peter Wilkie[4]; and Kristie Przewieda[4]

[1] Faculty of Education, St. Francis Xavier University
[2] Department of Psychology and Neuroscience, Dalhousie University
[3] Ontario Institute for Studies in Education, University of Toronto
[4] St. Francis Xavier University

DOI: 10.15273/hpj.v3i2.11585

Abstract

Mental health literacy (MHL) was introduced four decades ago as a term referring to knowledge and beliefs about mental disorders that aid in their recognition, management, or prevention. This scoping review mapped the peer-reviewed literature to understand how MHL is defined, conceptualized, and measured in studies involving those becoming teachers (pre-service teachers) and working teachers (in-service teachers). The search was performed following the method for scoping reviews by the Joanna Briggs Institute (JBI). Searches were conducted in four scientific databases with no time limit, although all sources had to be written in English or French. Primary studies (N = 35) that measured MHL for pre- and in-service teachers provided a global snapshot of MHL conceptualization and measurement across five continents. Global conceptualizations of MHL were largely driven by the definition and measures developed by Jorm, though the definition by Kutcher et al. was used in one fourth of the papers. Few studies explicitly stated a theoretical framework. Most studies used closed-ended scales, or a combination of closed-ended scales and vignettes to measure MHL. From a closer examination of the results, Canada emerged as a major leader in teacher MHL. Future research in this area should aim to include vignette measures, especially for pre-service teachers, and explicit theoretical frameworks, including socio-ecological and social or structural determinants of health-related frameworks that take an intersectional approach to MHL.

Keywords: mental health literacy, education, pre-service teachers, teachers, psychoeducation

Introduction

When teachers recognize the early indications of mental illness and unhealthy, persistent stress; know about the best types of help available; and know how to access support, they are equipped to facilitate appropriate help-seeking for their students and themselves. Proactively, when teachers know how to achieve and maintain mental health, they may be able to apply helpful strategies for themselves and in their classrooms for their students. Having positive mental health means enjoying a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to contribute to his or her community (World Health Organization, 2004). The ability to access, understand, and use information to promote mental health may lead to positive outcomes through early intervention (Jorm et al., 1997a). Being mental health literate entails holding "knowledge and beliefs about mental disorders which aid their recognition, management, or prevention" (Jorm et al., 1997a, p. 182). Mental health literacy (MHL) also involves knowing how to achieve and maintain positive mental health, and understanding and engaging in anti-stigma work (Kutcher et al., 2015). Anti-stigma work could include providing recent, best available evidence on mental health and mental illness, as well as contact-based education to increase the target population's understanding of the lived experiences of those living with mental illnesses (Link & Phelan, 2001).

As both elementary and high school students usually do not seek professional health support on their own (Stiffman et al., 2004; Zimmerman, 2005) and are more likely to discuss their mental health with friends and trusted others than with medical professionals (Burns & Rapee, 2006; Kelly et al., 2007), the role of teachers in supporting student mental health is considerable. According to Stiffman et al. (2004), friends and trusted others can be seen as gateway providers, whose knowledge and awareness of services and assessment of youth's symptoms, diagnosis, and impairment are essential in recommending services for youth. Indeed, teachers spend most of their working days with students, hopefully developing positive connections with them and becoming those trusted gateway providers.

A recent systematic review of MHL programs for adolescents (preteens and teenagers) has shown increases in knowledge, positive attitudes, helping behaviour, and confidence in helping other students following program participation (Olyani et al., 2021). Knowledge of appropriate pathways for support for students has been shown to increase the quality of care decisions made by gateway providers (Stiffman et al., 2004). At the same time, fostering students' ability to obtain and maintain positive mental health can promote their well-being (Bjørnsen et al., 2019). Thus, knowledge is a necessary foundation for making purposeful health-promoting decisions (Bjørnsen et al., 2019), and this knowledge can best be shared by teachers (herein referred to as in-service teachers) in school settings (Kutcher, Wei, & Morgan, 2015). Those studying to become teachers (herein referred to as pre-service teachers, synonymous with Bachelor of Education students or teacher candidates) are in an especially important upstream position to enter the profession with strong MHL. Understanding the scope of the current field of pre- and in-service teacher MHL research is an important first step for faculties of education, educational administrators, and their research partners in determining if and how to effectively move forward with increasing the MHL of their teachers.

Student Mental Health

Prior to COVID-19, 14% of Canadian children and youth were living with mental illness (Malla et al., 2018; Waddell et al., 2013), and it has been observed that most adults who live with mental illness experience symptoms before the age of 18 (Kessler et al., 2007). Most students with mental illness do not receive treatment, and those who do will often receive treatment that is not evidence-based (Vaillancourt & Boylan, 2021). Recent evidence suggests this reality is exacerbated by the impacts of COVID-19 on youth and adult mental health. For example, a global study demonstrated that during the pandemic there were significant increases in the number of school-aged youth, particularly females, attending emergency rooms for suicide attempts and ideation (Madigan et al., 2023). A study of Icelandic youth aged 13–18 showed elevated depressive symptoms and worsened mental health up to two years into the pandemic (Thorisdottir et al., 2023). A meta-analysis by

Sun et al. (2023) claimed that most people "recovered" from the mental health problems they faced during the pandemic; however, a rapid response critique by Vaillancourt et al. (2021) argued that a closer analysis of the data reveals evidence of worsening general mental health among parents and women, which is linked to the role primary caregivers have in the well-being of youth. Given the evidence to date, we advocate for an increased sense of urgency when it comes to the need for mental health support for young people, which we believe includes increasing teacher (and student) MHL as a mental health promotion effort.

Importance of Mental Health Literate Teachers

Important MHL work can begin before teachers enter the profession full-time. Pre-service teachers who complete MHL-based courses or modules—whether online, face to face, or a combination of the two (Atkins & Rodger, 2016; Carr et al., 2018; Gilham, Neville-MacLean, & Atkinson, 2021)—show significantly increased knowledge of MHL and increased self-efficacy for inclusion. Pre-service teachers who leave their teacher education programs with training in MHL could have a lasting impact on student success by being better equipped to promote positive mental health in their schools and seek appropriate and timely help for themselves and their students. This is important, given that the highest attrition rates for in-service teachers occur within the first five years of teaching (Carver-Thomas & Darling-Hammond, 2017), though attrition rates vary by region. Addressing students' mental health needs has been cited as a significant source of compassion fatigue, which is a predictor of teacher burnout and early retirement (Farmer, 2020). Conversely, supporting the well-being and mental health of teachers has been shown to foster resilience and reduce the likelihood of burnout (Gray et al., 2017).

A systematic review on teacher MHL programs (Yamaguchi et al., 2020) concluded that most studies show a significant improvement in MHL outcomes, suggesting that programs that educate teachers through direct engagement with MHL content have a positive impact, though the overall quality of evidence was considered very low (Yamaguchi et al., 2020). Among in-service teachers, MHL programming has led to increased self-help behaviours (Kutcher, Wei, Gilberds, et al., 2016; Kutcher et al., 2017; Ojio et al., 2015), also assisting teachers and students with the management of mental disorders and their treatments (Carvalho et al., 2022, p. 4; Kutcher, Wei, & Coniglio, 2016; Sweileh, 2021).

School-based MHL programs for students, delivered by teachers, lead to demonstrated increases in students' knowledge about mental health and mental illness, treatments, and their intention to seek help and to support peers with mental health-related problems (Ojio et al., 2015). For example, when teachers use teacher-friendly resources (Kutcher et al., 2017), their students achieve similar results in increased MHL—specifically, a decrease in stigma-related attitudes. A recent systematic review found a positive effect of school-based educational interventions on improving MHL in adolescents (Olyani et al., 2021) and decreased stigma associated with mental illness (Carvalho et al., 2022, p. 3; Kutcher, Wei, & Coniglio, 2016; Sweileh, 2021). The more knowledge teachers have to identify and develop coping strategies for themselves and their students, the greater the possibility of better outcomes for student mental health. These positive outcomes are especially significant due to the increased need for mental health support for both teachers and students during the COVID-19 pandemic.

Rationale

In a systematic review just prior to COVID-19 (Yamaguchi et al., 2020), the following characteristics of MHL programs for teachers were analyzed: country, study design, school type, timing of data acquisition, sample size, recruitment method, method of intervention, duration of intervention, and outcome measurement. A strong narrative discussion summarized the field and noted the need for more uniform measures and high-quality evaluations (Yamaguchi et al., 2020). Given these recent documented characteristics, we aim to extract additional information that would present an overall characterization of school-based surveys on teacher MHL such as MHL definitions and conceptualization, theoretical framework, type of educational professional, and consideration of socio-ecological levels or social determinants of health. We included studies involving pre-service and in-service teachers to paint a contextually and thematically refined picture of the current state of knowledge, whereby patterns and gaps can be further identified for future programming and evaluation.

Objective

Research question: What characterizes school-based surveys on teacher MHL?

Sub-question 1: How has MHL been defined in studies that surveyed teachers?

Sub-question 2: How has MHL been empirically measured in surveys of teachers?

Methods

This scoping review was conducted in accordance with the Joanna Briggs Institute (JBI) methodology for scoping reviews (Peters et al., 2020). Scoping reviews address an exploratory research question by systematically searching, selecting, and synthesizing a wide range of literature to determine the breadth of evidence on a particular topic (Peters et al., 2020). They are a type of knowledge synthesis that scopes or maps a body of literature with relevance to time, location, source, method, and origin (Levac et al., 2010). In accordance with the JBI methodology, our review is specific to a population (teachers in public schools) and outcome (level of MHL in teachers), with a particular focus on context (classrooms). We follow the JBI methodology (Peters et al., 2020) for evidence screening and selection (two reviewers screen each source with a third reviewer involved to resolve conflicts) and study selection process (narrative and flow diagram format), and without quality appraisal of sources. Data extraction and analysis is further aligned with JBI methodology, which states “the analysis of the extracted data should not involve anything more than basic descriptive analysis (i.e., frequency counts of concepts, populations, or location of studies” (Peters et al., 2020, p. 2125).

Database Search of Peer-Reviewed Literature

A preliminary search of PROSPERO, the Cochrane Database of Systematic Reviews, and *JBI Evidence Synthesis* was conducted and no current or in-progress scoping reviews on the topic were identified. We then began our database search for articles (see Appendix A for search strategy). Articles published in English or French were included. The databases include PsycInfo (EBSCO), MEDLINE (PubMed), ERIC, and CINAHL, and were searched on June 21st, 2021. The search was rerun and updated on May 4th, 2022. The result of the search is reported in a Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) flow diagram (Tricco et al., 2018; see Figure 1). The data extracted from relevant published literature (see Appendix B for data extraction tool) are displayed to include details relevant to the following:

- bibliography (e.g., author and year of publication, journal of publication, country),
- conceptualization (e.g., purpose of study, definition and citation used for defining MHL),
- design (e.g., scale used to measure MHL, study design),
- sample (e.g., size, teacher type, school type), and
- results (e.g., level of MHL in teachers, key findings of surveys).

Data were organized based on pre-service and in-service teacher studies, and subsequently classified into themes using content analysis. A discussion accompanies the tabulated data to describe how the results relate to the research objective.

Results

Summary of Included Articles

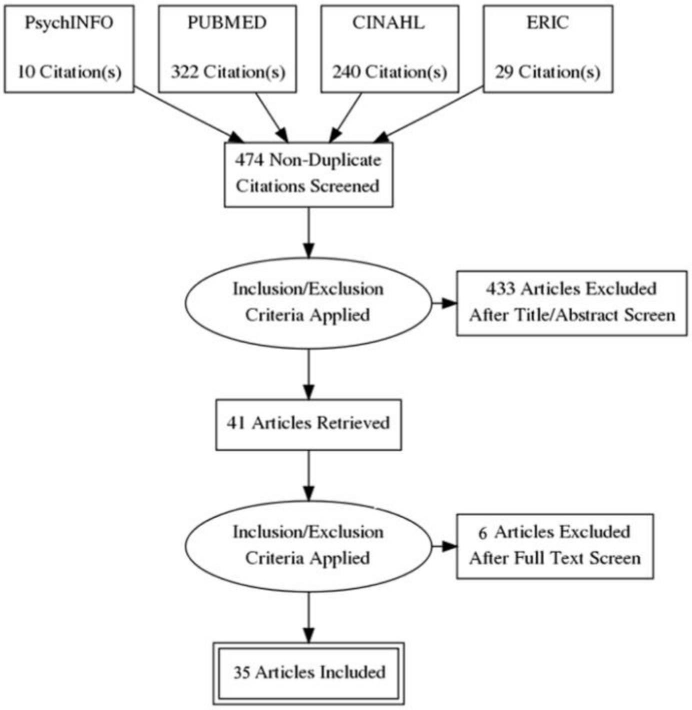
The database searches resulted in the screening of 601 studies. Relevant papers were hand-searched for additional references not captured by our database search. After 127 duplicates were removed, we screened 474 articles, deeming 433 irrelevant (see Figure 1). This resulted in 41 full-text studies to screen, of which six were excluded. A total of 35 articles were reviewed. Results are categorized by bibliographic details (see Appendix C) and study characteristics (see Appendix D).

Bibliographic Details

The majority of the research was conducted in Asia (*N* = 11; Japan = 2, Vietnam = 2, India = 2, Malaysia = 1, Cambodia = 1, Taiwan = 1, Sri Lanka = 1, Pakistan = 1), followed by Canada (*N* = 9), Africa (*N* = 8; Kingdom of Eswatini = 1, Malawi = 3, Tanzania = 3, Nigeria = 1), United States (*N* = 5), Europe (*N* = 3; Norway = 1, Portugal = 1, Scotland = 1), and Australia (*N* = 2). The total number of countries exceeds the number of articles (*N* = 35), as some studies took place in more than one country. Before the year 2016, only five articles on teachers' MHL were published (in 2004, 2011, 2013, 2014, and 2015). Between 2016 and 2022, an increase in articles can be observed, as a total of 30 were published. The majority of the articles were

Figure 1

Identification of Peer-Reviewed Articles From Database Search



published in 2019 (*N* = 6) and 2021 (*N* = 7) so far. The years 2016 (*N* = 4), 2018 (*N* = 5), and 2020 (*N* = 4) also saw an increase in the amounts of articles being published, while the years 2017 (*N* = 2) and 2022 (as of May; *N* = 2) saw a slight decrease in the number of articles being published.

Of the articles focused on pre-service teachers (*N* = 8), most were from Canada (*N* = 6), with one additional study from Scotland and Australia and another from the United States. Of the articles focused on in-service teachers (*N* = 28) most were from Asia (*N* = 10 [in 11 countries]; Japan = 2, India = 2, Vietnam = 2, Malaysia = 1, Cambodia = 1, Pakistan = 1, Taiwan = 1, and Sri Lanka = 1), followed by Africa (*N* = 8; Malawi = 3, Nigeria = 1, Tanzania = 3, Kingdom of Eswatini = 1), the United States (*N* = 4), Europe (*N* = 2 Norway = 1, Portugal = 1), and Canada (*N* = 3). One article, included in the in-service teachers category, surveyed both in-service teachers and professional staff.

Conceptualization of MHL

Across the 35 articles, most provided a definition of MHL (*N* = 29; 81%). The most cited definitions (*N* = 11) referred to Jorm et al. (1997a). Either the short or long form of their definition was used:

> *Short form: Knowledge and beliefs about mental disorders which aid their recognition, management or prevention.*
> *Long form: MHL is defined as the ability to gain access to, understand, and use information in ways which promote and maintain good mental health. It refers to knowledge and beliefs about mental disorders which aid their recognition, management or prevention including the ability to recognize specific disorders; knowing how to seek mental health information; knowledge of risk factors and causes, of self-treatments, and of professional help available; and attitudes that promote recognition and appropriate help-seeking. (p. 182)*

Additionally, the other most-cited definitions were the ones from Jorm (2012; *N* = 7), Kutcher, Bagnell, & Wei (2015; *N* = 5), Jorm (2000; *N* = 3), and Kutcher, Wei, & Coniglio (2016; *N* = 3). In a handful of articles, no MHL definition was provided (*N* = 7; 20%).

Jorm's (2012) definition is the following:

> *The ability to gain access to, understand, and use information in ways which promote and maintain good mental health. It refers to knowledge and beliefs about mental disorders which aid their recognition, management or prevention including the ability to recognize specific disorders; knowing how to seek mental health information; knowledge of risk factors and causes, of self-treatments, and of professional help available; and attitudes that promote recognition and appropriate help-seeking. (p. 231)*

Kutcher, Wei, & Coniglio (2016) further refined this conceptualization to emphasize the maintenance of good mental health, understanding of and empowerment to seek out treatment, and reduction of stigmatizing attitudes toward mental health disorders.

MHL was either examined in terms of specific disorders (*N* = 8), general mental illness (*N* = 23), or both (*N* = 2). The medical perspective used to examine MHL was not explicitly reported in two articles. Among the studies examining specific disorders, the most mentioned disorder was depression (*N* = 7), followed by schizophrenia (*N* = 2), anxiety (*N* = 1), substance abuse (*N* = 1), psychosis (*N* = 1), and post-traumatic stress disorder (*N* = 1).

Design

The most reported study design across all the articles was cross-sectional (*N* = 16), followed by program evaluation (*N* = 9). Other, less common designs in this case were used in a total of ten articles: randomized control trial (*N*

= 2), and longitudinal design ($N = 1$), including a feasibility study ($N = 1$), cross-sectional analytical and pre/post intervention methodology ($N = 1$), qualitative research ($N = 1$), cohort study ($N = 1$), prospective cohort study ($N = 1$), a repeated measures/within participants design ($N = 1$), and a quasi-experimental research design ($N = 1$).

MHL was measured with a total of 43 scales across all articles. The most used measurement method was a questionnaire ($N = 24$), while vignettes were nearly never used on their own ($N = 1$). However, a combination of both questionnaires and vignettes was used in eight articles. The selected measures were not reported in two articles. The most used questionnaires were the Mental Health Literacy Scale (MHLS; O'Connor & Casey, 2015; $N = 5$), the Adolescent Depression Awareness Program (ADAP) Depression Knowledge Questionnaire (Hart et al., 2014; $N = 2$), and the Reported and Intended Behavior Scale (Evans-Lacko et al., 2011; $N = 2$).

Here is an example of a vignette from Whitley and Gooderham (2016):

> *Chris is an 8-year-old boy in Grade 2 at Sunshine elementary school. Chris's teacher, Jayne, has some concerns about Chris's behaviour. Chris has always done well in school, getting good marks and finishing his work quickly. Over the past couple of months, however, Jayne has noticed that Chris is frequently unfocused, and his work is rarely finished at the end of the class. As a result, his grades are starting to drop. He has also stopped participating in intramural soccer, saying that he was tired and having lots of headaches. Jayne has also seen Chris snap at his classmates over pretty minor things like humming while working at their desks or asking to borrow an eraser. (p. 91)*

Examples of scale questions include the following: "Seeing a mental health professional means you are not strong enough to manage your own difficulties," "People with a mental illness could snap out of it if they wanted" (O'Connor & Casey, 2015), "The cause of Major Depression is well known," "A person with depression always feels sad" (Hart et al., 2014), "Are you currently living with, or have you ever lived with, someone with a mental health problem?" and " In the future, I would be willing to work with someone with a mental health problem" (Evans-Lacko et al., 2011).

Some authors developed their own questionnaire ($N = 13$), including questions such as the following: "My efforts to support mental health/social, emotional, and behavioural disorders make a difference in the lives of my students," "Whether or not I support student mental health/SEB is entirely within my control," (Dods, 2016) "A person can have a mental illness without being stressed out," and "Depression and Bipolar Disorder are two examples of mental illnesses called mood disorders" (Kutcher et al., 2013).

Of the articles that focused on pre-service teacher MHL ($N = 8$), questionnaires were used in five of the articles. A close reading of selected non-fiction was the primary activity in one article, a vignette was used in one article, and the measure of choice was not reported in one article. Of the articles that focused on in-service teacher MHL ($N = 27$), questionnaires/scales were used in 18 of the articles, while eight articles used a combination of vignettes and questionnaires. One article did not report their choice of measure.

Sample

Sample sizes varied from 25 to over 400 teachers ($N = 7$). The sample size was not reported in two articles. The sample was characterized as pre-service teachers ($N = 5$) or BEd/Bachelor of Education Students ($N = 3$) for a total of eight studies involving pre-service teachers, and in-service teachers ($N = 27$) or professional support staff ($N = 1$) for a total of 28 studies involving in-service teachers. School types included public (*N* = 20), private (*N* = 8), specialized (*N* = 3), Catholic (*N* = 2), and not reported (*N* = 10). The total school type exceeds the number of articles (*N* = 35) because some studies took place in more than one school type.

Reported Outcomes

With regard to reported levels of MHL, low levels of MHL among teachers were identified in seven articles, medium/moderate levels in two articles, high levels in three articles, and mixed levels in one article (low to medium). MHL levels were also described as "improved" (*N* = 10), "below average level" (*N* = 1), and "less than satisfactory" (*N* = 1). The level of MHL was not explicitly reported in 11 articles.

Of the articles focused on pre-service teacher MHL (*N* = 8), reported levels of MHL were as follows: improved (*N* = 3), low (*N* = 1), and medium (*N* = 1). MHL levels were not explicitly reported in three articles. Of the articles focused on in-service teacher MHL (*N* = 27), reported levels of MHL were as follows: improved (*N* = 7), low (*N* = 5), high (*N* = 3), and medium (*N* = 1). MHL was also reported as "less than satisfactory" in one article and "below average level of MHL" in one article. MHL was not explicitly reported in nine articles.

We did not complete a deeper scan of these various outcomes and how they are interpreted, nor did we assess the quality of the outcomes, typically the task of a systematic review.

Discussion

We took stock of the evidence base of pre- and in-service teacher MHL by mapping the literature on MHL in teachers to further clarify empirical measurement in this literature. In the following narrative description, we discuss major themes to emerge from our content analysis of the results. Then we briefly discuss the theoretical framework, design, and methods within the literature.

Canada Leads in Teacher Mental Health Literacy

While Asia had the most studies in the field of teacher MHL (*N* = 11), these particular teacher MHL studies are spread out over eight countries. We found that Canada had the highest number of studies (*N* = 9) of any single country in the reviewed articles. Furthermore, of these Canadian studies, two-thirds involved pre-service teachers (*N* = 6). Considering we found only eight total pre-service teacher studies worldwide, Canada clearly leads the field in evaluating pre-service teacher MHL.

A closer look at the Canadian studies revealed that all were published between 2016 and 2021. More than half of these studies were published between 2018 and 2021 by authors who have worked together to create MHL resources for pre-service teachers. When looking at the authorship of publications on pre- and in-service teacher education (*N* = 11), many involve this same authorship team. Of the seven studies completed in Africa, five were co-authored by the lead of that team, Senator Stan Kutcher, as part of his role as the SunLife Chair in Adolescent Mental Health at the IWK Health Centre in Halifax, Nova Scotia (*N = 2*, Malawi; *N = 3*, Tanzania).

Within the mixed MHL outcomes that we found (*N = 25*), 11 articles or almost 50% of the papers sharing MHL outcomes involved *TeenMentalHealth.org* and/or academics associated with this team. Within the 11 papers, eight specifically reported high or improved MHL scores for pre- and in-service teachers, which represents 62% of the total articles (*N* = 13) that reported high or improved MHL scores for pre- or in-service teachers. In the Yamaguchi et al. (2020) systematic review, outcomes from several of the *TeenMentalHealth.org*-led studies were of fair to good quality.

Spiker and Hammer (2019) have argued that the benefits of MHL as a unified construct or theory include helping practitioners, program developers, and policy-makers make informed decisions about how to improve MHL at both the individual and community level. MHL evaluations would benefit from a more explicit account of how MHL serves as the main theoretical framework or construct underlying the research. As noted by Spiker and Hammer (2019), good theory is testable. Once the main constructs and interrelationships between those constructs are clear, they can be either substantiated or replaced. Similarly, MHL as a theory can then also be compared to other prominent theories. Such testing can lead to a more robust theory of MHL and more shared work among researchers, perhaps leading to greater practice-related outcomes.

Bjornson et al. (2018) claimed to have found no specific MHL measures that relate to the construct of positive mental health; however, there are specific knowledge questions related to achieving and maintaining good mental health in most of Kutcher's evaluations. Bjornson et al. (2018) developed a measure of positive mental health as a state, which is different from MHL instruments that evaluate knowledge of how to achieve positive mental health. This example elucidates some possible current debate and/or confusion surrounding MHL as a construct that measures mental health states or the literacy of participants, which may or may not include questions on future situations related to help-seeking or stigma (Wei et al., 2019).

Measurement and Design Limitations in Teacher MHL Research

In our review, MHL was most assessed at a single time point using a questionnaire, predominantly the MHLS (O'Connor & Casey, 2015). Systematic and scoping reviews of other available MHL measures reveal that many are of questionable psychometric quality (O'Connor & Casey, 2015; Wei et al., 2015). The preponderance of the MHLS in our review is encouraging from a psychometric standpoint, as this measure has been shown to be a valid and reliable measure of MHL. However, the MHLS was not constructed to examine MHL specifically within teacher populations. Although the MHLS has been shown to discriminate MHL between mental health professionals and community samples (O'Connor & Casey, 2015), its sensitivity in accurately discriminating between levels of MHL within teacher populations is unknown. More recent work by Wei et al. (2019) has resulted in the development of the Mental Health Literacy Tool for Educators (MHL-ED). This measurement tool builds upon and validates the MHL measurement instruments commonly used in the works by Kutcher and colleagues (Carr et al., 2018; Gilham, Wei, et al, 2021; Kutcher, Gilberds, Morgan, Greene, et al., 2015; Kutcher et al., 2019; Kutcher, Wei, Gilberds, et al., 2016; Kutcher et al., 2013), and may provide a more robust means of assessing specific facets of MHL as they relate to educational contexts, helping to better identify gaps in teacher MHL. No studies directly accounted for socio-ecological and social/structural determinants of health (SDOH) impacts on mental health, though arguments were made for schools as important locations for teachers to serve as gateway providers, especially in locales where psychiatric services are direly lacking. Once gaps in teacher MHL have been accurately identified, efforts can be made to close those gaps through MHL training.

Several studies in our review sought to examine the effectiveness of teacher MHL training. High quality assessment of the MHL of teachers in response to training initiatives ideally requires the use of randomized control trials and validated pre and post measures of MHL, such as the MHLS. These designs are typically costly, time consuming, and present with ethical challenges such as eventually providing control groups with MHL training or education. Systematic constraints within educational contexts often make such studies impractical. Teachers are usually working within tight time constraints, and therefore assessing teacher MHL at a single time point through quick and easily completed survey designs is most practical. The predominance of cross-sectional designs and the use of surveys or questionnaires, as noted within our review, demonstrates these constraints.

We highlight the observation that, of the studies that used questionnaires to assess teacher MHL, many used vignettes, either in combination with additional survey questionnaires or, rarely, in isolation. The use of vignettes to assess MHL dates back to the earliest community surveys of MHL, conducted by Jorm et al. (1997a) in their seminal paper. Vignette measures typically involve presenting participants with a short written description of a fictional individual exhibiting behaviours indicative of a mental health disorder. Participants read the vignette and are asked to provide their interpretations of the behaviours depicted (e.g., level of concern, diagnostic label, recommended referral actions, beliefs about treatments, outcomes, causes, risk factors, likelihood of interacting with people like those in the vignette, the health status of the fictitious individual, and stigmatizing attitudes toward the person depicted in the vignette). In lieu of conducting lengthy interviews or behavioural observations of teachers in their real-world classrooms, vignette designs provide an ecologically valid means of assessing mental health knowledge and attitudes. Medical research frequently employs clinical vignettes to evaluate training and the quality of physician care. Peabody et al. (2000) have demonstrated the effectiveness of this method in approximating real-world decision making.

The utility of vignettes to explore MHL is particularly relevant for pre-service teachers who may have limited teaching experience to rely on when attempting to apply learned MHL concepts to their teaching. For example, vignette measures have been employed to assess the ability of teachers to identify emerging psychopathologies in students. Page (2021) conducted a study that revealed a significant correlation between teachers' ability to accurately identify clinically significant levels of mental health distress—as measured through vignettes—and standardized measures of mental health literacy (MHL). These results hold promise in supporting the use of vignette measures as a low-cost, practical means of assessing the interface between MHL learning and pedagogic application, including timely and accurate referrals to care. Additional studies are required to continue to build the evidence base. Although vignette measures inherently carry with them methodological limitations, they may represent the most economical means of assessing gaps in help-seeking pathways (e.g., MHL) that hinder the judicious provision of mental health resources in educational contexts.

Limitations and Future Directions

This review was limited by the search strategy and scope. Our search strategy was developed to identify all peer-reviewed literature that empirically measured MHL in teachers and required sifting through databases to identify papers relevant to this population. Our review does not include information from grey literature, nor did we assess the quality of the outcomes, typically the task of a systematic review.

The most used MHL instruments in the reviewed articles considered MHL a general competency and not specific to the school setting (e.g., no reporting of students, school resources, guidance counselling support, school board psychologists). In the future, surveys may utilize more recent measures that have been designed and validated for teachers (e.g., Mental Health Literacy Questionnaire for Teachers [MHLQT; Leeper, 2018], or the MHL-ED) to get the most accurate picture of teacher MHL.

Future research on teacher MHL surveys should assess and report factors that influence the teacher's ability to become mental health literate, which could help enable appropriate design of surveys (i.e., measuring determinants of, as well as level of, MHL), in turn informing future implementation of MHL interventions and programs. Finally, a synthesis of MHL levels across different population groups (e.g., students, health professionals) would improve generalizability and add breadth to the current evidence base.

Research on student MHL involves training teachers about MHL so that they can teach MHL content to students, but teachers' MHL is not evaluated during these studies (Gilham, Neville-MacLean, & Atkinson, 2021 for example). It is likely that teacher MHL has also increased because of these student MHL training programs and the delivery of them by teachers. Future research should endeavour to assess both teacher and student MHL when evaluating programs delivered by teachers to increase student MHL.

Conclusion

We mapped the peer reviewed literature to understand themes in the field of pre- and in-service teacher MHL. Worldwide, pre- and in-service teacher MHL is largely conceptualized by definitions by Jorm, and Canada has emerged as a leader in this field. Methodologically, we suggest that future pre-service teacher MHL work involve the use of vignettes, in the absence of more in-service-like teaching experiences. Future MHL projects for this population should include content related to the SDOH, including their intersectionality, and create or adapt evaluations that can assess teacher understanding of these important facets associated with mental health.

References

Alegria, M., Vallas, M., & Pumariega, A. J. (2010). Racial and ethnic disparities in pediatric mental health. *Child and Adolescent Psychiatric Clinics of North America*, *19*(4), 759–774. https://doi.org/10.1016/j.chc.2010.07.001

Allen, R., Jerrim, J., & Sims, S. (2020, September). *How did the early stages of the COVID-19 pandemic affect teacher wellbeing?* (CEPEO Working Paper No. 20-15). Centre for Education Policy and Equalising Opportunities, University College London. https://repec-cepeo.ucl.ac.uk/cepeow/cepeowp20-15.pdf

Aluh, D. O., Dim, O. F., & Anene-Okeke, C. G. (2018). Mental health literacy among Nigerian teachers. *Asia-Pacific Psychiatry, 10*(4), Article e12329. https://doi.org/10.1111/appy.12329

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). https://doi.org/10.1176/appi.books.9780890425596

Anderson, E. R., & Mayes, L. C. (2010). Race/ethnicity and internalizing disorders in youth: A review. *Clinical Psychology Review*, *30*(3), 338–348. https://doi.org/10.1016/j.cpr.2009.12.008

Ando, S., Yamasaki, S., Shimodera, S., Sasaki, T., Oshima, N., Furukawa, T. A., Asukai, N., Kasai, K., Mino, Y., Inoue, S., Okazaki, Y., & Nishida, A. (2013). A greater number of somatic pain sites is associated with poor mental health in adolescents: A cross-sectional study. *BMC Psychiatry, 13*, Article 30. https://doi.org/10.1186/1471-244X-13-30

Angermeyer, M. C., & Matschinger, H. (1996). Relatives' beliefs about the causes of schizophrenia. *Acta Psychiatrica Scandinavica, 93*(3)*,* 199–204. https://doi.org/10.1111/j.1600-0447.1996.tb10632.x

Armstrong, D., Macleod, G., & Brough, C. (2019). Work done in the margins: A comparative study of mental health literacy in pre-service teacher education in Australia and in Scotland. *Journal of Research in Special Educational Needs, 19*(4), 334–343. https://doi.org/10.1111/1471-3802.12452

Atkins, M-A., & Rodger, S. (2016). Pre-service teacher education for mental health and inclusion in schools. *Exceptionality Education International, 26*(2), 93–118. https://doi.org/10.5206/eei.v26i2.7742

Barrett-Bernstein, M., Uribe, N., & White, H. (2022, June 7). *Mental health and suicide prevention in men* [Evidence brief]. Mental Health Commission of Canada. https://mentalhealthcommission.ca/wp-content/uploads/2022/06/Mental-Health-and-Suicide-Prevention-in-Men.pdf

Bjørnsen, H. N., Espnes, G. A., Eilertsen, M.-E. B., Ringdal, R., & Moksnes, U. K. (2019). The relationship between positive mental health literacy and mental well-being among adolescents: Implications for school health services. *The Journal of School Nursing*, *35*(2), 107–116. https://doi.org/10.1177/1059840517732125

Bjørnsen, H. N., Ringdal, R., Espnes, G. A., Eilertsen, M.-E. B., & Moksnes, U. K. (2018). Exploring MEST: A new universal teaching strategy for school health services to promote positive mental health literacy and mental wellbeing among Norwegian adolescents. *BMC Health Services Research*, *18*, Article 1001. https://doi.org/10.1186/s12913-018-3829-8

Burns, J. R., & Rapee, R. M. (2006). Adolescent mental health literacy: Young people's knowledge of depression and help seeking. *Journal of Adolescence, 29*(2), 225–239. https://doi.org/10.1016/j.adolescence.2005.05.004

Campos, L., Dias, P., & Palha, F. (2014). Finding Space to Mental Health – Promoting mental health in adolescents: Pilot study. *Education and Health, 32*(1), 23–29. https://sheu.org.uk/sheux/EH/eh321lc.pdf

Canadian Alliance on Mental Illness and Mental Health. (2007, May). *Mental health literacy in Canada: Phase one report mental health literacy project*.

Carr, W., Wei, Y., Kutcher, S., & Heffernan, A. (2018). Preparing for the classroom: Mental health knowledge improvement, stigma reduction and enhanced help-seeking efficacy in Canadian preservice teachers. *Canadian Journal of School Psychology, 33*(4), 314–326. https://doi.org/10.1177/0829573516688596

Carvalho, D., Sequeira, C., Querido, A., Tomás, C., Morgado, T., Valentim, O., Moutinho, L., Gomes, J., & Laranjeira, C. (2022). Positive mental health literacy: A concept analysis. *Frontiers in Psychology*, *13*, Article 877611. https://doi.org/10.3389/fpsyg.2022.877611

Carver-Thomas, D., & Darling-Hammond, L. (2017, August 16). *Teacher turnover: Why it matters and what we can do about it*. Learning Policy Institute. https://learningpolicyinstitute.org/product/teacher-turnover-report

Chartier, M. J., Bolton, J. M., Ekuma, O., Mota, N., Hensel, J. M., Nie, Y., & McDougall, C. (2022). Suicidal risk and adverse social outcomes in adulthood associated with child and adolescent mental disorders. *The Canadian Journal of Psychiatry*, *67*(7), 512–523. https://doi.org/10.1177/07067437211055417

Chen, S., Chen, K., Wang, S., Wang, W., & Li, Y. (2021). Initial validation of a Chinese version of the Mental Health Literacy Scale among Chinese teachers in Henan province. *Frontiers in Psychiatry, 12,* Article 661903. https://doi.org/10.3389/fpsyt.2021.661903

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior, 24*(4)*,* 385–396. https://doi.org/10.2307/2136404

Craig, S. G., Ames, M. E., Bondi, B. C., & Pepler, D. J. (2023). Canadian adolescents' mental health and substance use during the COVID-19 pandemic: Associations with COVID-19 stressors. *Canadian Journal of Behavioural Science, 55*(1), 46–55. https://doi.org/10.1037/cbs0000305

Dang, H.-M., Weiss, B., Lam, T., & Ho, H. (2018).

Mental health literacy and intervention program adaptation in the internationalization of school psychology for Vietnam. *Psychology in the Schools, 55*(8), 941–954. https://doi.org/10.1002/pits.22156

Davis, C. S., Massey, O. T., Smith, R. B., Armstrong, M., Vergon, K. S., & McNeish, R. (2008, June 1). *Refinement of an instrument to measure mental health literacy and examination of interventions to enhance mental health literacy*. Florida Agency for Health Care Administration. http://mhlp.fmhi.usf.edu/_assets/docs/ahca/220-113.pdf

de Figueiredo, C. S., Sandre, P. C., Portugal, L. C. L., Mázala-de-Oliveira, T., da Silva Chagas, L., Raony, Í., Ferreira, E. S., Giestal-de-Araujo, E., dos Santos, A. A., & Bomfim, P. O.-S. (2021). COVID-19 pandemic impact on children and adolescents' mental health: Biological, environmental, and social factors. *Progress in Neuro-Psychopharmacology and Biological Psychiatry*, *106*, Article 110171. https://doi.org/10.1016/j.pnpbp.2020.110171

Delgadillo, A. A., Wymbs, F. A., Margherio, S. M., & Egan, T. E. (2020). Using conjoint analysis to predict teachers' preferences for intervention intensity. *School Mental Health, 12*(4), 743–756. https://doi.org/10.1007/s12310-020-09385-8

Dias, P., Campos, L., Almeida, H., & Palha, F. (2018). Mental health literacy in young adults: Adaptation and psychometric properties of the mental health literacy questionnaire. *International Journal of Environmental Research and Public Health, 15*(7)*,* Article 1318. https://doi.org/10.3390/ijerph15071318

Dods, J. (2016). Teacher candidate mental health and mental health literacy. *Exceptionality Education International, 26*(2), 42–61. http://doi.org/10.5206/eei.v26i2.7740

Doherty, R., Mcloughlin, K., Johnson, S., Pilling, S., Hinton, M., Collins, A., & Cooper, C. (2006). The keys study: A survey of the knowledge about psychosis and views about services of community and educational staff [Conference abstract]. *Schizophrenia Research, 86*(Suppl), S122. https://doi.org/10.1016/S0920-9964(06)70365-6

Dussault, M., Deaudelin, C., Royer, N., & Loiselle, J. (1999). Professional isolation and occupational stress in teachers. *Psychological Reports, 84*(3), 943–946. https://doi.org/10.2466/pr0.1999.84.3.943

Ely, J. A. (2018). *Exploring education mental health literacy: A study to inform professional learning needs* [Unpublished doctoral dissertation]. University of Pittsburgh.

Evans, N., Lane, R., Stacey-Emile, G., & Sefasi, A. (2021). Training school teachers in Malawi about substance misuse and trauma: The need for a sustainable strategy. *Journal of Mental Health Training, Education and Practice, 16*(6), 480–488. http://dx.doi.org/10.1108/JMHTEP-07-2020-0049

Evans-Lacko, S., Little, K., Meltzer, H., Rose, D., Rhydderch, D., Henderson, C., & Thornicroft, G. (2010). Development and psychometric properties of the Mental Health Knowledge Schedule. *The Canadian Journal of Psychiatry*, *55*(7), 440–448. https://doi.org/10.1177/070674371005500707

Evans-Lacko, S., Rose, D., Little, K., Flach, C., Rhydderch, D., Henderson, C., & Thornicroft, G. (2011). Development and psychometric properties of the Reported and Intended Behaviour Scale (RIBS): A stigma-related behaviour measure. *Epidemiology and Psychiatric Sciences, 20*(3), 263–271. https://doi.org/10.1017/S2045796011000308

Farmer, D. (2020). Teacher attrition: The impacts of stress. *Delta Kappa Gamma Bulletin, 87*(1), 41–50.

Froese-Germain, B., & Riel, R. (2012). *Understanding teachers' perspectives on student mental health: Findings from a* *national survey.* Canadian Teachers' Federation.

Gilham, C., Austen, E. L., Wei, Y., & Kutcher, S. (2018). Improving mental health literacy in post-secondary students: Field testing the feasibility and potential outcomes of a peer-led approach. *Canadian Journal of Community Mental Health*, *37*(1), 1–12. https://doi.org/10.7870/cjcmh-2018-002

Gilham, C., Neville-MacLean, S., & Atkinson, E. (2021). Effect of online modules on pre-service teacher mental health literacy and efficacy toward inclusive practices. *Canadian Journal of Education, 44*(2), 559–599. https://doi.org/10.53967/cje-rce.v44i2.4601

Gilham, C., Wei, Y., Kutcher, S., MacIntyre, C., MacCuspic, S., & Fougere, W. (2021). Field testing a campus preparation mental health resource. *McGill Journal of Education*, *56*(1), 90–106. https://mje.mcgill.ca/article/view/9774/7705

Ginige, P., Perera, I. B. R. U., Arambepola, S. C. A., Kuruwita, K. A. P. R., & Gunawardena, E. R. N. D. (2021). The impact of a specialized training programme on teacher mental health literacy in central Sri Lanka. *Sri Lanka Journal of Medicine, 30*(1), 34–43. https://doi.org/10.4038/sljm.v30i1.243

Gray, C., Wilcox, G., & Nordstokke, D. (2017). Teacher mental health, school climate, inclusive education and student learning: A review. *Canadian Psychology, 58*(3), 203–210. https://psycnet.apa.org/doi/10.1037/cap0000117

Griffiths, K. M., Christensen, H., Jorm, A. F., Evans, K., & Groves, C. (2004). Effect of web-based depression literacy and cognitive-behavioural therapy interventions on stigmatising attitudes to depression: Randomised controlled trial. *The British Journal of Psychiatry, 185*(4), 342–349. https://doi.org/10.1192/bjp.185.4.342

Gulliver, A., Farrer, L., Bennett, K., & Griffiths, K. M. (2019). University staff mental health literacy, stigma and their experience of students with mental health problems. *Journal of Further and Higher Education, 43*(3), 434–442. https://doi.org/10.1080/0309877X.2017.1367370

Hart, S. R., Kastelic, E. A., Wilcox, H. C., Beaudry, M. B., Musci, R. J., Heley, K. M., Ruble, A. E., & Swartz, K. L. (2014). Achieving depression literacy: The Adolescent Depression Knowledge Questionnaire (ADKQ). *School Mental Health, 6*(3), 213–223. https://doi.org/10.1007/s12310-014-9120-1

Hirai, M., & Clum, G. A. (2000). Development, reliability, and validity of the Beliefs toward Mental Illness scale. *Journal of Psychopathology and Behavioral Assessment, 22*(3), 221–236. https://doi.org/10.1023/A:1007548432472

Holtz, K. F. (2017). *The mental health literacy of high school teachers* (Publication No. 10261386) [Doctoral dissertation, Columbia University]. ProQuest Dissertations Publishing.

Hsu, P.-C., Chang, I.-H., & Chen, R.-S. (2019). Online learning communities and mental health literacy for preschool teachers: The moderating role of enthusiasm for engagement. *International Journal of Environmental Research and Public Health, 16*(22), Article 4448. https://doi.org/10.3390/ijerph16224448

Hunt, S., Wei, Y., & Kutcher, S. (2019). Addressing mental health literacy in a UK university campus population: Positive replication of a Canadian intervention. *Health Education Journal*, *78*(5), 537–544. https://doi.org/10.1177/0017896919826374

Imran, N., Rahman, A., Chaudhry, N., & Asif, A. (2022). Effectiveness of a school-based mental health intervention for school teachers in urban Pakistan: A randomized controlled trial. *Child and Adolescent Psychiatry and Mental Health, 16*, Article 33. https://doi.org/

10.1186/s13034-022-00470-1

Jones, E. E., Farina, A., Hastorf, A. H., Markus, H., Miller, D. T., & Scott, R. A. (1984). *Social stigma: The psychology of marked relationships*. W. H. Freeman.

Jorm, A. F. (2000). Mental health literacy: Public knowledge and beliefs about mental disorders. *British Journal of Psychiatry, 177*(5), 396–401. https://doi.org/10.1192/bjp.177.5.396

Jorm, A. F. (2012). Mental health literacy: Empowering the community to take action for better mental health. *American Psychologist, 67*(3), 231–243. https://doi.org/10.1037/a0025957

Jorm, A. F., Kitchener, B. A., Sawyer, M. G., Scales, H., & Cvetkovski, S. (2010). Mental health first aid training for high school teachers: A cluster randomized trial. *BMC Psychiatry, 10*, Article 51. https://doi.org/10.1186/1471-244X-10-51

Jorm, A. F., Korten, A. E., Jacomb, P. A., Christensen, H., Rodgers, B., & Pollitt, P. (1997a). "Mental health literacy": A survey of the public's ability to recognise mental disorders and their beliefs about the effectiveness of treatment. *Medical Journal of Australia, 166*(4), 182–186. https://doi.org/10.5694/j.1326-5377.1997.tb140071.x

Jorm, A. F., Korten, A. E., Jacomb, P. A., Christensen, H., Rodgers, B., & Pollitt, P. (1997b). Public beliefs about causes and risk factors for depression and schizophrenia. *Social Psychiatry and Psychiatric Epidemiology, 32*(3), 143–148. https://doi.org/10.1007/BF00794613

Jorm, A. F., Korten, A. E., Jacomb, P. A., Rodgers, B., & Pollitt, P. (1997). Beliefs about the helpfulness of interventions for mental disorders: A comparison of general practitioners, psychiatrists and clinical psychologists. *Australian & New Zealand Journal of Psychiatry*, *31*(6), 844–851. https://doi.org/10.3109/00048679709065510

Kajawi, L., Chingarande, S. D., Jack, H., Ward, C., & Taylor, T. (2016). What do African traditional medical practitioners do in the treatment of mental disorders in Zimbabwe? *International Journal of Culture and Mental Health, 9*(1), 44–55. https://doi.org/10.1080/17542863.2015.1106568

Kelly, C. M., Jorm, A. F., & Wright, A. (2007). Improving mental health literacy as a strategy to facilitate early intervention for mental disorders. *Medical Journal of Australia, 187*(S7), S26–S30. https://doi.org/10.5694/j.1326-5377.2007.tb01332.x

Kessler, R. C., Angermeyer, M., Anthony, J. C., de Graaf, R., Demyttenaere, K., Gasquet, I., de Girolamo, G., Gluzman, S., Gureje, O., Haro, J. M., Kawakami, N., Karam, A., Levinson, D., Medina Mora, M. E., Browne, M. A. O., Posada-Villa, J., Stein, D. J., Tsang, C. H. A., Aguilar-Gaxiola, S., ... Üstün, T. B. (2007). Lifetime prevalence and age-of-onset distributions of mental disorders in the World Health Organization's World Mental Health Survey initiative. *World Psychiatry, 6*(3), 168–176.

Kessler, R. C., Berglund, P., Demler, O., Jin, R., Merikangas, K. R., & Walters, E. E. (2005). Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. *Archives of General Psychiatry, 62*(6), 593–602. https://doi.org/10.1001/archpsy62.6.593

Khan, K. S., Mamun, M. A., Griffiths, M. D., & Ullah, I. (2022). The mental health impact of the COVID-19 pandemic across different cohorts. *International Journal of Mental Health and Addiction*, *20*(1), 380–386. https://doi.org/10.1007/s11469-020-00367-0

Kirmayer, L. J., Guzder, J., & Rousseau, C. (Eds.). (2014). *Cultural consultation: Encountering the other in mental health care*. Springer. https://doi.org/10.1007/978-1-4614-7615-3

Kurumatani, T., Ukawa, K., Kawaguchi, Y., Miyata, S., Suzuki, M., Ide, H., Seki, W., Chikamori, E., Hwu, H.-G., Liao, S.-C., Edwards, G. D., Shinfuku, N., & Uemoto, M. (2004). Teachers' knowledge, beliefs and attitudes concerning schizophrenia: A cross-cultural approach in Japan and Taiwan. *Social Psychiatry and Psychiatric Epidemiology, 39*(5), 402–409. https://doi.org/10.1007/s00127-004-0758-0

Kutcher, S., Bagnell, A., & Wei, Y. (2015). Mental health literacy in secondary schools: A Canadian approach. *Child and Adolescent Psychiatric Clinics of North America, 24*(2), 233–244. https://doi.org/10.1016/j.chc.2014.11.007

Kutcher, S., Gilberds, H., Morgan, C., Greene, R., Hamwaka, K., & Perkins, K. (2015). Improving Malawian teachers' mental health knowledge and attitudes: An integrated school mental health literacy approach. *Global Mental Health, 2*, Article e1. https://doi.org/10.1017/gmh.2014.8

Kutcher, S., Gilberds, H., Morgan, C., Udedi, M., & Perkins, K. (2015). Malawi educators' assessment of student mental health outcomes. *International Journal of School and Cognitive Psychology, 2*(S2), Article 009. https://www.longdom.org/open-access/malawi-educators-assessment-of-student-mental-health-outcomes-ijscp-S2-009.pdf

Kutcher, S., Hampton, M. J., & Wilson, J. (2010). Child and adolescent mental health policy and plans in Canada: An analytical review. *The Canadian Journal of Psychiatry*, *55*(2), 100–107. https://doi.org/10.1177/070674371005500206

Kutcher, S, & McLuckie, A. (2010, July). *Evergreen: A child and youth mental health framework for Canada.* Child and Youth Advisory Committee, Mental Health Commission of Canada. https://www.mentalhealthcommission.ca/wp-content/uploads/drupal/C%252526Y_Evergreen_Framework_ENG_1.pdf

Kutcher, S., Perkins, K., Gilberds, H., Udedi, M., Ubuguyu, O., Njau, T., Chapota, R., & Hashish, M. (2019). Creating evidence-based youth mental health policy in Sub-Saharan Africa: A description of the Integrated Approach to Addressing the Issue of Youth Depression in Malawi and Tanzania. *Frontiers in Psychiatry, 10*, Article 542. https://doi.org/10.3389/fpsyt.2019.00542

Kutcher, S., Wei, Y., & Coniglio, C. (2016). Mental health literacy: Past, present, and future. *The Canadian Journal of Psychiatry, 61*(3), 154–158. https://doi.org/10.1177/0706743715616609

Kutcher, S., Wei, Y., Costa, S., Gusmão, R., Skokauskas, N., & Sourander, A. (2016). Enhancing mental health literacy in young people. *European Child & Adolescent Psychiatry*, *25*(6), 567–569. https://doi.org/10.1007/s00787-016-0867-9

Kutcher, S., Wei, Y., Gilberds, H., Brown, A., Ubuguyu, O., Njau, T., Sabuni, N., Magimba, A., & Perkins, K. (2017). The African Guide: One year impact and outcomes from the implementation of a school mental health literacy curriculum resource in Tanzania. *Journal of Education and Training Studies, 5*(4), 64–73. https://doi.org/10.11114/jets.v5i4.2049

Kutcher, S., Wei, Y., Gilberds, H., Ubuguyu, O., Njau, T., Brown, A., Sabuni, N., Magimba, A., & Perkins, K. (2016). A school mental health literacy curriculum resource training approach: Effects on Tanzanian teachers' mental health knowledge, stigma and help-seeking efficacy. *International Journal of Mental Health Systems, 10*, Article 50. https://doi.org/10.1186/s13033-016-0082-6

Kutcher, S., Wei, Y., McLuckie, A., & Bullock, L. (2013). Educator mental health literacy: A programme evaluation of the teacher training education on the mental health & high school curriculum guide. *Advances in School Mental Health Promotion, 6*(2), 83–93. https://doi.org/10.1080/1754730X.2013.784615

Kutcher, S., Wei, Y., & Morgan, C. (2015).

Successful application of a Canadian mental health curriculum resource by usual classroom teachers in significantly and sustainably improving student mental health literacy. *The Canadian Journal of Psychiatry, 60*(12), 580–586. https://doi.org/10.1177/070674371506001209

Langeveld, J., Joa, I., Larsen, T. K., Rennan, J. A., Cosmovici, E., & Johannessen, J. O. (2011). Teachers' awareness for psychotic symptoms in secondary school: The effects of an early detection programme and information campaign. *Early Intervention in Psychiatry, 5*(2), 115–121. https://doi.org/10.1111/j.1751-7893.2010.00248.x

Lee, F. S., Heimer, H., Giedd, J. N., Lein, E. S., Šestan, N., Weinberger, D. R., & Casey, B. J. (2014). Adolescent mental health: Opportunity and obligation. *Science, 346*(6209), 547–549. https://doi.org/10.1126/science.1260497

Leeper, E. C. (2018). *Teacher candidates' perceived psychological wellness, behaviour management skills, and mental health literacy* (Publication No. 10813063) [Doctoral dissertation]. ProQuest Dissertations and Theses.

Levac, D., Colquhoun, H., & O'Brien, K. K. (2010). Scoping studies: Advancing the methodology. *Implementation Science*, *5*, Article 69. https://doi.org/10.1186/1748-5908-5-69

Link, B. G., & Phelan, J. C. (2001). Conceptualizing stigma. *Annual Review of Sociology*, *27*, 363–385. https://doi.org/10.1146/annurev.soc.27.1.363

Loreman, T., Earle, C., Sharma, U., & Forlin, C. (2007). The development of an instrument for measuring pre-service teachers' sentiments, attitudes and concerns about inclusive education. *International Journal of Special Education, 22*(2), 150–159.

Luke, M., Hinkle, J. S., Schweiger, W., & Henderson, D. (2016). Mental health facilitator (MHF) service implementation in schools in Malawi, Africa: A strategy for increasing community human resources. *The Professional Counselor, 6*(1), 1–21. https://doi.org/10.15241/ml.6.1.1

Madigan, D. J., & Kim, L. E. (2021). Towards an understanding of teacher attrition: A meta-analysis of burnout, job satisfaction, and teachers' intentions to quit. *Teaching and Teacher Education*, *105*, Article 103425. https://doi.org/10.1016/j.tate.2021.103425

Madigan, S., Korczak, D. J., Vaillancourt, T., Racine, N., Hopkins, W. G., Pador, P., Hewitt, J. M. A., AlMousawi, B., McDonald, S., & Neville, R. D. (2023). Comparison of paediatric emergency department visits for attempted suicide, self-harm, and suicidal ideation before and during the COVID-19 pandemic: A systematic review and meta-analysis. *The Lancet Psychiatry, 10*(5), 342–351. https://doi.org/10.1016/S2215-0366(23)00036-6

Malla, A., Shah, J., Iyer, S., Boksa, P., Joober, R., Andersson, N., Lal, S., & Fuhrer, R. (2018). Youth mental health should be a top priority for health care in Canada. *The Canadian Journal of Psychiatry*, *63*(4), 216–222. https://doi.org/10.1177/0706743718758968

Matschinger, H., & Angermeyer, M. C. (1996). Lay beliefs about the causes of mental disorders: A new methodological approach. *Social Psychiatry and Psychiatric Epidemiology, 31*(6), 309–315. https://doi.org/10.1007/BF00783418

Milin, R., Kutcher, S., Lewis, S. P., Walker, S., Wei, Y., Ferrill, N., & Armstrong, M. A. (2016). Impact of a mental health curriculum on knowledge and stigma among high school students: A randomized controlled trial. *Journal of the American Academy of Child & Adolescent Psychiatry, 55*(5), 383–391. https://doi.org/10.1016/j.jaac.2016.02.018

Miller, L., Musci, R., D'Agati, D., Alfes, C., Beaudry, M. B., Swartz, K., & Wilcox, H. (2019). Teacher mental health literacy is associated with student literacy in the Adolescent Depression Awareness Program. *School Mental Health, 11*(2), 357–363. https://doi.org/10.1007/s12310-018-9281-4

Moher, D., Shamseer, L., Clarke, M., Ghersi, D., Liberati, A., Petticrew, M., Shekelle, P., & Stewart, L. A. (2015). Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. *Systematic Reviews*, *4*, Article 1. https://doi.org/10.1186/2046-4053-4-1

Nguyen, A. J., Dang, H.-M., Bui, D., Phoeun, B., & Weiss, B. (2020). Experimental evaluation of a school-based mental health literacy program in two southeast Asian nations. *School Mental Health, 12*(4), 716–731. https://doi.org/10.1007/s12310-020-09379-6

Ngwenya, T. Z., Huang, N., Wang, I.-A., & Chen, C.-Y. (2022). Urban-rural differences in depression literacy among high school teachers in the Kingdom of Eswatini. *Journal of School Health, 92*(6), 561–569. https://doi.org/10.1111/josh.13173

Njie, A., Shea, S., & Williams, M. (2018, March). *Students first: Inclusive education that supports teaching, learning, and the success of all Nova Scotia students*. Commission on Inclusive Education. https://inclusiveedns.ca/wp-content/uploads/2018/03/CIE-Students-First-WEBreport-2.pdf

Nutbeam, D. (2000). Health literacy as a public health goal: A challenge for contemporary health education and communication strategies into the 21st century. *Health Promotion International*, *15*(3), 259–267. https://doi.org/10.1093/heapro/15.3.259

O'Connor, M., & Casey, L. (2015). The mental health literacy scale (MHLS): A new scale-based measure of mental health literacy. *Psychiatry Research, 229*(1–2), 511–516. https://doi.org/10.1016/j.psychres.2015.05.064

Ojio, Y., Yonehara, H., Taneichi, S., Yamasaki, S., Ando, S., Togo, F., Nishida, A., & Sasaki, T. (2015). Effects of school-based mental health literacy education for secondary school students to be delivered by school teachers: A preliminary study. *Psychiatry and Clinical Neurosciences, 69*(9), 572–579. https://doi.org/10.1111/pcn.12320

Olyani, S., Gholian Aval, M., Tehrani, H., & Mahdiadeh, M. (2021). School-based mental health literacy educational interventions in adolescents: A systematic review. *Journal of Health Literacy*, *6*(2), 69–77. https://doi.org/10.22038/jhl.2021.58551.1166

Ormiston, H. E., Nygaard, M. A., & Apgar, S. (2022). A systematic review of secondary traumatic stress and compassion fatigue in teachers. *School Mental Health*, *14*(4), 802–817. https://doi.org/10.1007/s12310-022-09525-2

Ozamiz-Etxebarria, N., Idoiaga Mondragon, N., Bueno-Notivol, J., Pérez-Moreno, M., & Santabárbara, J. (2021). Prevalence of anxiety, depression, and stress among teachers during the COVID-19 pandemic: A rapid systematic review with meta-analysis. *Brain Sciences, 11*(9), Article 1172. https://doi.org/10.3390/brainsci11091172

Page, D. J. (2021). *The role of teacher mental health literacy in identifying emerging mental health disorders in students* [Master's thesis, University of Toronto]. Tspace. https://tspace.library.utoronto.ca/bitstream/1807/109053/3/Page_Damian_202111_MA_thesis.pdf

Peabody, J. W., Luck, J., Glassman, P., Dresselhaus, T. R., & Lee, M. (2000). Comparison of vignettes, standardized patients, and chart abstraction: A prospective validation study of 3 methods for measuring quality. *JAMA, 283*(13), 1715–1722. https://doi.org/10.1001/jama.283.13.1715

Pereira Amaral, M. O., Marques da Silva, D., da Graça Aparício Costa, M., Matos Gonçalves, A., Campos Salvado Pires, S.

M., Viegas e Melo Cruz, C. M., do Rosário Cabral, L., & dos Santos Pessoa Gil, N. C. (2020). ProMenteSã: A teacher training intervention program for mental health promotion at schools. *Acta Paulista de Enfermagem, 33*, Article eAPE20190224. https://doi.org/ 10.37689/acta-ape/2020AO02246

Peters, M. D., Marnie, C., Tricco, A. C., Pollock, D., Munn, Z., Alexander, L., McInerney, P., Godfrey, C. M., & Khalil, H. (2020). Updated methodological guidance for the conduct of scoping reviews. *JBI Evidence Synthesis*, *18(*10), 2119–2126. https://doi.org/10.11124/JBIES-20-00167

Prabhu, V., Ashok, L., Kamath, V. G., Sekaran, V. C., Kamath, A., Padickaparambil, S., Hegde, A. P., & Devaramane, V. (2021). What predicts mental health literacy among school teachers? *Ghana Medical Journal, 55*(2), 141–146. http://doi.org/10.4314/gmj.v55i2.7

Raguram, R., Weiss, M. G., Channabasavanna, S. M., & Devins, G. M. (1996). Stigma, depression, and somatization in South India. *The American Journal of Psychiatry, 153*(8), 1043–1049. https:// doi.org/10.1176/ajp.153.8.1043

Raphael, D. (Ed.). (2016). *Social determinants of health: Canadian perspectives* (3rd ed.). Canadian Scholars.

Reavley, N. J., & Jorm, A. F. (2011). Recognition of mental disorders and beliefs about treatment and outcome: Findings from an Australian national survey of mental health literacy and stigma. *Australian and New Zealand Journal of Psychiatry, 45*(11), 947–956. https://doi.org/ 10.3109/00048674.2011.621060

Ritchie, T., Rogers, M., & Ford, L. (2021). Impact of COVID-19 on school psychology practices in Canada. *Canadian Journal of School Psychology*, *36*(4), 358–375. https://doi.org/10.1177/08295735211039738

Samji, H., Wu, J., Ladak, A., Vossen, C., Stewart, E., Dove, N., Long, D., & Snell, G. (2022). Review: Mental health impacts of the COVID-19 pandemic on children and youth – a systematic review. *Child and Adolescent Mental Health, 27*(2), 173–189. https://doi.org/10.1111/camh.12501

Santomauro, D. F., Mantilla Herrera, A. M., Shadid, J., Zheng, P., Ashbaugh, C., Pigott, D. M., Abbafati, C., Adolph, C., Amlag, J. O., Aravkin, A. Y., Bang-Jensen, B. L., Bertolacci, G. J., Bloom, S. S., Castellano, R., Castro, E., Chakrabarti, S., Chattopadhyay, J., Cogen, R. M., Collins, J. K., … Ferrari, A. J. (2021). Global prevalence and burden of depressive and anxiety disorders in 204 countries and territories in 2020 due to the COVID-19 pandemic. *The Lancet*, *398*(10312), 1700–1712. https://doi.org/10.1016/S0140-6736(21)02143-7

Spiker, D. A., & Hammer, J. H. (2019). Mental health literacy as theory: Current challenges and future directions. *Journal of Mental Health*, *28*(3), 238–242. https://doi.org/10.1080 /09638237.2018.1437613

Stead, T. (2014). Nurturing the inquiring mind through the nonfiction read-aloud. *The Reading Teacher, 67*(7), 488–495. https://doi.org/10.1002/trtr.1254

Stiffman, A. R., Pescosolido, B., & Cabassa, L. J. (2004). Building a model to understand youth service access: The Gateway Provider Model. *Mental Health Services Research*, *6*(4), 189–198. https://doi.org/10.1023/B:MHSR.0000044745.09952.33

Sun, Y., Wu, Y., Fan, S., Dal Santo, T., Li, L., Jiang, X., Li, K., Wang, Y., Tasleem, A., Krishnan, A., He, C., Bonardi, O., Boruff, J. T., Rice, D. B., Markham, S., Levis, B., Azar, M., Thombs-Vite, I., Neupane, D., ... Thombs, B. D. (2023). Comparison of mental health symptoms before and during the COVID-19 pandemic: Evidence from a systematic review and meta-analysis of 134 cohorts. *BMJ, 380*(8374), Article e074224. https://doi.org/10.1136 /bmj-2022-074224

Sweileh, W. M. (2021). Global research activity on mental health literacy. *Middle East Current Psychiatry, 28*, Article 43. https://doi.org/10.1186/s43045-021-00125-5

Tay, J. L., Tay, Y. F., & Klanian-Yobas, P. (2018). Mental health literacy levels. *Archives of Psychiatric Nursing, 32*(5), 757–763. https://doi.org/10.1016/j.apnu.2018.04.007

Tay, K. W., Ong, A. W. H., Pheh, K. S., Low, S. K., Tan, C. S., & Low, P. K. (2019). Assessing the effectiveness of a mental health literacy programme for refugee teachers in Malaysia. *Malaysian Journal of Medical Science, 26*(6), 120–126. https://doi.org/10.21315/mjms2019.26.6.12

Thorisdottir, I. E., Agustsson, G., Oskarsdottir, S. Y., Kristjansson, A. L., Asgeirsdottir, B. B., Sigfusdottir, I. D., Valdimarsdottir, H. B., Allegrante, J. P., & Halldorsdottir, T. (2023). Effect of the COVID-19 pandemic on adolescent mental health and substance use up to March, 2022, in Iceland: A repeated, cross-sectional, population-based study. *The Lancet Child & Adolescent Health*. https://doi.org/10.1016/s2352-4642(23)00022-6

Thornicroft, G. (2006). *Shunned: Discrimination against people with mental illness*. Oxford University Press. https://doi.org/10.1093/med/9780198570981.001.0001

Tricco, A. C., Lillie, E., Zarin, W., O'Brien, K. K., Colquhoun, H., Levac, D., Moher, D., Peters, M. D. J., Horsley, T., Weeks, L., Hempel, S., Akl, E. A., Chang, C., McGowan, J., Stewart, L., Hartling, L., Aldcroft, A., Wilson, M. G., Garritty, C., ... Straus, S. E. (2018). PRISMA extension for scoping reviews (PRISMA-ScR): Checklist and explanation. *Annals of Internal Medicine*, *169*(7), 467–473. https://doi.org/10.7326/M18-0850

Turner, B. J., Robillard, C. L., Ames, M. E., & Craig, S. G. (2022). Prevalence and correlates of suicidal ideation and deliberate self-harm in Canadian adolescents during the coronavirus disease 2019 pandemic. *The Canadian Journal of Psychiatry*, *67*(5), 403–406. https://doi.org/10.1177/07067437211036612

Ueda, J., Yamaguchi, S., Matsuda, Y., Okazaki, K., Morimoto, T., Matsukuma, S., Sasaki, T., & Kishimoto, T. (2021). A randomized controlled trial evaluating the effectiveness of a short video-based educational program for improving mental health literacy among schoolteachers. *Frontiers in Psychiatry, 12,* Article 596293. https://doi.org/10.3389/fpsyt.2021.596293

Vaillancourt, T., & Boylan, K. (2021). Behaviour and emotional disorders of childhood and Adolescence. In D. J. A. Dozois (Ed.), *Abnormal psychology: Perspectives* (6th ed., pp. 384–410). Pearson.

Vaillancourt, T., Szatmari, P., Georgiades, K., & Krygsman, A. (2021). The impact of COVID-19 on the mental health of Canadian children and youth. *FACETS*, *6*, 1628–1648. https://doi.org/10.1139/facets-2021-0078

Venkataraman, S., Patil, R., & Balasundaram, S. (2019). Stigma toward mental illness among higher secondary school teachers in Puducherry, South India. *Journal of Family Medicine and Primary Care, 8*(4), 1401–1407. https://doi.org/10.4103/jfmpc. Jfmpc_203_19

Waddell, C., McEwan, K., Shepherd, C. A., Offord, D. R., & Hua, J. M. (2005). A public health strategy to improve the mental health of Canadian children. *The Canadian Journal of Psychiatry*, *50*(4), 226–233. https://doi.org/10.1177/070674370505000406

Waddell, C., Shepherd, C. A., Chen, A., & Boyle, M. H. (2013). Creating comprehensive children's mental health indicators for British Columbia. *Canadian Journal of Community Mental Health*, *32*(1), 9–27. https://doi.org/10.7870/cjcmh-2013-003

Wahl, O., Rothman, J., Brister, T., & Thompson,

C. (2019). Changing student attitudes about mental health conditions: NAMI ending the silence. *Stigma and Health, 4*(2), 188–195. https://doi.org/10.1037/sah0000135

Wei, Y., Baxter, A., & Kutcher, S. (2019). Establishment and validation of a mental health literacy measurement in Canadian educators. *Psychiatry Research, 279,* 231–236. https://doi.org/10.1016/j.psychres.2019.03.009

Wei, Y., Carr, W., Alaffe, R., & Kutcher, S. (2020). Mental health literacy development: Application of online and in-person professional development for preservice teachers to address knowledge, stigma, and help-seeking intentions. *Canadian Journal of Behavioural Science*, *52*(2), 107–114. http://dx.doi.org/10.1037/cbs0000164

Wei, Y., Hayden, J. A., Kutcher, S., Zygmunt, A., & McGrath, P. (2013). The effectiveness of school mental health literacy programs to address knowledge, attitudes and help seeking among youth. *Early Intervention in Psychiatry, 7*(2), 109–121. https://doi.org/10.1111/eip.12010

Wei, Y., & Kutcher, S. (2014a). Innovations in practice: 'Go-To' educator training on the mental health competencies of educators in the secondary school setting: A program evaluation. *Child and Adolescent Mental Health*, *19*(3), 219–222. https://doi.org/10.1111/camh.12056

Wei, Y., & Kutcher, S. (2014b). School mental health literacy: A national curriculum guide shows promising results. *Education Canada, 54*(2), 22–26. https://www.edcan.ca/articles/school-mental-health-literacy/

Wei, Y., Kutcher, S., Austen, E., Comfort, A., Gilham, C., MacDougall, C., McKenna, G., McKinnon, M., Thompson, K., Yeo, E., Zhang, M., Baxter, A., & Matheson, K. (2022). The impact of Transitions, a mental health literacy intervention with embedded life skills for postsecondary students: Preliminary findings from a naturalistic cohort study. *The Canadian Journal of Psychiatry*, *67*(6), 452–461. https://doi.org/10.1177/07067437211037131

Wei, Y., Kutcher, S., Baxter, A., & Heffernan, A. (2021). The program evaluation of 'Go-To Educator Training' on educators' knowledge about and stigma toward mental illness in six Canadian provinces. *Early Intervention in Psychiatry, 15*(4), 922–931. https://doi.org/10.1111/eip.13037

Wei, Y., McGrath, P. J., Hayden, J., & Kutcher, S. (2015). Mental health literacy measures evaluating knowledge, attitudes and help-seeking: A scoping review. *BMC Psychiatry, 15*, Article 291. https://doi.org/10.1186/s12888-015-0681-9

Wei, Y., McGrath, P. J., Hayden, J., & Kutcher, S. (2017). Measurement properties of mental health literacy tools measuring help-seeking: A systematic review. *Journal of Mental Health, 26*(6), 543–555. https://doi.org/10.1080/09638237.2016.1276532

Weston, K. J., Anderson-Butcher, D., & Burke, R. W. (2008). Developing a comprehensive curriculum framework for teacher preparation in expanded school mental health. *Advances in School Mental Health Promotion, 1*(4), 25–41. https://doi.org/10.1080/1754730X.2008.9715737

Whitley, J., & Gooderham, S. (2016). Exploring mental health literacy among pre-service teachers. *Exceptionality Education International, 26*(2), 62–92. https://doi.org/10.5206/eei.v26i2.7741

World Health Organization. (2004). *Promoting mental health: Concepts, emerging evidence, practice (Summary report)*. https://apps.who.int/iris/bitstream/handle/10665/42940/9241591595.pdf

Yamaguchi, S., Foo, J. C., Kitagawa, Y., Togo, F., & Sasaki, T. (2021). A survey of mental health literacy in Japanese high school teachers. *BMC Psychiatry, 21*, Article 478. https://doi.org/10.1186/s12888-

021-03481-y

Yamaguchi, S., Foo, J. C., Nishida, A., Ogawa, S., Togo, F., & Sasaki, T. (2020). Mental health literacy programs for school teachers: A systematic review and narrative synthesis. *Early Intervention in Psychiatry*, *14(*1), 14–25. https://doi.org/10.1111/eip.12793

Yap, M. B. H., Mackinnon, A., Reavley, N., & Jorm, A. F. (2014). The measurement properties of stigmatizing attitudes towards mental disorders: Results from two community surveys. *International Journal of Methods in Psychiatric Research, 23*(1), 49–61. https://doi.org/10.1002/mpr.1433

Zimmerman, F. J. (2005). Social and economic determinants of disparities in professional help-seeking for child mental health problems: Evidence from a national sample. *Health Services Research*, *40*(5p1), 1514–1533. https://doi.org/10.1111/j.1475-6773.2005.00411.x

Appendix A

Search Strategy

#	Query	PUBMED	PsycInfo	CINAHL	ERIC
5	("mental health"[Title/Abstract] OR "mental hygiene"[Title/Abstract] OR ("mental health"[Subject] OR "mental hygiene"[Subject])) AND ("literacy"[Title/Abstract] OR "illiteracy"[Title/Abstract] OR "illiterate"[Title/Abstract] OR "literate"[Title/Abstract]) AND (educat* OR teach* [Title/Abstract] OR educat* OR teach* [Subject]) AND (intervention OR program OR train* [Title/Abstract] OR intervention OR program OR train* [Subject])	322	10	240	29
4	(literacy[Title/Abstract] OR illiteracy[Title/Abstract] OR illiterate[Title/Abstract] OR literate[Title/Abstract]) OR (literacy[Subject] OR illiteracy[Subject] OR illiterate[Subject] OR literate[Subject])	29,462	9.557	17,312	13,737
3	(“mental health”[Title/Abstract] OR “mental hygiene”[Title/Abstract]) OR (“mental health”[Subject] OR “mental hygiene”[Subject])	187,957	47,632	104,848	9,958
2	(educat* OR teach* [Title/Abstract] OR educat* OR teach* [Subject])	785,714	122,658	398,450	496,139
1	(intervention OR program OR train* [Title/Abstract] OR intervention OR program OR train* [Subject])	1,570,104	153,807	836,907	236,345

Note. Limited to French and English, no time limit imposed. Date of search: May 4, 2022.

Appendix B

Data Extraction Instrument

Title
Journal
Country in which the study was conducted:

1. United States
2. UK
3. Canada
4. Australia
5. Other

Aim/purpose of study
Theoretical background/ framework if given

Reported theoretical background?

1. Yes
2. No

MHL conceptualization

Definition/description of MHL
What are the basic components?

1. Recognition
2. Attitudes
3. Knowledge
4. All three
5. Other

Who do they cite when defining MHL?
Anticipated outcome of MHL

Methods

MHL measurement
Type of MHL

1. Overall
2. Disorder specific
3. Both
4. Other

Which disorder?
How is MHL measured?

1. Survey/questionnaire (quantitative)
2. Vignette (qualitative)
3. Both
4. Other

Scale or vignette used (name and citation)
Was individual's own mental health measured?
Positive mental health
If educator's own mental health was measured, which scale/measure was used?

Design

Study design

1. Randomized control trial
2. Program evaluation
3. Cross-sectional study (e.g., survey)
4. Longitudinal study (e.g., survey)
5. Qualitative research
6. Other

Participants

Population
Description of educators

1. Pre-service teachers
2. BEd/Bachelor of Education students
3. Teacher candidates
4. Teachers (employed in school setting)
5. Guidance counsellors
6. Professional support staff (e.g., social worker, school psychologist)
7. Other

Population description
E.g., elementary vs. secondary

Type of school

1. Public
2. Private
3. Charter (hybrid of public/private)
4. Catholic
5. Specialized (e.g., learning disabilities, exceptionalities, justice)

Total number of participant educators

Social determinants of mental health

Which socio-ecological levels were considered?
Beyond the individual

1. Classroom
2. School
3. Neighbourhood/community
4. Region/state/province
5. Society/culture

Key findings
Level of MHL reported in educators

Program details

Program description

Barriers
Facilitators

Program effectiveness

1. Overall, yes
2. Overall, no
3. Unsure/unreported
4. Other

Summary of program effects
Conclusion

Appendix C

Characteristics of Mental Health Literacy Conceptualization in Educator Surveys

Authors	Aim/Purpose of study	MHL definition	Basic MHL components	MHL definition citation	Theoretical framework	Socio-ecological levels	Type of MHL
Aluh et al., 2018	To assess the MHL of secondary school teachers in Southeast Nigeria with specific focus on their knowledge of depression	Not reported	Not reported	Not reported	Not reported	*Region/state/province* There are currently less than 150 psychiatrists in Nigeria, which has a population of 180 million, so teachers have to be able to recognize symptoms of depression and be able to refer students to appropriate mental health care providers.	Disorder Specific: depression
Armstrong et al., 2019	To identify and examine commonalities and differences in MHL of pre-service teacher education for the purpose of bettering the programming and support systems for teachers once they enter the field	MHL is defined as consistent, coherent, high-quality knowledge about child mental health and the confidence to use this knowledge	Knowledge	Jorm, 2012	Not reported	Not reported	Not reported
Atkins & Rodger, 2016	(a) To evaluate the first iteration of the course and	MHL is defined as an enhanced understanding	Other: awareness, dispositions,	Wei & Kutcher, 2014b;	Social justice framework	*Society/culture* Since all these participants were pre-service teachers	Not Reported

	teacher candidates' progress toward the five learning objectives, and (b) to invite teacher candidates to share their thoughts about what they were learning and about the personal and professional meaning of their learning	of how to obtain and maintain positive mental health… [and] the awareness, dispositions, beliefs, and values that are necessary first to orient educators to the needs of children and youth, and then to enhance their ability to support students' mental health in school	beliefs and values	Weston et al., 2008		from Western University, they were all graduate students. A study done by Doring, Hodge, and Heo (2014) found that graduate students were more willing to share personal information with their teachers—this meant that they did better on MHL scores because they were willing to share more of their experiences with their peers.	
Carr et al., 2018	To increase mental health knowledge, decrease the stigma and maintain these outcomes at a 3-month follow up	MHL is defined as understanding how to obtain and maintain good mental health, understanding mental disorders and their treatments, developing capacities to decrease stigma and developing capacities to enhance help-seeking efficacy	Recognition, attitudes, knowledge, and other: self-seeking efficacy	Kutcher et al., 2015; Kutcher, Wei, & Coniglio, 2016	Not reported	*Classroom/school* Before the program was in the classrooms, MHL wasn't the greatest. But when the classrooms were given the "guide pre-service professional development program" (GPPDP), their scores rose significantly. The program in the schools enhanced pre-service educators' understanding of mental health as well as their ability to help others.	Overall

Dang et al., 2018	To assess levels of mental health literacy among Vietnamese teachers, which also helped determine the extent to which mental health literacy training needed to be emphasized in our school mental health programs	MHL is defined as knowledge and beliefs about mental disorders and their treatment, which aid their recognition, management, or prevention	Recognition, attitudes, and knowledge	Jorm, 2000	Not reported	Not reported	Overall
Delgadillo et al., 2020	To examine teachers' preferences for three different interventions varying in intensity and explore attributes and levels associated with a preferred intervention intensity	MHL is defined as the attitude and knowledge of mental disorders that aid their recognition, prevention, or management	Recognition, attitudes, and knowledge	Jorm et al., 1997a	Not reported	*Classroom/school* No additional socio-ecological information	Overall
Dods, 2016	To establish a baseline understanding of the mental health and MHL of Canadian teacher candidates	MHL is defined as the knowledge, attitudes, beliefs, and skills related to mental health that emerge	Attitudes and knowledge	Jorm et al., 1997a	Theory of planned behaviour	Not reported	Overall

		from experience, education, and existing belief systems					
Ely, 2018	To examine educators' perceptions of current mental health needs within a prestigious private school in the Northeastern United States	MHL is defined as knowledge and beliefs about mental disorders that aid their recognition, management or prevention	Recognition, attitudes, and knowledge	Jorm et al., 1997a	Not reported	*Classroom/school* There is a gap in educator general understanding related to the ability to preserve optimal levels of student mental health in the classroom. Also, if the educator has been in the classroom working for 11 years or more, they tend to feel more prepared and have the ability to deal with mental health situations, rather than an educator who has been there less than 11 years.	Overall
Evans et al., 2021	To determine the acceptability and feasibility of delivering a mental health training initiative to teachers in Malawi to better enable them to recognize and cope with school children who had been exposed to trauma and substance misuse	MHL is defined as improving mental health knowledge and awareness	Knowledge	Jorm et al., 1997a; Reavley & Jorm, 2011; Jorm, 2012; Wei et al., 2013; Luke et al., 2016	Not reported	*Society/culture & neighbourhood/community* In this city in Malawi, there is only one outpatient mental health service, with four mental health nurses providing care to an age-blind population, none with specialism in child mental health. Teachers were not linked into the mental health service, so they were unaware what services could be available or how to access or signpost children there.	Disorder specific: substance abuse and trauma

Gilham, Neville-MacLean, & Atkinson, 2021	To examine changes in MHL, perceived stress, and teacher efficacy for inclusive practices in pre-service teachers in elementary and secondary year streams, who took a mandatory 36-hour, nine-week, face-to-face BEd course called Inclusion Two	MHL is defined as understanding how to obtain and maintain good mental health, understanding mental disorders and their treatments, developing capacities to decrease stigma, and developing capacities to enhance help-seeking efficacy, or knowing when, where, and how to seek help	Recognition, attitudes, and knowledge	Kutcher, et al., 2015; Kutcher, Wei, & Coniglio, 2016	Not reported	Not reported	Overall
Ginige et al., 2021	To develop and deliver a teacher-training program to improve MHL on emotional and behavioural disorders of childhood and adolescents	MHL is defined as knowledge and beliefs about mental disorders that aid their recognition, management and prevention	Knowledge	Jorm et al., 1997a	Not reported	Not reported	Overall
Holtz, 2017	To explore teachers' knowledge and awareness of mental health	MHL is defined as knowledge and beliefs about mental disorder that aid	Recognition, attitudes, and knowledge	Canadian Alliance on Mental Illness and Mental	Social cognitive theory	*Classroom/school & Neighbourhood/community* Teachers in this school specifically reported taking approximately six separate	Overall

	and how prepared they were to respond to issues concerning adolescent mental health	in their recognition, management or prevention		Health, 2007		actions when they recognize that they might have a student with significant emotional or behavioural challenges. However, teachers need help too, and for more improvements additional training and more support from staff is needed.	
Hsu et al., 2019	To explore preschool teachers' attitudes toward the relationship between online learning communities and mental health literacy and clarify the moderating effect of enthusiasm for engagement in this relationship	MHL is defined as an individual's knowledge and beliefs about mental health disorders (their own and those of others), as well as self-help strategies for reducing mental disorders	Knowledge	Dias et al., 2018	Not reported	Not reported	Overall
Imran et al., 2022	To demonstrate the effectiveness of a teacher training programme using the WHO-EMRO Manual of School Mental Health in improving teachers' mental health literacy, self-efficacy, and	MHL is defined as knowledge and beliefs about mental disorders that aid their recognition, management, or prevention	Recognition and knowledge	Jorm, 2012; Kutcher et al., 2013	Not reported	Not reported	Overall

	confidence in helping students with mental health difficulties						
Kurumatani et al., 2004	To characterize the general public's mental health literacy in Japan and Taiwan, and what is reported here is part of a larger survey of Japanese and Taiwanese elementary school teachers	MHL is defined as knowledge and beliefs about mental disorders that aid their recognition, management or prevention	Not reported	Jorm, 2000	Not reported	Not reported	Disorder specific: schizophrenia
Kutcher et al., 2013	To examine the impact of an educator training programme designed to support educators in the delivery of a high school mental health curriculum within their classrooms, such as health class	MHL is defined as encompassing the capacity to understand what constitutes positive mental health and strategies to achieve positive mental health, including knowledge of mental disorders based on evidence-based research; promotes appropriate attitudes	Attitudes, knowledge, and other: help-seeking	Kelly et al., 2007	Not reported	*Classroom/school* Schools can play an important role in the promotion of positive mental health as well as an integral role in the pathways into mental health care for adolescents. Schools provide an opportunity for mental health literacy to be embedded into the curriculum for a more sustained effect with students. Additionally, as many mental disorders manifest and are typically identified in young people of secondary school	Overall

		towards those living with mental disorders; and enhances the capacity to seek mental health care from appropriate health care providers should that be required				age, improved mental health literacy through embedded curriculum in this population may have impact on improving entry into mental health care by enhancing the ability to self-identify the need for care and by decreasing stigma associated with obtaining care.	
Kutcher, Gilberds, Morgan, Greene, et al., 2015	To determine the impact of a training programme for educators on how to use a culturally adapted school mental health curriculum resource (the African Guide: Malawi version [AGMv]) on the mental health literacy of educators in the Lilongwe, Mchinji and Salima districts of central Malawi	MHL is defined as knowledge and beliefs about mental disorders that aid their recognition, management and prevention	Not reported	Jorm et al., 1997a	Health Literacy	*Region/state/province & society/culture* There are currently only four psychiatrists to serve the total population of 15.7 million in Malawi, and no child and adolescent psychiatrists (The World Health Organization, 2011, as cited in Kutcher, Gilberds, Morgan, Greene, et al., 2015). There is also a limited number of other mental health care professionals, such as social workers, psychologists and psychiatric nurses. There are three psychiatric hospitals in the entire country, and these are institutions that mostly service individuals who live with the severest and most disabling mental illnesses. Mental health services targeted toward common	Overall

						mental disorders are scarce, as are mental health services specifically for adolescents. Furthermore, mental health promotion and programmes designed to target mental health literacy are uncommon, and the focus tends to be on service delivery for the most severe mental disorders. In addition to the scarcity of services for common mental disorders, poor understanding of mental health and mental illness persists in Malawi. In a 2013 cross-sectional survey of over 2000 adolescents conducted by the Grand Challenges Project team in central Malawi, 95% of the respondents attributed the cause of mental disorders to alcohol and illicit drug abuse, 92.8% to brain disease, 82.8% to spirit possession, and 76.1% to psychological trauma.	
Kutcher, Wei, Gilberds, et al., 2016	To evaluate the impact of a culturally adapted MHL refresher training resource in Tanzania	MHL is defined as how to obtain and maintain positive mental health; understanding mental disorders and	Recognition, attitudes, and knowledge	Kajawi et al., 2016; Kutcher, et al., 2015; Kutcher, Wei, & Coniglio, 2016	Health Literacy	Not reported	Both: overall and depression

		their treatments; decreasing stigma related to mental disorders; and enhancing help-seeking efficacy (knowing when and where to seek help and developing competencies designed to improve one's mental health care and self-management capabilities					
Kutcher et al., 2017	To investigate the impact of the African Guide resource at three time points over a one-year period following its implementation in a sample of Tanzania schools	MHL is defined as how to obtain and maintain good mental health, understanding mental disorders and their treatments, decreasing stigma related to mental disorders and enhancing help-seeking efficacy	Recognition, attitudes, and knowledge	Kutcher et al., 2015	Not reported	*Classroom/school, neighbourhood/community, region/state/province, & society/culture* Prior to the African Guide training, teachers reported that they had not identified any students at high risk of a mental disorder and that no students had approached their teachers with the concern that they may have a mental disorder. Over the course of the year since the introduction of the African Guide in their schools, 399 students approached their teachers about their personal mental health	Disorder specific: depression

						concerns, and teachers referred 108 students to trained community health care providers for assessment for a potential mental disorder (specifically depression). schools are an institution that can be used to address and improve various aspects of mental health among young people (students) as well as teachers. Available data from Tanzania suggests that the need to address mental health in schools is substantive. Tanzania, a low-income country in sub-Saharan Africa, is one of the poorest countries in the world and has a proportionally very high distribution of youths in its population: 60 percent are aged under 25 (Central Intelligence Agency, 2016). The formal Tanzanian education system includes no mental health curriculum resources	
Kutcher et al., 2019	To develop, apply, and evaluate an effective and frugal mental health policy and programmatic	MHL is defined as 1) enhancing capacity to obtain and maintain good mental health; 2) enhancing	Recognition, attitudes, and knowledge	Wei & Kutcher, 2014b	Not reported	Not reported	Disorder specific: depression

	framework that can simultaneously improve mental health literacy and enhance capacity for improved access to effective mental health care for young people with depression - Improving mental health literacy of communities, youth, and teachers; enhancing case identification and linking schools to community health clinics; improving the capacity of community health care providers to identify, diagnose, and effectively treat depression in youth	understanding of mental disorders and their treatments; 3) decreasing stigma related to mental illness; and 4) enhancing help-seeking efficacy.					
Langeveld et al., 2011	To evaluate the effects of an early detection	MHL is defined as knowledge and beliefs	Recognition, attitudes, and	Jorm et al., 1997a	Norwegian National Plan for	*Classroom/school* A programme entitled “Mental Health in Schools” is	Disorder specific: psychosis

	programme composed of an ongoing information campaign (IC), low-threshold access to an early detection psychosis team and mental health literacy training programme on high school teachers' literacy about psychosis symptoms and on teachers' confidence in the benefits of psychosis treatment on the mental health of pupils with psychotic symptoms	about mental disorders that aid recognition, management or prevention	knowledge		Improved Mental Health Services	part of the government's strategic plan for the mental health of children and young people. The early treatment and intervention in psychosis (TIPS) project in Norway was designed for early case-identification in first-episode psychosis. The Rogaland County site had access to TIPS, a mental health literacy program, information campaigns/educational resources, and early detection teams for psychosis. Teachers at the study site in Rogaland with an ongoing IC and access to an outreaching team for early detection and treatment of psychosis demonstrated a higher level of confidence in the effects of treatment on psychosis.	
Leeper, 2018	To examine personal wellness factors and mental health literacy among teacher candidates and how these factors may contribute	MHL is defined as knowledge and beliefs about mental disorders that aid their recognition, management or prevention.	Recognition, attitudes, and knowledge	Jorm et al., 1997a; Jorm, 2012	Gerald Caplan's Consultee-Centered Consultation (Caplan, 1995)	Not reported	Overall

	to their perceived behaviour management abilities						
Miller et al., 2019	To explore the depression literacy and stigma of teachers and their students	MHL is defined as knowledge and beliefs about mental disorders that aid their recognition, management or prevention	Recognition, attitudes, and knowledge	Jorm et al., 2010	Not reported	Not reported	Disorder specific: depression
Nguyen et al., 2020	To evaluate a school-based MHL program, the "Mental Health & High School Curriculum Guide" ("The Guide"), implemented separately in (1) Vietnam and (2) Cambodia, following adaptations made by the research team	MHL is defined as knowledge and beliefs about mental disorders and their treatment, which aid their recognition, management or prevention	Recognition, attitudes, and knowledge	Jorm, 2000	Not reported	Not reported	Overall
Ngwenya et al., 2022	To estimate the prevalence of correct responses for adolescent	MHL is defined as knowledge and beliefs about mental disorders that	Knowledge	Jorm et al., 1997a	Not reported	*Region/state/province*	Disorder specific: depression

	depression literacy items among high school teachers in Eswatini and to determine whether teachers' literacy toward adolescent depression varies by urbanicity at scale- and item-levels	aid in their recognition, management, or prevention					
Pereira Amaral et al., 2020	To assess the ProMenteSã program's efficacy and teachers' level of knowledge before and after the application of the training intervention program	MHL is defined as knowledge about factors associated with mental issues and disorders; the capacity to recognize disorders; knowledge about available options and treatment; management interventions in moments of crisis; self-defence against crises; first aid skills to support those who seem to be suffering from mental	Knowledge and recognition	Jorm, 2012; Tay et al., 2018	The program was influenced by the European Framework for Action on Mental Health and Well-being & the WHO's "Mental health action plan 2013–2020"	*Neighbourhood/community*	Overall

		illness; and knowledge about aid-seeking attitudes					
Prabhu et al., 2021	To assess high school teachers' mental health literacy and predictors	Not reported	Not reported	Not reported	Not reported	*Classroom/school*	Overall
Tay et al., 2019	To examine effectiveness of a newly developed mental health literacy programme for refugee teachers in Malaysia	Not reported	Not reported	Not reported	Not reported	Not reported	Overall
Ueda et al., 2021	To examine the effectiveness of an MHL educational program for teachers	MHL is defined as knowledge regarding means of preventing mental disorders, ability to recognize when a disorder is developing, knowledge of help-seeking options and available treatments, knowledge of effective self-help strategies	Recognition and knowledge	Jorm et al., 2012	Not reported	*Classroom/school*	Overall

		for milder problems, and first-aid skills to support others who are developing mental disorders or who are experiencing a mental-health crisis					
Venkataraman et al., 2019	To assess the stigma toward mental illness and the associated factors among higher secondary school teachers in Puducherry, South India	Not reported	Not reported	Not reported	Not reported	Not reported	Overall
Wei & Kutcher, 2014a	To report on a program evaluation on the effectiveness of mental health training of "go-to" educators in early identification of mental disorders, triage and support, and attitudes toward mental illness,	Not reported	Not reported	Not reported	Not Reported	Not reported	Overall

	conducted with the Halifax Regional School Board (HRSB) in the province of Nova Scotia, Canada						
Wei et al., 2020	To investigate whether pre-service teachers will improve their mental health literacy outcomes following the PD session on the Guide, and to investigate whether outcomes will differ when the Guide is presented face-to-face and online as the secondary analysis	MHL is defined as knowing about, obtaining and maintaining mental health, understanding mental disorders and their treatments, reducing stigma, and increasing help-seeking efficacy	Attitudes and knowledge	Kutcher et al., 2015	Not reported	Not reported	Overall
Wei et al., 2021	To report on “Go-To Educator Training” (GTET) implementation in six Canadian provinces between 2012 and 2015 and to investigate	Not reported	Not reported	Not reported	Not reported	Region/state/province	Overall

	whether GTET would have different impacts by locations, gender (male and female), years of professional practice, and the instructor from whom recipients received their training						
Whitley & Gooderham, 2016	To explore the MHL of a sample of pre-service teachers	MHL is defined as knowledge and beliefs about mental disorders that aid their recognition, management, or prevention	Recognition and knowledge	Jorm et al., 1997a	Not reported	Not reported	Overall
Yamaguchi et al., 2021	To assess levels of MHL in Japanese public high school teachers	MHL is defined as knowledge and beliefs that aid in the recognition, management, or prevention of mental health problems	Recognition, attitudes, and knowledge	Jorm et al., 1997a; Jorm, 2012	Not reported	Not reported	Both: overall and depression, schizophrenia, and panic disorder

Appendix D

Characteristics of Mental Health Literacy Survey Design in Educators

Authors	Study Design	MHL Measurement	Measure Citation	Population	Type of School	MHL Level
Aluh et al., 2018	Cross-sectional	Vignette & questionnaire	The Friend in Need Questionnaire (Burns & Rapee, 2006)	104 secondary school teachers	Public	Low
Armstrong et al., 2019	Cross-sectional	Not Reported	Not Reported	24 pre-service teachers	Not reported	Not Reported
Atkins & Rodger, 2016	Qualitative research	Questionnaire	Reading and analyzing nonfiction strategy (Stead, 2014)	7 teacher candidates	Public	Not Reported
Carr et al., 2018	Prospective cohort study	Questionnaire	Mental Health Knowledge & Stigma Survey (developed by authors) SAME Stigma test	60 pre-service teachers	Public	Improved
Dang et al., 2018	Cross-sectional	Questionnaire	Translated version in Vietnam of the Mental Health Literacy Scale (MHLS; O'Connor & Casey, 2015)	353 grade 6-12 teachers	Public	Below average level of MHL
Delgadillo et al., 2020	Cross-sectional	Questionnaire	Mental Health Literacy Scale (MHLS; O'Connor & Casey, 2015)	229 elementary teachers	Public	Not reported
Dods, 2016	Cross-sectional	Questionnaire	Developed by author	385 BEd/Bachelor of Education students	Public	Medium
Ely, 2018	Cross-sectional	Vignette & questionnaire	Mental Health Literacy Scale (MHLS; O'Connor & Casey, 2015); Educator Mental Health Literacy Inventory (developed by author)	41 elementary educators and support personnel	Private	Not reported
Evans et al., 2021	Feasibility study	Not reported	Not reported	Elementary teachers	Public and	Not reported

	(qualitative and collaborative approach)				private	
Gilham, Neville-MacLean, & Atkinson, 2021	Cohort study	Questionnaire	Mental health Knowledge (adapted from Wei et al., 2019); attitudes toward stigma (Milin et al., 2016:); Perceived Stress Scale (PSS; Cohen et al., 1983); Attitudes Toward Help Seeking (Wei et al., 2017); Teacher Efficacy for Inclusive Practice (TEIP; Loreman et al., 2007) Same STIGMA test	71 pre-service teachers	Public	Improved
Ginige et al., 2021	Program evaluation	Vignette & questionnaire	Not reported	251 primary school teachers	Public	Low
Holtz, 2017	Cross-sectional	Questionnaire	Author adapted scale: Mental health literacy and capacity survey for educators	78 high school teachers	Public	Not reported
Hsu et al., 2019	Cross-sectional	Questionnaire	Preschool Teachers Mental Health Literacy Scales (PTMHL; developed by author)	534 preschool teachers	Not reported	Medium
Imran et al., 2022	Randomized controlled trial	Questionnaire	Developed by the WHO	231 secondary school teachers	Private	Improved
Kurumatani et al., 2004	Cross-sectional	Vignette & questionnaire	Developed by author (inspired by Jorm et al., 1997a; Jorm, Korten, Jacomb, Rodgers, & Pollitt, 1997; Jorm et al., 1997b; Angermeyer & Matschinger, 1996; Matschinger & Angermeyer, 1996; Raguram, 1996)	215 teachers	Not reported	Not reported

Kutcher et al., 2013	Program evaluation	Questionnaire	Developed by authors	79 secondary school teachers (specifically grade 9)	Public	Improved
Kutcher, Gilberds, Morgan, Greene et al., 2015	A repeated measures/within-participants study design	Questionnaire	Kutcher et al., 2013	194 teachers	Public, private, and catholic	Improved
Kutcher, Gilberds, Morgan, Udedi, & Perkins, 2016	Program evaluation	Questionnaire	Kutcher et al., 2013	61 secondary school teachers	Public	Improved
Kutcher et al., 2017	Longitudinal study	Questionnaire	The School Mental Health Literacy Impact Data Collection Form (developed by authors)	32 secondary school teachers	Not reported	High
Kutcher et al., 2019	Program evaluation	Questionnaire	Not reported	Teachers	Public, private, and catholic	Low
Langeveld et al., 2011	Cross-sectional	Vignette & questionnaire	Questionnaire on Knowledge and Experience of Social and Emotional Difficulties Among Young People (Doherty et al., 2006)	441 high school teachers	Not reported	Higher for teachers in experimental group
Leeper, 2018	Cross-sectional	Questionnaire	Mental Health Literacy Questionnaire for Teachers (MHLQT; adapted from MHLQ by Davis et al., 2008)	118 BEd/Bachelor of Education students	Not reported	Not reported
Miller et al., 2019	Program evaluation	Questionnaire	The Adolescent Depression Knowledge Questionnaire (Hart et al., 2014); The Reported and Intended Behaviour Scale (Evans-Lacko et al., 2011)	66 secondary teachers	Public and private	Not reported

Nguyen et al., 2020	Program evaluation	Vignette & questionnaire	In both studies: Vietnamese adaptation of the Mental Health Literacy Scale (MHLS; O'Connor & Casey, 2015; adapted from Dang et al., 2018) and Beliefs Towards Mental Illness Scale-BMI (BMI; Hirai & Clum, 2000)	143 grade 8 and 9 teachers	Public	Not reported
Ngwenya et al., 2022	Cross-sectional	Questionnaire	Adolescent Depression Knowledge Questionnaire (ADKQ; Hart et al., 2014)	976 high school teachers	Public	Less than satisfactory
Pereira Amaral et al., 2020	Cross-sectional analytical and before/after intervention methodology	Questionnaire	Mental Health Literacy Questionnaire (MHLq; Campos et al., 2012)	13 second and third cycle teachers	Not reported	Improved
Prabhu et al., 2021	Cross-sectional	Vignette & questionnaire	Australian National Mental Health Literacy and Stigma Youth Survey (Reavley & Jorm, 2011)	460 high school teachers	Public, private, & specialized	Low
Tay et al., 2019	Program evaluation	Questionnaire	Mental Health Knowledge Schedule (MHKS; Evans-Lacko et al., 2010); Reported and Intended Behaviour Scale (RIBS; Evans-Lacko et al., 2011); Attitudes and Knowledge about Mental Health Conditions (Wahl et al., 2019); Mental Health Literacy Questionnaire for Young Adult Form (Dias et al., 2018)	68 refugee centre teachers	Specialized	Not reported
Ueda et al., 2021	Randomized control trial	Questionnaire	Japanese version of the Reported and Intended Behavior Scale (RIBS-J; Evans-Lacko et al., 2011); self-developed	92 teachers	Elementary, secondary, special support,	High for knowledge and help-seeking

			questionnaire (inspired by Griffiths et al., 2004)		middle, & high schools	& low stigma
Venkataraman et al., 2019	Cross-sectional	Questionnaire	Mental Health Literacy Scale (Jorm et al., 1997a)	566 higher secondary school teachers	Public & private	Not reported
Wei & Kutcher, 2014a	Program evaluation	Questionnaire	Developed by authors	120 secondary school teachers	Not reported	Improved
Wei et al., 2020	Quasi-experimental research	Questionnaire	Developed by authors based on the content of the Guide resource	176 secondary and middle school pre-service teachers	Not reported	Improved
Wei et al., 2021	Program evaluation	Questionnaire	Stigma Toward Mental Disorders Survey (informed by Jones et al., 1984; Thornicroft, 2006)	949 junior high and secondary school teachers	Not reported	Improved
Whitley & Gooderham, 2016	Cross-sectional	Vignette	Developed by authors	186 elementary and secondary school pre-service teachers	Not reported	Low to medium
Yamaguchi et al., 2021	Cross-sectional	Vignette & questionnaire	Questionnaire (adapted from Kessler et al., 2007; Kessler et al., 2005; Lee et al., 2014; Ando et al., 2013; American Psychiatric Association, 2013; Yap et al., 2014); vignette (adapted from American Psychiatric Association, 2013)	665 secondary school teachers	Public	Low

HPJ HEALTHY POPULATIONS JOURNAL

Book Review/Commentary

The Commercial Determinants of Health, edited by Nason Maani, Mark Petticrew, and Sandro Galea

Steve Machat, BEd, MA
Interdisciplinary Studies, Dalhousie University

DOI: 10.15273/hpj.v3i2.11606

A Maani, N., Petticrew, M., & Galea, S. (Eds.). (2023). The commercial determinants of health. Oxford University Press. https://doi.org/10.1093/oso/9780197578742.001.0001

The social determinants of health (SDOH) have become a mainstay in public health teaching and understanding but often neglect the role of commercial entities and practices that powerfully affect population health. The edited *The Commercial Determinants of Health* endeavours to fill this gap and represents a benchmark volume that provides a "conceptual and empiric state" (p. 5) of a term first coined by Kickbusch (2012) and Hastings (2012). Similar to the SDOH, the commercial determinants of health (CDOH) provide both an established research field and a conceptual framework that seeks to understand the underlying factors that shape population health. While defining the parameters of CDOH is a focus for this book, given the term's recent emergence (see chapters Lacy-Nichols et al., 2023; Maani et al., 2023), the salient interdisciplinary underpinning of CDOH is often located in the influence of commercial actors and their strategies and practices. In this, for example, we can point to the political lobbying and influencing activities that corporations engage in to protect the design, sale, and promotion of health-harming consumer products such as sugar-sweetened beverages, ultra-processed foods, and alcohol. One also only needs to recount the tobacco industry's successful marketing campaigns to expand and retain a cigarette-using consumer base and their efforts to divert attention away from the scientific links between their products and health as additional examples of how the CDOH show up.

The volume consists of six sections and 34 chapters, offering a comprehensive introductory overview of the policy and research implications and health impacts of CDOH. The interrelated range of topics the contributors cover will look familiar to those who have studied corporate political activities and how commercial entities attempt to reframe health issues with the ultimate aim of diverting attention away from the population health impacts of their actions. It has become a common strategy for commercial actors responsible for manufacturing, selling, and distributing health-harming products and commodities to engage in a multi-faceted set of actions that shape, influence, or delay the production and dissemination of science and research that may impede or damage the prospect of profits or market share (see chapters Bero, 2023; Fabbri & Gilmore, 2023). The book also takes on the topic of how commercial entities mitigate the efficacy of conflict-of-interest rules that govern the interactions between researchers, institutions, and industry. This often results in positioning producers and manufacturers of these commodities and products as a necessary part of the solution to address noncommunicable disease incidences, despite their being, in part or wholly, the cause or source of this harm (see chapters Adam, 2023; Collin et al., 2023; Cullerton & White, 2023). Within this overall strategy, often referred to as "the corporate playbook," a key facet includes litigating potential threats—including governments—and influencing the policy-making environment and public discourse to protect and sustain the sale of health-harming products and practices (see chapters Gómez, 2023; Hilton, 2023), not only in affluent countries but in low- and middle-income jurisdictions globally (see chapter Abdalla et al., 2023).

While the term CDOH may have emerged only in the last 10 years, questions about the role of commercial actors' influence on public policy that negatively impacts health can be found going back to the 19th century, especially when viewed through the lens of the history of the corporation and its influence on culture and society (see chapter Tomes, 2023). The contributors build and reflect on this longstanding research and advocacy. The set of sector case studies profiled in the book provides a strong primer on the state of research and action, starting with the well-documented impact of tobacco industry strategies and tactics (see chapter Gilmore & Dance, 2023). A focus on the tobacco industry is often seen as a jumping-off point for understanding the blueprint of other commercial entities to delay, weaken, or prevent public health actions (Brownell & Warner, 2009). The contemporary history of tobacco industry interference in preventing effective public policy is also rich and well documented outside of this volume, and is worth consideration to understand today's current state of the commercial determinants of health and policy-making processes (Brandt, 2007; Cunningham, 1996; Proctor, 2012; Robinson, 2021). Despite the relative success and lessons learned from global efforts to counter tobacco industry strategies through national policy frameworks, including Canada's frameworks and the World Health Organization's Framework Convention on Tobacco Control, the corporate political activities first initiated or emboldened by the tobacco industry are now being re-enacted, modified, and innovated in various ways by the alcohol (see chapters Stockwell & Hobin, 2023), sugar-sweetened beverage (Crosbie et al., 2023), fossil fuel (van Schalkwyk et al., 2023), and gambling industries (van Schalkwyk & Cassidy, 2023). Together these sectors continue to represent a source of significant harm to population (and planetary) health.

Beyond the individual case studies, there are several cross-cutting industry mechanisms that each of these sectors deploys. One of these mechanisms includes marketing (see chapter Pettigrew & Jones, 2023) and is often characterized as utilizing a successful combination of the four "P"s: price, product, promotion, and place. Another cross-sector mechanism that is commonly used to reframe health issues and distract political and community focus from the impacts of unhealthy products is the integration of corporate social responsibility initiatives (see chapter Paichadze et al., 2023) into the company's public and government relations and marketing campaigns. A corporate social responsibility initiative (often simply referred to by its acronym, CSR) is aimed at showcasing the company's or industry's societal contributions through funding grants to community groups, sponsorship of amateur sports and physical activity, and cause marketing to show support for certain social issues—such as breast cancer awareness—focused on individual action rather than upstream healthy public policies (p. 157). In a Canadian context, we routinely see CSR manifested in sponsorship of youth sports, which is often used as a foil by the food industry to prevent, dilute, or delay restrictions on marketing to children. A typical food industry refrain in opposition to marketing restrictions will involve threats to remove these funding and sponsorship opportunities if advertising to youth and children is curtailed. The book also examines the ability of corporations to exercise power beyond lobbying and how this power has become structurally embedded in various national and international policy-making mechanisms and environments (see chapter Fooks, 2023). In particular, cost-benefit analysis processes and regulatory oversight bodies are identified as key examples of how corporate power has the potential to become integrated into political decision-making.

The final two sections of the volume seek to shine a light on the way forward and allow us to think about the promise of future CDOH research and practice, including the role of policy process theories and teaching. While the contributors outline the necessary policy measures and the need for involvement of civil society and researchers to address the CDOH (see chapters Casswell, 2023; Mialon et al., 2023), the volume does not lay out or debate how change would occur in a systematic way. There is considerable space left open to explore and elaborate on how policy process theories, such as the advocacy coalition framework or punctuated equilibrium theory (among many others), play a role in helping to understand the underlying conditions and factors that result in altering the trajectory of the CDOH. A potential direction for future focus here could include a project like Weible and Cairney (2021) that translates and applies policy process theory to changing the CDOH. Equally, the book makes a compelling case to insert the CDOH into teaching within schools of public health, community epidemiology, and social science faculties, the subject deserving an appropriate level of attention to prepare scholars and practitioners to study and address the various forces that lie at the core of the CDOH (see chapter Freudenberg & Crosbie, 2023).

To end, a necessary preoccupation of the book is the focus on the marketing and sale of health-harming products and commodities—but what about those types of commercial practices that could be considered more health-promoting, such as employment that the private sector provides? How we come to terms with what could be considered health-promoting under the rubric of CDOH will be critical, not only conceptually but also in formulating how civil society actors and researchers frame their messaging during successful interactions with policy-makers and the broader public. Answers to the question of how to reconcile these potential contradictions and tensions of the positive and negative impacts of commercial activity will likely be found in the rich, nuanced experiences of community and advocacy coalitions both nationally and internationally, and our task will be to learn, document, and emulate what is successful in these attempts. *The Commercial Determinants of Health* provides the map to navigate and broaden the borders and scope of that conversation, as well as many other conversations related to population health.

References

Abdalla, S. M., Ofei, L., Maani, N., & Galea, S. (2023). Chapter 28: Commercial determinants of health in low- and middle-income countries. In N. Maani, M. Petticrew, & S. Galea (Eds.), *The commercial determinants of health* (pp. 283–294). Oxford University Press. https://doi.org/10.1093/oso/9780197578742.003.0028

Adams, P. J. (2023). Chapter 29: The question of industry partnerships. In N. Maani, M. Petticrew, & S. Galea (Eds.), *The commercial determinants of health* (pp. 295–306). Oxford University Press. https://doi.org/10.1093/oso/9780197578742.003.0029

Bero, L. (2023). Chapter 19: Industry influence on research: A cycle of bias. In N. Maani, M. Petticrew, & S. Galea (Eds.), *The commercial determinants of health* (pp. 185–196). Oxford University Press. https://doi.org/10.1093/oso/9780197578742.003.0019

Brandt, A. M. (2007). *The cigarette century: The rise, fall, and deadly persistence of the product that defined America*. Basic Books.

Brownell, K. D., & Warner, K. E. (2009). The perils of ignoring history: Big Tobacco played dirty and millions died. How similar is Big Food? *The Milbank Quarterly*, *87*(1), 259–294.

https://doi.org/10.1111/j.1468-0009.2009.00555.x

Casswell, S. (2023). Chapter 33: A policy agenda for the commercial determinants of health. In N. Maani, M. Petticrew, & S. Galea (Eds.), *The commercial determinants of health* (pp. 341–352). Oxford University Press. https://doi.org/10.1093/oso/9780197578742.003.0033

Collin, J., Ralston, R., & Hill, S. (2023). Chapter 23: Rethinking conflict of interest: From individual to structural understandings. In N. Maani, M. Petticrew, & S. Galea (Eds.), *The commercial determinants of health* (pp. 231–240). Oxford University Press. https://doi.org/10.1093/oso/9780197578742.003.0023

Crosbie, E., Schmidt, L., Krieger, J., & Nestle, M. (2023). Chapter 14: Sugar-sweetened beverages. In N. Maani, M. Petticrew, & S. Galea (Eds.), *The commercial determinants of health* (pp. 131–142). Oxford University Press. https://doi.org/10.1093/oso/9780197578742.003.0014

Cullerton, K., & White, M. (2023). Chapter 30: Understanding and managing corporate conflicts of interest. In N. Maani, M. Petticrew, & S. Galea (Eds.), *The commercial determinants of health* (pp. 307–318). Oxford University Press. https://doi.org/10.1093/oso/9780197578742.003.0030

Cunningham, R. (1996). *Smoke and mirrors: The Canadian tobacco war*. International Development Research Centre. https://idl-bnc-idrc.dspacedirect.org/bitstream/handle/10625/14226/IDL-14226.pdf?sequence=62&isAllowed=y

Fabbri, A., & Gilmore, A. B. (2023). Chapter 8: Industry influence on science: What is happening and what can be done. In N. Maani, M. Petticrew, & S. Galea (Eds.), *The commercial determinants of health* (pp. 69–77). Oxford University Press. https://doi.org/10.1093/oso/9780197578742.003.0008

Fooks, G. (2023). Chapter 17: The institutionalization of corporate power within policy. In N. Maani, M. Petticrew, & S. Galea (Eds.), *The commercial determinants of health* (pp. 164–175). Oxford University Press. https://doi.org/10.1093/oso/9780197578742.003.0017

Freudenberg, N., & Crosbie, E. (2023). Chapter 31: Teaching the commercial determinants of health. In N. Maani, M. Petticrew, & S. Galea (Eds.), *The commercial determinants of health* (pp. 319–329). Oxford University Press. https://doi.org/10.1093/oso/9780197578742.003.0031

Gilmore, A. B., & Dance, S. (2023). Chapter 11: Learning from 70 years of tobacco control: Winning the war and not just the battles. In N. Maani, M. Petticrew, & S. Galea (Eds.), *The commercial determinants of health* (pp. 98–110). Oxford University Press. https://doi.org/10.1093/oso/9780197578742.003.0011

Gómez, E. J. (2023). Chapter 5: Understanding the politics of the commercial determinants of health. In N. Maani, M. Petticrew, & S. Galea (Eds.), *The commercial determinants of health* (pp. 38–46). Oxford University Press. https://doi.org/10.1093/oso/9780197578742.003.0005

Hastings, G. (2012). Why corporate power is a public health priority. *BMJ*, *345*(7871), Article e5124. https://doi.org/10.1136/bmj.e5124

Hilton, S. (2023). Chapter 27: The influence of commercial industries on public discourse. In N. Maani, M. Petticrew, & S. Galea (Eds.), *The commercial determinants of health* (pp. 274–282). Oxford University Press. https://doi.org/10.1093/oso/9780197578742.003.0027

Kickbusch, I. (2012). Addressing the interface of the political and commercial determinants of health. *Health Promotion International*, *27*(4), 427–

428. https://doi.org/10.1093/heapro/das057

Lacy-Nichols, J., de Lacy-Vawdon, C., & Moodie, R. (2023). Chapter 21: Defining the commercial determinants of health. In N. Maani, M. Petticrew, & S. Galea (Eds.), *The commercial determinants of health* (pp. 209–220). Oxford University Press. https://doi.org/10.1093/oso/9780197578742.003.0021

Maani, N., Petticrew, M., & Galea, S. (2023). Chapter 1: Commercial determinants of health: An introduction. In N. Maani, M. Petticrew, & S. Galea (Eds.), *The commercial determinants of health* (pp. 3–6). Oxford University Press. https://doi.org/10.1093/oso/9780197578742.003.0001

Mialon, M., Anaf, J., & Baum, F. (2023). Chapter 32: Learning from experience: Identifying key intervention points around corporate practices to improve health. In N. Maani, M. Petticrew, & S. Galea (Eds.), *The commercial determinants of health* (pp. 330–340). Oxford University Press. https://doi.org/10.1093/oso/9780197578742.003.0032

Paichadze, N., Ilakkuvan, V., Gizaw, M., & Hyder, A. A. (2023). Chapter 16: Corporate social responsibility: Past, present, and future. In N. Maani, M. Petticrew, & S. Galea (Eds.), *The commercial determinants of health* (pp. 153–163). Oxford University Press. https://doi.org/10.1093/oso/9780197578742.003.0016

Pettigrew, S., & Jones, A. (2023). Chapter 15: Marketing. In N. Maani, M. Petticrew, & S. Galea (Eds.), *The commercial determinants of health* (pp. 143–152). Oxford University Press. https://doi.org/10.1093/oso/9780197578742.003.0015

Proctor, R. N. (2012). *Golden holocaust: Origins of the cigarette catastrophe and the case for abolition*. University of California Press.

Robinson, D. J. (2021). *Cigarette nation: Business, health, and Canadian smokers, 1930–1975*. McGill-Queen's University Press.

Stockwell, T., & Hobin, E. (2023). Chapter 10: Hidden from view: Alcohol industry efforts to keep the epidemic of alcohol-related harm from public awareness. In N. Maani, M. Petticrew, & S. Galea (Eds.), *The commercial determinants of health* (pp. 89–97). Oxford University Press. https://doi.org/10.1093/oso/9780197578742.003.0010

Tomes, N. (2023). Chapter 7: The role of corporations in influencing culture. In N. Maani, M. Petticrew, & S. Galea (Eds.), *The commercial determinants of health* (pp. 58–68). Oxford University Press. https://doi.org/10.1093/oso/9780197578742.003.0007

van Schalkwyk, M. C. I., & Cassidy, R. (2023). Chapter 13: The gambling industry: Harmful products, predatory practices, and the politics of knowledge. In N. Maani, M. Petticrew, & S. Galea (Eds.), *The commercial determinants of health* (pp. 120–130). Oxford University Press. https://doi.org/10.1093/oso/9780197578742.003.0013

van Schalkwyk, M. C. I., Maani, N., & Petticrew, M. (2023). Chapter 12: The fossil fuel industry: Fueling doubt and navigating contradiction. In N. Maani, M. Petticrew, & S. Galea (Eds.), *The commercial determinants of health* (pp. 111–119). Oxford University Press. https://doi.org/10.1093/oso/9780197578742.003.0012

Weible, C. M., & Cairney, P. (2021). *Practical lessons from policy theories*. Policy Press.

HEALTHY
POPULATIONS
JOURNAL

Infographic

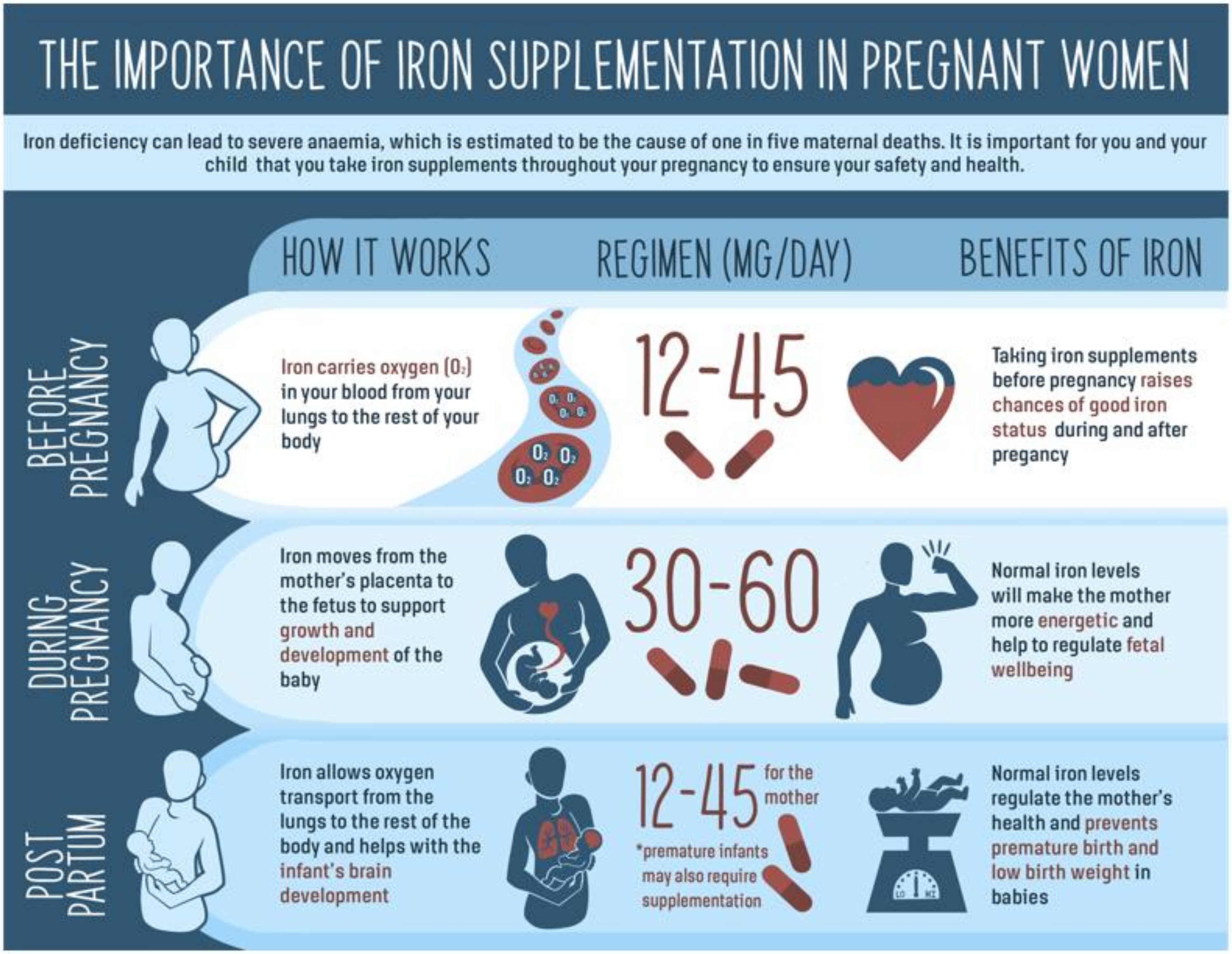
The Importance of Iron Supplementation in Pregnant Women

Abdullah Chanzu, BSc[1, 4]; Molly Wells, BSc[2, 4]; Natasha Vitkin, MPH, MSc[3, 4]; and Sarah Nersesian, MSc [1,4]
[1] Faculty of Medicine, Dalhousie University
[2] Faculty of Science, Dalhousie University
[3] Faculty of Health Sciences, Simon Fraser University
[4] Designs that Cell, Halifax, Nova Scotia, Canada

DOI: 10.15273/hpj.v3i2.11552

Abstract

Iron supplementation is an important treatment for pregnant people with iron deficiency anemia. For this reason, we designed and created an evidence-based infographic with accessible fonts, pictograms, and language. This tool serves as a framework for the potential of visual communication tools in the context of improving medication and treatment adherence. Various sources were utilized to derive information on a suggested iron intake regimen; however, we encourage individuals to consult with their primary care providers in order to establish the ideal regimen for them, adjusted to unique individual factors.



THE IMPORTANCE OF IRON SUPPLEMENTATION IN PREGNANT WOMEN

Iron deficiency can lead to severe anaemia, which is estimated to be the cause of one in five maternal deaths. It is important for you and your child that you take iron supplements throughout your pregnancy to ensure your safety and health.

	HOW IT WORKS	REGIMEN (MG/DAY)	BENEFITS OF IRON
BEFORE PREGNANCY	Iron carries oxygen (O_2) in your blood from your lungs to the rest of your body	12-45	Taking iron supplements before pregnancy raises chances of good iron status during and after pregancy
DURING PREGNANCY	Iron moves from the mother's placenta to the fetus to support growth and development of the baby	30-60	Normal iron levels will make the mother more energetic and help to regulate fetal wellbeing
POST PARTUM	Iron allows oxygen transport from the lungs to the rest of the body and helps with the infant's brain development	12-45 for the mother *premature infants may also require supplementation	Normal iron levels regulate the mother's health and prevents premature birth and low birth weight in babies

Three main points were chosen as the focus of the infographic – the primary functions of iron in the body (Iron needs of babies and children, 2007; Cao & Fleming, 2016); a recommended iron supplementation regimen (Iron needs of babies and children, 2007; Institute of Medicine, 2001; Peña-Rosas et al., 2012); and the benefits iron (Viteri & Berger, 2005; Institute for Quality and Efficiency in Health Care, 2009; Abu-Ouf & Jan, 2015; Allen, 2000). We broke the information down into three critical time periods encompassing pregnancy – before pregnancy, during pregnancy, and postpartum. We then designed custom illustrations to visually represent information and accompanied these pictograms with complimentary text to create our resulting infographic.

References

Abu-Ouf, N. M., & Jan, M. M. (2015). The impact of maternal iron deficiency and iron deficiency anemia on child's health. *Saudi Medical Journal, 36*(2) 146-149. https://doi.org/10.15537/smj.2015.2.10289

Allen, L. H., (2000). Anemia and iron deficiency: Effects on pregnancy outcome. The American Journal of Clinical Nutrition, 71(5), 1280S-1284S. https://doi.org/10.1093/ajcn/71.5.1280s

Cao, C., & Fleming, M. D. (2016). The placenta: the forgotten essential organ of iron transport, *Nutrition Reviews*, *74*(7), 421–431. https://doi.org/10.1093/nutrit/nuw009

Institute of Medicine. (2001). *Panel on Micronutrients.* Washington, DC: National Academies Press. https://www.ncbi.nlm.nih.gov/books/NBK222310/

Institute for Quality and Efficiency in Health Care. (2009). *Pregnancy and birth: Do all pregnant women need to take iron supplements?* Cologne, DE: InformedHealth.org. https://www.ncbi.nlm.nih.gov/books/NBK279574/

Iron needs of babies and children. (2007). *Paediatrics & Child Health*, *12*(4), 333 -334. https://doi.org/10.1093/pch/12.4.333

Peña-Rosas, J. P., De-Regil, L. M., Dowswell, T., & Viteri, F. E. (2012). Daily oral iron supplementation during pregnancy. *Cochrane Database of Systematic Reviews, 12*, CD004736. https://doi.org/10.1002/14651858.CD004736.pub4

Viteri, F. E., & Berger, J. (2005). Importance of pre-pregnancy and pregnancy iron status: can long-term weekly preventive iron and folic acid supplementation achieve desirable and safe status? *Nutrition Reviews, 63*(12, Pt. 2), S65-76. https://doi.org/10.1301/nr.2005.dec.s65-s76

Acknowledgements

Thank you to all the reviewers, authors, and readers of HPJ!

A special thank you to Dr. Sara Kirk and Gillian Ritcey at HPI for their continued support of HPJ.

Funding Support

Healthy Populations Institute

Dalhousie Research Centres and Institutes
Next Wave Fund

Canadian Association for Health Sciences and Policy
Research Student Working Group

Interested in publishing with HPJ?

Please visit **https://ojs.library.dal.ca/hpj/** to see current calls for submissions for upcoming issues and general submission guidelines.

Email us at **HPJ@dal.ca**

Follow us on Twitter **@DalHPJ**