

The Official Journal of the Canadian Council of Cardiovascular Nurses
La revue officielle du Conseil canadien des infirmières et infirmiers en soins cardiovasculaires

Canadian Journal of Cardiovascular Nursing

Revue canadienne de soins infirmiers cardiovasculaires

VOLUME 34, ISSUE 1 • SPRING 2024
eISSN: 2368-8068

Canadian
Council of
Cardiovascular
Nurses



Conseil canadien
des infirmières et
infirmiers en soins
cardiovasculaires





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CCCN Annual Spring Conference

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May 24 & 25, 2024
Calgary, Alberta

Calgary Marriott Downtown Hotel

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2 Editorial Board

ARTICLES

6 Complex Experiences of Cardiac Rehabilitation Utilization in Individuals with Heart Disease

Nassim Adhami, PhD, RN, Sally Thorne, PhD, RN, Alison Phinney, PhD RN, Richard Sawatzky, PhD, RN, & Patricia Rodney, PhD, RN

13 Development of a Measure of Adherence to Best Practice Guidelines by Interprofessional Teams with Nurse Practitioners in the Cardiac Surgery Setting

Li-Anne Audet, RN, MSc, PhD(c), Mélanie Lavoie-Tremblay, RN, PhD, Éric Tchouaket, PhD, & Kelley Kilpatrick, RN, PhD

22 Primary Care for Individuals with Obesity: A Critical Overview and Recommendations

Ann E. Broadberry, RN, MSN, NP(F), Martha McKay, PhD, RN, CCN(C), Mary T. Kelly, MA, & John L. Oliffe, PhD, RN, MEd

Canadian Journal of Cardiovascular Nursing

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Publishing

The *Canadian Journal of Cardiovascular Nursing* is published three times per year by the Canadian Council of Cardiovascular Nurses (CCCN).

This is a refereed journal concerned with health care issues related to cardiovascular health and illness. All manuscripts are reviewed by the editorial board and selected reviewers. Opinions expressed in published articles reflect those of the author(s) and do not necessarily reflect those of the Board of Directors of CCCN or the publisher. The information contained in this journal is believed to be accurate, but is not warranted to be so. The CCCN does not endorse any person or products advertised in this journal. Produced by Pappin Communications, Cobden, Ontario.

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Indexing

The *Canadian Journal of Cardiovascular Nursing* is indexed in EBSCO.
eISSN: 2368-8068

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Editorial

Spring is the time of plans and projects.

—Leo Tolstoy

The winter of 2023 is finally behind us! One thing we know for sure: Spring is in the air! Leo Tolstoy said it best, as spring is often a time for plans and projects! In this issue, there are several examples of opportunities to make new plans and start new projects! First, the Annual CCCN Spring Conference is just around the corner! We hope you are making plans to attend this year's meeting of the cardiovascular nursing minds in Calgary, AB, in May! Second, if you have not already heard about the upcoming CJC/CJCCN collaborative journal issue, please consider how you can contribute to this joint effort by submitting a paper on a project you have been a part of that may be relevant to both cardiovascular and critical care nurses! Third, plan to become more active in CCCN! There are so many ways to be a part of this amazing community of cardiovascular nurses! From my perspective, as the CJC/CJCCN editor, I would enthusiastically

welcome those of you who may be interested in the role of associate editor or a guest reviewer. Please read on for further details on all of these great potential plans and projects for the spring of 2024!!

In this issue of the CJC/CJCCN, we are pleased to publish three novel projects on diverse cardiovascular populations. Nassim Adhami and colleagues share their qualitative findings of the complex experiences of cardiac rehabilitation utilization in individuals with heart disease. Li-Anne Audet and co-authors share their journey in developing a measure of adherence to best practice guidelines by interprofessional teams with NPs in the cardiac surgery setting. Finally, Ann Broadberry and associates share their critical overview of current evidence on obesity management and best practice in the primary care setting.

Happy reading!

Jo-Ann V. Sawatzky RN, PhD
Editor & Chief, CJC/CJCCN

OPPORTUNITY

Associate Editors & Guest Peer Reviewers for the Canadian Journal of Cardiovascular Nursing

We are currently seeking **Associate Editors** and **Guest Peer Reviewers** for the *Canadian Journal of Cardiovascular Nursing* (CJC/CJCCN). Required qualifications include

- at least 5 years of cardiovascular nursing experience
- a current CCCN membership
- a minimum of master's preparation
- experience in publishing in peer-reviewed journals

We encourage qualified nurses to consider these rewarding roles. Experience reviewing manuscripts is preferred for the Associate Editor role. The Guest Peer Reviewer role is an ideal way to gain experience reviewing manuscripts, with guidance and support from the Editor. Guest peer reviewers should possess subject-matter expertise in the topic of the paper to be reviewed.

This is an opportunity to learn and grow, and to share your knowledge and expertise in the area of cardiovascular nursing scholarship and publishing! For further information on these opportunities to participate in the CJC/CJCCN publication process, please contact CCCN Director of Publications & CJC/CJCCN Editor, Dr. Jo-Ann Sawatzky at joanne.sawatzky@umanitoba.ca

OPPORTUNITÉ

Rédacteurs adjoints et évaluateurs invités pour la Revue canadienne de soins infirmiers cardiovasculaires

Nous sommes actuellement à la recherche de rédacteurs adjoints et d'évaluateurs invités pour la revue canadienne de soins infirmiers cardiovasculaires. Les qualifications requises pour ces postes sont les suivantes

- Au moins 5 ans d'expérience en soins infirmiers cardiovasculaires
- Être membre en règle du Conseil canadien des infirmières et infirmiers en soins cardiovasculaires
- Préparation à la maîtrise, au minimum
- Avoir publié dans des revues évaluées par les pairs

Nous encourageons les infirmières et infirmiers qualifiés à envisager ces rôles enrichissants. De l'expérience avec la révision de manuscrits est préférable pour le poste de rédacteur adjoint. Le rôle d'évaluateur invité est un moyen idéal d'acquérir de l'expérience dans la révision de manuscrits, avec les conseils et le soutien de la rédactrice en chef. Les évaluateurs invités doivent posséder une expertise dans le domaine du manuscrit à évaluer.

C'est une occasion d'apprendre et de développer ses compétences professionnelles, et de partager vos connaissances et votre expertise dans le domaine de la recherche et de l'écriture en soins infirmiers cardiovasculaires. Pour obtenir de plus amples renseignements sur ces postes, veuillez communiquer avec la directrice des communications et rédactrice en chef de la RCSIC, D^{re} Jo-Ann Sawatzky, à l'adresse joanne.sawatzky@umanitoba.ca.

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**Canadian Journal of Cardiovascular Nursing (CJCN)
&
Canadian Journal of Critical Care Nursing (CJCCN)**

**invite submissions for a Special Collaborative Theme Issue:
*Cardiovascular & Critical Care Nursing: Connections to Care***

The CJCN & CJCCN are pleased to announce the call for papers for a special collaborative theme issue on cardiovascular and critical care nursing. We invite researchers, clinicians, educators, students, and administrators to consider submitting short reports on novel research projects, knowledge synthesis, or non-research clinical practice, education, or administrative papers (e.g., case reports, QI projects) related to cardiovascular and critical care.*

* Accepted papers will be published in a theme issue of the CJCN & CJCCN.

Deadline for submissions: June 1, 2024

Criteria for all submissions:

- Page limit: max 15 double-spaced pages [including title page];
- Abstract: maximum 200 words;
- APA 7th edition formatting required
- For all other submission criteria, follow the Author Guidelines for the CJCN (<https://cccn.ca/journal/author-guidelines>) or CJCCN (<https://cjccn.ca/aim-scope-guidelines-for-authors/>) for research/non-research papers (note: please specify in your cover letter which of these Author Guidelines were followed).

*Potential novel topic areas common to cardiovascular and critical care nurses:

- advances in cardiac assessment
- advanced/novel arrhythmias
- advances in organ support
- support/initiatives for inclusion of family
- initiatives or research directed toward care of diverse populations
- models of care across the cardiovascular/critical care continuum.

*Please direct queries/submissions to Dr. Jo-Ann Sawatzky, CJCN Editor-and-Chief at joanne.sawatzky@umanitoba.ca

Notice CCCN Annual General Meeting

Date: Friday, May 24, 2024

Time: 12:40–13:00

Location: Calgary Marriott Downtown Hotel

Call for Resolutions for the 2024 CCCN Annual General Meeting

Resolutions are invited for discussion at the 2024 annual general meeting of CCCN. Members wishing to propose a Resolution must have it typed and signed by at least two other members. If the president and the secretary agree that the Resolution is appropriate, it shall be included with the names of the mover and seconder in the agenda for the meeting. At the annual meeting, a member proposing a Resolution, or the proposer's appointed representative, will be asked to clarify the background to the Resolution, if necessary, and to formally move acceptance of the same. Please submit Resolutions to CCCN by April 28, 2024.

Format for Submitting Resolutions

The Resolution has two parts; first the 'preamble' and then the 'resolved'. Please provide the name and address of each of the individuals participating in the submission of the Resolution. The following example is provided for your guidance. Preamble—'WHEREAS' smoking is a known risk factor related to the development and progression of cardiovascular disease; BE IT RESOLVED—that no smoking be permitted in any business meeting or scientific symposia hosted by the Council.

Submitted by:

Mover: _____

Address: _____

Secunder: _____

Address: _____

Secunder: _____

Address: _____

Date: April 28, 2024

Avis Assemblée générale annuelle du CCIISC

Date : Vendredi, 24 mai, 2024

Heure : 12 h 40– 13 h 00

Lieu : Hôtel Marriott Calgary Centre-ville

Appel de résolutions pour l'assemblée générale annuelle du CCIISC de 2024

Nous vous invitons à nous faire parvenir vos résolution pour qu'elles puissent être discutées à l'occasion de l'assemblée générale annuelle du CCIIS de 2024. Les membres qui veulent présenter une résolution doivent la faire signer par au moins deux personnes. À l'assemblée générale annuelle, les membres proposant une résolution ou leur représentant(e) seront priés de donner le contexte de la résolution et, au besoin, de présenter une motion en à bonne et due forme pour son acceptation. La présidente et la secrétaire se réservent le droit de décider du bien-fondé des résolutions proposées, compte tenu des statuts du Conseil et de tout autre élément qui risque de compromettre la validité de la résolution. Veuillez soumettre vos résolutions au CCIISC avant le 28 avril, 2024.

Format de présentation des résolutions

La résolution comporte deux parties, d'abord le "Préambule", puis la partie qui commence par "Il est résolu que". Veuillez fournir le nom et l'adresse de chaque personne participant à la soumission de la résolution. Voici un exemple dont vous pourrez vous inspirer : Préambule—Attendu que l'on sait que l'usage de la cigarette est un facteur de risque lié à l'apparition et à la progression des maladies cardio-vasculaires, IL EST RÉSOLU QUE—L'usage de la cigarette sera interdit à l'occasion des réunions d'affaires et des colloques scientifiques du Conseil.

Soumis par :

Motionnaire : _____

Adresse : _____

Co-motionnaire: _____

Adresse : _____

Co-motionnaire : _____

Adresse : _____

Date : le 28 avril, 2024

Complex Experiences of Cardiac Rehabilitation Utilization in Individuals with Heart Disease

Nassim Adhami, PhD, RN¹, Sally Thorne, PhD, RN¹, Alison Phinney, PhD RN¹, Richard Sawatzky, PhD, RN², and Patricia Rodney, PhD, RN¹

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Abstract

Background: Cardiac rehabilitation (CR) is underutilized in Canada. Little is known about individuals' experiences with CR programs and the social contexts that shape program participation.

Purpose: To explore individuals' experiences with using CR programs.

Methods: We conducted an interpretive description study. Data analysis involved thematic analysis.

Results: Participants' ($N = 19$) concerns centred around three themes: finding a way to get into the program; making this work; and the appropriateness of the program.

Conclusion: Participants' experiences in CR programs involve challenges related to their personal lives, healthcare provider referral practices to CR programs, and the structure of these programs.

Implications for Practice: There is a need for harmonized CR program referral systems that allow for better connection between specialty care and primary care. CR programs must emphasize patient education, interpersonal communication, and relational practice to enhance the trust of CR participants. Cardiovascular nurses can play a pivotal role in achieving these outcomes.

Keywords: cardiac rehabilitation, transitions of care, patient experiences, qualitative

Adhami, N., Thorne, S., Phinney, A., Sawatzky, R., & Rodney, P. (2024). Complex Experiences of Cardiac Rehabilitation Utilization in Individuals with Heart Disease. *Canadian Journal of Cardiovascular Nursing*, 34(1), 6–11.

Key Highlights

- Many individuals with HD still experience challenges with obtaining referrals for, and participating in CR programs. Provincially based harmonized referrals are needed to ensure that patients across all geographic locations of a province obtain referrals.
- Individuals enrolled in CR programs may experience multiple intersecting challenges within their personal lives that impact their program participation.
- Cardiovascular nurses can play an important role in optimizing CR program utilization by advocating for strategies that have an intersectional lens.

Introduction

Heart disease (HD) is a global health issue (Roth et al., 2020). It is associated with debilitating signs and symptoms, decreased quality of life (QoL), and increased risk for mortality for individuals living with the disease (McGregor et al., 2020). Outpatient cardiac rehabilitation (CR) programs contribute to decreased morbidity and mortality and increased QoL in individuals with HD (Cowie et al., 2019; McGregor et al., 2020; Taylor et al., 2019). However, despite convincing evidence of the benefits, globally, CR programs continue to be underutilized (Borg et al., 2019; Grace et al., 2021). Specific to Canada, the most

recent, comprehensive data available indicate utilization rates of 30% to 50% (Grace et al., 2016).

There are numerous barriers to program participation, which occur at the referral, CR program, and individual levels (Grace et al., 2021). At the referral level, referral to a program (Ghisi & Grace, 2019) and encouragement by in-hospital physicians is central to subsequent program participation (Ivers et al., 2020). To date, there is a paucity in research that has explored the impact of nursing at the referral level. At the program level, barriers include the costs of CR programs and program hours (Sérvio et al., 2019). At the individual level, women, older adults, increased distance of home residence to a CR program, lower income, and increased number of comorbidities are barriers to program enrolment and adherence (Brouwers et al., 2021; Mathews & Brewer, 2021; Ruano-Ravina, et al., 2016).

Studies exploring the experiences of individuals participating in CR programs are limited. Furthermore, few studies have examined the connections, or intersections, between the different factors at the referral, CR program, and individual levels and their cumulative impact on program participation. Exploring individual experiences and the intersections and cumulative impact of various factors associated with CR program participation, is essential to inform the development and delivery of services that are accessible, effective, and meet their needs.

Aim and Methods

The purpose of this study was to explore how the intersections of (1) the contexts of the healthcare delivery; (2) the social contexts of individuals' lives; and (3) participants' navigation through their chronic illness journey shape their experiences within a centre-based (i.e., in-person) CR program.

Design

We conducted a qualitative study to explore participants' experiences within a centre-based CR program. We employed interpretive description, an approach appropriate to the knowledge needs of the applied practice disciplines, and which allows for the use of different qualitative methods (e.g., interviews, focused groups, participant observations) to answer clinically-rooted exploratory research questions (Thorne, 2016).

In this study we drew on the theoretical lens of intersectionality. Intersectionality is a term that was coined in Kimberlé Crenshaw's seminal work in 1989 and 1991 to highlight how human beings are impacted by the interactions between their social locations (i.e., age, gender, sexuality, 'race'/ethnicity, class, geography), which, in turn, take place within connected systems and structures of power (i.e., laws, policies, institutions) (Crenshaw, 1989; Crenshaw, 1991). While intersectionality has been applied in a variety of disciplines, including sociology, psychology, and nursing (Collins, 2019, Gkiouleka et al., 2018), to date, this concept has been overlooked in the realm of CR program research. As well, previous studies have only examined factors that impact program utilization in isolation from one another. However, intersectionality enabled us to explore the simultaneous interactions between factors (e.g., sex, gender, socioeconomic status, geographic location of home residence) that influence individual experiences with CR programs.

In this study, we drew on Collin's (2019) six core constructs of intersectionality: (1) relationality (i.e., exploring the relational processes that give meaning and power to certain social positions over others); (2) power (i.e., examining how power relations can lead to social divisions between different categories); (3) social inequality (i.e., highlighting processes by which power relations result in social inequalities); (4) social context (i.e., the relationship of the researchers with the distinct social context of the study participants); (5) complexity (i.e., the need for drawing on multiple lenses and methods of data collection to capture the connectedness of the different categories); and (6) social justice (i.e., attention to intersectionality's commitment to social justice). According to Collins (2019), any or all of the core constructs can be applied in any given inquiry grounded in intersectionality.

Sample and setting

Purposive sampling, in which participants are recruited based on their ability to provide rich data to answer the research question (Polit & Beck, 2022) was used. Participants were eligible if they (1) were 19 years of age or older; (2) had a diagnosis of HD; (3) spoke English; and (4) were able to provide informed consent. Being guided by interpretive

description and the core intersectionality construct of 'relationality,' recruitment continued until we achieved a heterogeneous sample. We aimed to recruit participants with diverse sociodemographic characteristics (e.g., age, self-identified gender, and ethnicity), the origin of the CR program referral (e.g., from an acute care physician versus a community physician), the number of CR sessions attended, and the participants' previous participation in a CR program. All patients admitted to an adult 25-bed general cardiac step down unit, a 25-bed cardiac surgery step down unit, or taking part in a CR program located within a tertiary hospital in British Columbia, Canada between 2018 and 2020 were given the opportunity to enrol in the study.

Data collection and analysis

Research ethics approval for this study was obtained through the University of British Columbia's Behavioural Research Ethics Board (certificate H16-00339). Participants provided written informed consent prior to data collection. Semi-structured, face-to-face individual interviews were conducted by the lead author (NA) in a private and quiet location chosen by the participants (e.g., a pre-booked private room at a CR program facility or a library). Interviews ranged from 60 to 90 minutes, were audio recorded and transcribed verbatim by the lead author (NA). Participants were interviewed once.

An interview guide (see Table 1) was developed to explore the experiences and perspectives of participants related to their participation in a centre-based (in-person) CR program. Interview questions included broad open-ended questions asking participants to speak to any aspect of their participation that was important to them, including facilitators and challenges to their participation that were operating at the personal, healthcare

Table 1

Interview Guide

1. Program journey: Take some time to think about what it was like for you when you used the cardiac rehabilitation program. Can you tell me what your experience was like?
2. Decision to use program: Now, I'd like to understand how you came to the decision to use the program (or not to use the program). Can you please tell me about your decision process?
 - A. Prompts for question 2
 - Prompts:
 - I. What factors facilitated your decision to use the program?
 - II. What factors challenged your decision to use the program?
3. Program challenges: Now, I'd like to get a picture of the types of challenges that you experienced related to using a cardiac rehabilitation program. Tell me about the main challenges that you struggled with when you were undergoing the program.
 - A. Prompts for Question 3
 - Prompts:
 - I. Related to when the program started in relation to when you were discharged home from the hospital?
 - II. Related to the physical space of the program?
 - III. Related to having to exercise in the same physical space as other patients?
4. Can you tell me about some factors that you believe facilitated your ability to engage with the program?

provider, and CR program levels. Questions also included more focused open-ended questions asking about their experiences with the referral, enrollment, and weekly exercise sessions.

Data collection and analysis took place concurrently, with each iteratively informing the other. Data analysis drew on guidance from thematic analysis (Braun & Clarke, 2006), and NVivo™ software was used to organize and manage data. Two of the authors (NA and PR) met regularly to discuss each interview transcript and the coding decisions. All transcripts were read several times to ensure familiarity with the data. Initial codes were descriptive labels generated from the emerging analysis and assigned to broad data segments. Potential themes were developed through the process of examining the material within and between these descriptive coding groups before refining the organization and [re]assigning further data. All authors (NA, ST, AP, RS, and PR) met to review and refine the initial themes to ensure that they accurately represented the data set and addressed the overarching research question.

Data collection concluded when the data reflected experiences across all milestones of the CR program (i.e., referral, enrollment, adherence, and completion) and included diverse social and contextual factors, (i.e., various sociodemographics including age, gender, ethnicity, relationship status, occupation), and when sufficient information was gathered to discern patterns and themes within the data set. Guided by the key assumptions of intersectionality, no specific social identity category was considered more important than the other (e.g., gender versus ethnicity) (Gkiouleka et al., 2018). In addition, based on intersectionality’s core constructs of ‘relationality’, ‘power’, and ‘social inequality’, the analysis process included a critical lens for examining the multidimensional and relational aspects of individual’s social locations and their experiences with a CR program.

Results

We recruited 19 participants. Sociodemographic data, HD diagnoses and duration of diagnoses, and where participants were situated within the course of their CR program were elicited from the participants (see Tables 2 & 3). Overall, more than half of the participants had a diagnosis of HD for less than one year ($n = 10$; 53%), with coronary artery disease being the most common diagnosis ($n = 11$, 58%). A majority of the participants were within the weekly exercise sessions ($n = 16$, 84%). The mean age was 63 years and ages ranged from 42 to 83 years; eight were men and 11 were women.

The data generated three overarching themes, which described the various influencing factors reported by participants and how those factors interplayed with one another in shaping each level of their CR program experiences. These themes included (1) finding a way to get into the program; (2) making this work; and (3) the appropriateness of the program.

Finding a way to get into the program

Being referred to a CR program is the first step in the CR program utilization journey. Currently, at our study site,

Table 2

Sociodemographic Characteristics of Participants

Demographics	Participants # (%)
Age (Years), n (%)	
40–49	2 (10)
50–59	4 (21)
60–69	7 (37)
70–79	3 (16)
80–89	3 (16)
Age, Mean, Years	63
Self-Identified Gender, n (%)	
Man	8 (42)
Woman	11 (58)
Employment Status, n (%)	
Retired	13 (68)
Disability Leave	3 (16)
Employed – Full Time	3 (16)
Relationship Status, n (%)	
Married	14 (74)
Widowed/Divorced & Living Alone	5 (26)
Self-Identified Ethnicity, n (%)	
Asian	5 (26)
American	2 (11)
Canadian	8 (42)
Indigenous	1 (5)
South East Asian	3 (16)
Heart Disease Diagnosis, n (%)	
Heart Failure	4 (21)
ARVC, SCAD	2 (10)
CAD	11 (58)
Aortic Stenosis	2 (11)
Time Since HD Diagnosis, n (%)	
< 1 Year	10 (53)
1–5 Years	3 (16)
5–10 Years	4 (21)
>10 years	2 (10)

Note. ARVC = Arrhythmogenic Right Ventricular Cardiomyopathy; CAD = Coronary Artery Disease; SCAD = Spontaneous Coronary Artery Dissection

Table 3

Patient Location Within Cardiac Rehabilitation (CR) Program Stages

CR Program Location	Participants
Referral Stage, n (%)	1 (5)
Intake Stage, n (%)	1 (5)
Weekly Exercise Sessions, n (%)	16 (84)
Completed Program	1 (5)
Participating in a Second CR Program, n (%)	2 (11)
Previously Completed Another CR Program, n (%)	1 (5)
Previously Quit a CR Program, n (%)	1 (5)

automatic referral systems have been established to ensure the referral of all patients to a CR program post-discharge from our inpatient cardiac care facility. However, participants' narratives highlighted multiple, complex, and intersecting influencing factors at the organizational and personal levels that challenged their ability to obtain a referral.

In this study, participants who received specialized inpatient cardiac care in hospitals that were outside their own health authority were not able to obtain an automatic referral to a CR program. Instead, they had to seek a referral from their own community healthcare professionals (HCPs). The following narrative demonstrates the multiple intersecting factors that challenged one participant's experience of obtaining a CR referral:

They [discharging HCPs] said that you need to make an appointment with your GP ... which we did. That you should get into the cardiac rehab program in [district of home residence]. So when we went to go to talk to our GP, he said that you need to fill out the papers, and of course he was upset because he didn't want to do the paper work... If we had not done all the work for the system, we wouldn't have been here. [Participant 13, male, 62]

The referral practices of community HCPs, including their perceived 'unwillingness' to make referrals to a CR program, or their perceived lack of knowledge of the benefits of the program were emphasized by all of the participants who had to obtain their own referral ($n = 3$). The need to be self-directed by persistently asking for a referral, initiating their own referral process paperwork, and/or advocating for the benefits of the program were highlighted throughout the accounts.

How much knowledge the individual participants had regarding the existence and benefits of CR programs was also an important influence on their ability to overcome the challenge of not having had a referral.

I think that many of the healthcare providers... do not even know about cardiac rehab. My partner and I are lucky that we know so much and we can fight for what we need. When I tell [others] that I go to CR, their jaws drop. They envy me because they wish that they could be involved in the program. But they never get sent by their doctors... For one thing, I know a lot about my condition. I know what I need, and I know where to go. [Participant 1, female, 67]

The need to work to meet the financial demands of family and personal life or caregiving responsibilities, such as childcare, were factors within the personal lives of participants that further challenged the ability of many to obtain a referral. These extra demands meant that they were less able to pursue CR.

I don't know why we didn't do it [seek a referral]... We had two small kids at that time [the first time the participant was hospitalized for his heart condition]... I just went back to work three days later [after hospital discharge]. Now I can do this. I am retired. My kids are out. [Participant 13, male, 62]

While patients who relocated during their cardiac care journey faced added challenges, those who stayed within the same health region for all of their cardiac care also experienced challenges with getting into a CR program.

When I went home, I waited and waited. I think that months went by, but nobody called me. So I decided to call myself. They told me that they never got papers for me... If I had not taken measures into my own hands, I would still not be in the program. [Participant 2, male, 76]

Making this work

Attending weekly exercise sessions was challenging for most participants, as they had to manage various aspects of their personal lives to be able to 'make their CR program work'. Needing to work to meet their financial needs was a dominant narrative among all study participants who were working at the time of their program. Their accounts explained the ways in which work obligations hindered their ability to participate in a program. As one explained, "My number one priority right now is to work, to put food on my family's table... I can't afford to miss any more work-time... There's no way I can manage to do this program." [Participant 17, male, 54].

Managing caregiving responsibilities was another complexity that participants had to overcome. Intersecting factors that challenged their CR utilization in this respect included the structure of the family unit and the cultural and financial circumstances of the family.

It's all on me. In my culture, the women stay home and cook and clean and stay with the kids. The men work hard outside. It's bad for the husband to do housework... We don't have the money to hire the extra help. As you can imagine, it's hard for me to find the time to go to my classes. [Participant 12, female, 52].

Several participants ($n = 4$) also referred to the degree to which their symptoms of HD impacted their ability to utilize a CR program.

There are days that I need to be dragged to go. Some days I feel extremely tired and I have aches and pain everywhere... But if my daughter finds out, she will physically come to my house and drag me out of bed, and take me. [Participant 9, female, 73]

These participants reflected on days when HD symptoms were exacerbated and challenged their ability to attend weekly CR sessions. Two participants remarked that having a social support network was a facilitating factor for being able to attend CR sessions during days when HD symptoms are exacerbated. Others decided not to attend weekly CR sessions during symptom exacerbations; "I have days that I just can't get out of bed. With the swelling of the ankles, the water in my abdomen, the shortness of breath. ... I just put off my exercise and wait till the pills work." [Participant 8, male, 68].

The appropriateness of the program

It was apparent across the accounts of the participants in this study that the experiences of attending weekly CR sessions were shaped by the perceived fit between personal needs and the content covered in CR sessions. Many ($n = 7$) participants reported a central misalignment between the content of the information sessions and their individual needs.

A lot of them [education sessions] don't relate to me. I don't have high cholesterol. I don't have high blood pressure... I have arrhythmia. So, they are not relatable. But they still talk about cholesterol and all these things... Let's talk about fear. Let's talk about vulnerability after a heart event. Let's talk about educating your family practitioner! [Participant 7, female, 42]

Participants also pointed to the importance of the quality and extent of their engagement with the HCPs delivering the CR.

I think that the relationship you have with the staff at the program is extremely important... I feel welcomed... It's their holistic approach... They know me. They don't just know my chart... They are empowering me, they are with me, they are walking along my side. It's something that I look forward to. That's important. Trusting the people that take care of you. [Participant 7, female, 42]

The importance of the quality of relationships between participants and CR HCPs was also highlighted when this participant compared her current experience with what had occurred in another program that she ultimately quit. As she explained: *"The interaction just reinforced that vulnerability that I was too sick to exercise. And, as result, I actually don't go there because I don't feel they can care for me. I don't feel safe."*

This participant was not alone in worrying about personal safety. The accounts of other participants also highlighted their need to feel safe to exercise after having a cardiac event as a key influence upon their experience. For example, one participant described postponing his CR exercise sessions because of his fear that he would experience another cardiac arrest; *"I went for my first exercise appointment five weeks after the day that I originally had to start. I brought up many excuses for not going. But really I was scared to exercise."* [Participant 4, male, 68]

However, some participants who did experience fear of exercise following a cardiac event ultimately found a sense of safety from the opportunity to have access to trusted HCPs within the CR program. As one explained, *"I couldn't exercise. I couldn't move because of fear... I do feel safe doing it here... I don't have it in the back of my head, what if I crash?"* [Participant 11, female, 53]

The nature and quality of engagement with the other participants in the CR program were also featured in many of these narratives. On the one hand, exercising in a group setting made some study participants question the appropriateness of the program for them, as they were not able to relate to the age

and/or physical capabilities of the other CR participants. As one explained, *"At the beginning I felt embarrassed going to the exercises. It was weird exercising with older people, some of which had to use a cane... I felt ashamed to tell my buddies that I was in the program."* [Participant 18, male, 47]

For other study participants, being able to relate to other CR participants was a positive influence on their experience. As one expressed it, *"I enjoy exercising with other people in the program. They are a pleasure. But mostly, just seeing how well they are doing, and how far they have come gives me a sense of relief and hope."* [Participant 5, female, 58]

Discussion

This study was the first to explore individuals' experiences with using CR programs, and to use an intersectional lens to examine the intersections of social contexts that shape program participation. Overall, the findings of our study highlighted that participants' experiences with a CR program were shaped by multiple influences at the CR program and personal levels that impacted their ability to obtain a referral and to enrol and participate in the program. These findings contribute to our understanding of factors that impact the centre-based CR program experience and provide insights that may inform implementation of new and existing programs.

In this study, multiple and intersecting factors impacted the participants' ability to obtain a referral. While low referral rates are associated with low utilization rates, automatic systematic referral strategies have been shown to increase referral (Brouwers et al., 2021). Previous to our study, an automatic referral system had been implemented within some health authorities in BC; however, this process did not guarantee a referral for all patients. Those living in smaller cities or rural/remote locations and who required specialized care in tertiary care hospitals were often unable to benefit from automatic referrals. Intersecting factors, including the participants' perceptions of the unwillingness of community HCPs to make referrals, and a lack of knowledge of the benefits of CR programs among community HCPs also challenged the process of getting a referral. The ability of a participant to obtain program referral from a community HCP was further impacted by their own knowledge of CR programs and their ability to allocate time to their health in the context of demands of personal life (e.g., having to return to work). These findings clearly illuminated how program participation barriers that have been reported in previous empirical studies (Brouwers et al., 2021; Mathews & LaPrincess, 2021) can intersect with one another in creating challenges for participants. These factors highlight the need to develop harmonized systematic referral engines to decrease disparities in referrals for individuals across the geographic regions of a province such as BC. Furthermore, these findings highlight the need to incorporate multifaceted strategies for referral that will decrease disparities. A study by Grace and colleagues (2011) highlights the importance of combining

strategies for referral to include automatic referral engines, electronic record prompts for referrals, and a liaison responsible for patient education about CR prior to discharge.

For the participants in this study, the ability to engage in weekly CR sessions was shaped by multiple coexisting forces, such as having to work to make ends meet, attending to social/family responsibilities (e.g., caregiving), and needing to navigate the days when HD symptoms were exacerbated. This observation lends support for a previous study (Chindhy et al., 2020) that also found work and family responsibilities and increased number of HD symptoms to be barriers to program uptake. These findings also highlight why home-based programs may help participants overcome some of the personal challenges to program uptake (Chindhy et al., 2020). On the other hand, many participants in this study reported a sense of safety when exercising with a group and in the presence of a trusted HCP. These findings highlight the importance of providing opportunities for both centre-based and hybrid-based (i.e., programs that encompasses both synchronous, real-time audiovisual and asynchronous, remote) programs that are able to meet the individual needs of participants (Keteyian et al., 2022).

The experiences of weekly CR sessions were also influenced by the fit between the participants' perceived personal needs and what the program offered, including the content of the weekly information sessions, relationships with HCPs, and their feelings of safety within the program. These findings are consistent with a fairly recent empirical study that pointed to the importance of educational content of CR programs being relevant to patient needs (Nascimento et al., 2021). Therefore, our findings support the need for individualized CR programs that meet the diverse informational needs of participants. Moreover, these programs must be delivered by HCPs who are perceived as both qualified and trustworthy by the wide range of individuals who may benefit from participation.

This study has a number of limitations. The main limitation was that participants were recruited from only one, centre-based CR site. As such, the realities of the participants in this study may not be representative of all individuals living with HD who attend CR programs. Furthermore, as participants volunteered to participate in this study, their CR experience may have been different than those who chose not to participate. However, the results of this study are consistent with many other studies, supporting the trustworthiness of the findings.

Implications for Cardiovascular Nurses

The accounts of these participants' CR experiences provide strong support for arguments that the problem with underutilization will not be resolved by simply documenting associated factors, but rather by applying these insights to adapt how we deliver CR services. Clearly, there is a need for harmonized referral systems, so that patients who might benefit from CR services are not lost in the disconnect between in-patient care, primary care, and community-based services. These systems will require active involvement in outreach and follow-up, rather than assuming patients who need the services will self-advocate and find their own way in. Cardiovascular nurses working in inpatient cardiac units and in primary care can play a pivotal role in providing patient education regarding the importance of CR programs. Nurses working within CR programs can also play an important role in improving patient participation and program completion, not only by providing education and information, but also by advocating for individualized programming, developing strategies to optimize interpersonal communication and relational practice, and nurturing trust and confidence in the services they provide. Our findings also highlight the importance of cardiovascular nurses having an awareness for intersections of factors that impact participation; this will allow for better assessment of individuals' ability to access cardiovascular resources and preventative programs. Finally, our findings also support the use of an intersectionality framework in future nursing research in the area of CR programming.

Conclusion

Our findings contribute in meaningful ways to the growing body of literature about CR underutilization. Specifically, the personal perspectives of our participants draw attention to the complex and multifaceted challenges that patients face as they transition between acute and CR care. These findings remind us that their lives are complex, and that managing their cardiac function is only one priority within many other intersecting priorities. Cardiovascular nurses can play a central role in improving referrals, access, participation, and completion of CR programs through individualized strategies that are grounded in education and research with an intersectional lens.

REFERENCES

- Allana, S., Ski, C. F., Thompson, D. R., & Clark, A. M. (2021). Bringing intersectionality to cardiovascular health research in Canada. *Canadian Journal of Cardiology Open*, 3(12), S4–S8. <https://doi.org/10.1016/j.cjco.2021.08.016>
- Borg, S., Öberg, B., Leosdottir, M., Lindolm, D., Nilsson, L., & Bäck, M. (2019). Factors associated with non-attendance at exercise-based cardiac rehabilitation. *BMC Sports Science, Medicine & Rehabilitation*, 11, Art. 13. <https://doi.org/10.1186/s13102-019-0125-9>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Brouwers, R. W. M., Houben, V. J. G., Kraal, J. J., Spee, R. F., & Kemps, H. M. C. (2021). Predictors of cardiac rehabilitation referral, enrolment and completion after acute myocardial infarction: An exploratory study. *Netherlands Heart Journal*, 29, 151–157. <https://doi.org/10.1007/s12471-020-01492-0>

- Chindhy, S., Taub, P. R., Lavie, C. J., & Shen, J. (2020). Current challenges in cardiac rehabilitation: Strategies to overcome social factors and attendance barriers. *Expert Review Cardiovascular Therapy*, 18(11), 777–789. <https://doi.org/10.1080/14779072.2020.1816464>
- Collins, P. H. (2000). *Black feminist thought: Knowledge, consciousness, and the politics of empowerment*. Routledge.
- Collins, P. H. (2019). *Intersectionality as a critical social theory*. Duke University Press.
- Cowie, A., Buckley, J., Doherty, P., Furze, G., Hayward, J., Hinton, S., Jones, J., Speck, L., Dalal, H., Mills, J., & British Association for Cardiovascular Prevention and Rehabilitation (BACPR). (2019). Standards and core components for cardiovascular disease prevention and rehabilitation. *Heart*, 105(7), 510–515. <https://doi.org/10.1136/heartjnl-2018-314206>
- Crenshaw, K. (1989). Demarginalizing the intersection of race and sex: A black feminist critique of antidiscrimination doctrine, feminist theory and antiracist politics. *University of Chicago Legal Forum*, 1989(1), 139–167. <http://chicagounbound.uchicago.edu/uclf/vol1989/iss1/8>
- Crenshaw, K. (1991). Mapping the margins: Intersectionality, identity politics, and violence against women of color. *Stanford Law Review*, 43(6): 1241–1299. <https://doi.org/10.2307/1229>
- Ghisi, G. L. M. & Grace, S. L. (2019). Validation of the physician attitudes toward cardiac rehabilitation and referral (PACRR) scale. *Heart, Lung and Circulation*, 28(8), 1218–1224. <https://doi.org/10.1016/j.hlc.2018.07.001>
- Ghisi, G. L. M., Polyzotis, P., Oh, P., Pakosh, M., & Grace, S. L. (2013). Physician factors affecting cardiac rehabilitation referral and patient enrolment: A systematic review. *Clinical Cardiology*, 36(6), 323–335. <https://doi.org/10.1002/clc.22126>
- Gkiouleka, A., Huijts, T., Beckfield, J., & Bambra, C. (2018). Understanding the micro and macro politics of health: Inequalities, intersectionality & institutions – A research agenda. *Social Science & Medicine*, 200, 92–98. <https://doi.org/10.1016/j.socscimed.2018.01.025>
- Grace, S. L., Kotseva, K., & Whooley, M. A. (2021). Cardiac rehabilitation: Under-utilized globally. *Current Cardiology Reports*, 23(9), 118. <https://doi.org/10.1007/s11886-021-01543-x>
- Grace, S. L., Russel, K. L., Reid, R. D., Oh, P., Anand, S., Rush, J., Williamson, K., Gupta, M., Alter, D. A., & Stewart, D. E. (2011). Effect of cardiac rehabilitation referral strategies on utilization rates. A prospective, controlled study. *Archives of Internal Medicine*, 171(3), 235–241. <https://doi.org/10.1001/archinternmed.2010.501>
- Grace, S. L., Turk-Adwai, K., Santiago de Araújo Pio, C., & Alter, D. A. (2016). Ensuring cardiac rehabilitation access for the majority of those in need: A call to action for Canada. *The Canadian Journal of Cardiology*, 32(2), S358–S364. <https://doi.org/10.1016/j.cjca.2016.07.001>
- Ivers, N. M., Schwalm, J. D., Bouck, Z., McCreedy, T., Taljaard, M., Grace, S. L., Cunningham, J., Bosiak, B., Presseau, J., Witteman, H. H., Sskin, N., Wijeyesundera, H. C., Atzema, C., Bhatia, R. S., Natarajan, M., & Grimshaw, J. M. (2020). Interventions supporting long-term adherence and decreasing cardiovascular events after myocardial infarction (ISLAND): Pragmatic randomised controlled trial. *British Medical Journal*, 369, m1731. <https://doi.org/10.1136/bmj.m1731>
- Kabboul, N. N., Tomlinson, G., Francis, T. A., Grace, S. L., Chaves, G., Rac, V., Daou-Kabboul, T., Bielecki, J. M., Alter, D. A., & Karen, M. (2018). Comparative effectiveness of the core components of cardiac rehabilitation on mortality and morbidity: A systematic review and network meta-analysis. *Journal of Clinical Medicine*, 7(12), 514. <https://doi.org/10.3390/jcm7120514>
- Keteyian, S. J., Ades, P. A., Beatty, A. L., Gavic-Ott, A., Hines, S., Lui, K., Schopfer, D. W., Thomas, R. J. & Sperling, L. S. (2022). A review of the design and implementation of a hybrid cardiac rehabilitation program: An expanding opportunity for optimizing cardiovascular care. *Journal of Cardiopulmonary Rehabilitation & Prevention*, 42(1), 1–9. <https://doi.org/10.1097/HCR.0000000000000634>
- Leung, Y. W., Brual, J., Macpherson, A., & Grace, S. L. (2010). Geographic issues in cardiac rehabilitation utilization: A narrative review. *Health & Place*, 16(6), 1196–1205. <https://doi.org/10.1016/j.healthplace.2010.08.004>
- Mathews, L. & LaPrincess, B. (2021). A review of disparities in cardiac rehabilitation: Evidence, drivers, and solutions. *Journal of Cardiopulmonary Rehabilitation and Prevention*, 41(6), 375–382. <https://doi.org/10.1097/HCR.0000000000000659>
- Mathews, L., & Brewer, L. (2021). A review of disparities in cardiac rehabilitation. *Journal of Cardiopulmonary Rehabilitation and Prevention*, 41(6), 375–382. <https://doi.org/10.1097/HCR.0000000000000659>
- McGregor, G., Powell, R., Kimani, P., & Underood, M. (2020). Does contemporary exercise-based cardiac rehabilitation improve quality of life for people with coronary artery disease? A systematic review and meta-analysis. *British Medical Journal Open*, 10, e036089. <https://doi.org/10.1136/bmjopen-2019-036089>
- Nascimento, I., Assis, M. G., Ghisi, G. L., & Britto, R. R. (2021). A qualitative study of patient’s perceptions of two cardiac rehabilitation models. *Brazilian Journal of Physical Therapy*, 25(5), 552–562. <https://doi.org/10.1016/j.bjpt.2021.02.004>
- Pack, Q. R., Squires, R. W., Lopez-Jimenez, F., Lichtman, S. W., Rodriguez-Escudero, J. P., Zysek, V. N., & Thomas, R. J. (2014). The current and potential capacity for cardiac rehabilitation utilization in the United States. *Journal of Cardiopulmonary Rehabilitation and Prevention*, 34(5), 318–326. <https://doi.org/10.1097/HCR.0000000000000076>
- Polit, D.F., & Beck, C.T. (2022). *Essentials of nursing research: Appraising evidence for nursing practice* (10th ed.). Wolters Kluwer Health.
- Roth, G. A., Mensah, G. A., Johnson, C. O., Addolorato, G., Ammirati, E., Baddour, L. M., Barengo, N. C., Beaton, A. Z., Benjamin, E. J., Benziger, C. P., Bonny, A., Brauer, M., Brodmann, M., Cahill, T. J., Carapetis, J., Catapano, A. L., Chugh, S. S., Cooper, L.T., Coresh, J., Criqui, M., ... GBD-NHLBI-JACC Global Burden of Cardiovascular Disease Writing Group (2020). Global burden of cardiovascular diseases and risk factors, 1990–2019: Update from the GBD 2019 Study. *Journal of the American College of Cardiology*, 76(25), 2983–3021. <https://doi.org/10.1016/j.jacc.2020.11.010>
- Ruano-Ravina, A., Pena-Gil, C., Abu-Assi, E., Raposeiras, S., van’t Hof, A., Meindersma, E., Prescott, E. I. B., & González-Juanatey, J. (2016). Participation and adherence to cardiac rehabilitation programs. A systematic review. *International Journal of Cardiology*, 223, 436–443. <https://doi.org/10.1016/j.ijcard.2016.08.120>
- Santiago de Araújo Pio, C., Beckie, T. M., Varnfield, M., Sarrafzadegan, N., Babu, A. S., Baidya, S., Buckley, J., Chen, S. Y., Gagliardi, A., Heine, M., Khiong, J. S., Mola, A., Radi, B., Supervia, M., Trani, M. R., Abreu, A., Sawdong, J. A., Moffatt, P. D., & Grace, S. L. (2020). Promoting patient utilization of outpatient cardiac rehabilitation: A joint International Council and Canadian Association of Cardiovascular Prevention and Rehabilitation position statement. *International Journal of Cardiology*, 298, 1–7. <https://doi.org/10.1016/j.ijcard.2019.06.064>
- Sérvio, T. C., Britto, R. R., Ghisi, G. L. M., da Silva, L. P., Silva, L. D. N., Lima, M. M. O., Pereira, D. A. G., & Grace S. L. (2019). Barriers to cardiac rehabilitation delivery in a low-resource setting from the perspective of healthcare administrators, rehabilitation providers, and cardiac patients. *BioMed Central Health Services Research*, 19, 615. <https://doi.org/10.1186/s12913-4463-9>
- Taylor, R. S., Walker, S., Smart, N. A., Piepoli, M. F., Warren, F. C., Ciani, O., Whellan, D., O’Connor, C., Keteyian, S. J., Coats, A., Davos, C. H., Dalal, H. M., Dracup, K., Evangelista, L. S., Jolly, K., Myers, J., Nilsson, B. B., Passino, C., Witham, M. D., Yeh, G. Y., & ExTraMATCH II Collaboration. (2019). Impact of exercise rehabilitation on exercise capacity and quality-of-life in heart failure: Individual participant meta-analysis. *Journal of the American College of Cardiology*, 73(12), 1430–1443. <https://doi.org/10.1016/j.jacc.2018.12.072>
- Thorne, S. (2016). *Interpretive description: Qualitative research for applied practice* (2nd ed.). Routledge. <https://doi.org/10.4324/9781315545196>

Development of a Measure of Adherence to Best Practice Guidelines by Interprofessional Teams with Nurse Practitioners in the Cardiac Surgery Setting

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Abstract

Background: To date, no tool is currently available to measure the adherence to best practice guidelines by interprofessional teams with acute care nurse practitioners (ACNPs) in the post-operative cardiac surgery setting.

Method: An extraction tool was developed, validated, and pilot-tested ($n = 30$) to measure the level of adherence to best practice in cardiac surgery. A multi-step approach was utilized, including a systematic review, a content and criterion validation, and a pilot-test of all items of the instrument.

Findings: The average content validity index of all items was 0.89. A Spearman correlation of 0.91 was identified between five items of the extraction tool and five gold standards of comparison. A Cohen Kappa of 0.72 was identified between the reviewers who participated in the pilot-test.

Implications: This validated tool will help further the understanding of the contributions of ACNPs and their impact on the care of post-operative cardiac surgery patients.

Keywords: acute care nurse practitioner, best practice guidelines, cardiac surgery, extraction tool

Audet, L.-A., Lavoie-Tremblay, M., Tchouaket, É., & Kilpatrick, K. (2024). Development of a measure of adherence to best practice guidelines by interprofessional teams with nurse practitioners in the cardiac surgery setting. *Canadian Journal of Cardiovascular Nursing*, 34(1), 13–20.

Key Highlights

- Currently no tools are available to measure the level of adherence to best practice guidelines by interprofessional teams that include acute care nurse practitioners.
- A multistep approach was used to develop, validate, and pilot-test an extraction tool.
- The 12 best practice guidelines in the extraction tool include the prescription and monitoring of pharmacotherapy and laboratory tests, as well as the post-operative evaluation of patients' clinical and psychosocial care.
- This extraction tool can serve as an exemplar for examining and evaluating the contribution of NPs within interprofessional teams.

Introduction

In the post-operative cardiac surgery setting, cardiovascular nurses practise in collaboration with an interprofessional

team of clinicians, typically composed of cardiac surgeons, physician residents, skin and wound care specialists, physiotherapists, nutritionists, respiratory therapists, social workers, and other medical specialists. Nurses and other clinicians work together to ensure an optimal daily follow-up of patients' post-operative conditions, including the assessment of their clinical and psychosocial conditions, medication and laboratory tests management, lifestyle and health promotion, and preparation for hospital discharge. To ensure the delivery of safe and high quality care, decrease the risk of adverse events, and improve outcomes for patients and families, nurses and clinicians utilize a wide range of internationally recognized best practice guidelines (McConnell et al., 2018). These guidelines are based on robust and high-quality empirical evidence (Benjamin et al., 2018; Engelman et al., 2019).

The literature in this area highlights the importance of adherence to these guidelines by interprofessional teams (Benjamin et al., 2018; Engelman et al., 2019). Adherence to

best practice guidelines by interprofessional teams is defined by the achievement of one or several best practices (e.g., prescription of anticoagulants), as well as the interventions initiated by clinicians associated with those guidelines (e.g., follow-up of international normalized ratio [INR]; Benjamin et al., 2018; Engelman et al., 2019). Several systematic reviews in post-operative cardiac surgery have identified significant associations between high levels of adherence to best practice guidelines by interprofessional teams and lower risk of adverse events for patients (Bourgon et al., 2019; Khalil et al., 2017; Witwer et al., 2019). Conversely, low adherence to best practice guidelines by interprofessional teams has been associated with higher risk of mortality and adverse events (e.g., atrial fibrillation) for patients in these settings (Bourgon Labelle et al., 2019; Larrazet et al., 2011).

Qualitative studies conducted by Reich et al. (2018), and Norful et al. (2018), in primary care and emergency departments, have suggested that the inclusion of nurse practitioners (NPs) within interprofessional teams increases the level of adherence to best practice guidelines by those teams. To explain this association, these authors suggested that the acute care NPs' (ACNPs') holistic approach to practice, focusing on patients' clinical and psychosocial needs, and their collaboration with interprofessional teams, contributes to an increased level of adherence to best practice guidelines (Norful et al., 2018; Reich et al., 2018).

An ACNP is an advanced practice nurse with graduate or postgraduate-level education who possesses in-depth nursing and clinical expertise (International Council of Nurses [ICN], 2020; Mares et al., 2018; Smigorowsky et al., 2020). The ACNP typically practises in acute (e.g., cardiology, oncology) and critical care (e.g., intensive care unit) settings (Kleinpell et al., 2019). In the post-operative cardiac surgery setting, ACNP practice focuses on the management of the patient's clinical and psychosocial needs, the prescription and management of pharmacotherapy and laboratory tests, and teaching coping and rehabilitation strategies for patients and families (Audet et al., 2021). Acute care NPs enhance interprofessional team coordination, facilitate communication between nursing and medical teams, and support the preparation of the patient's hospital discharge (Audet et al., 2021; Kleinpell et al., 2018; Smigorowsky et al., 2020).

To date, the level of adherence to best practice guidelines by interprofessional teams with ACNPs has been studied using qualitative and conceptual designs, but no quantitative studies have been conducted using validated tools. To the best of our knowledge, no instrument is currently available to measure the adherence to best practice guidelines by interprofessional teams with ACNPs in the post-operative cardiac surgery setting or any other type of acute or critical care setting. Existing tools and instruments measure the adherence of interprofessional teams to medically-focused best practice guidelines (e.g., prescription of pharmacotherapy, evaluation of surgical wounds, etc.). However, none of

those tools reflect the advanced nursing practice of ACNPs within interprofessional teams, which is characterized by the holistic evaluation of the patient's clinical and psychosocial needs (e.g., nutrition, mobilization, psychosocial status).

Therefore, the development of a new extraction tool to measure adherence to best practice guidelines by interprofessional teams with ACNPs practising in a post-operative cardiac surgery setting is needed for several important reasons. First, to retrieve and measure a wide range of best practice guidelines related to the clinical and psychosocial care of patients who have undergone cardiac surgery (Audet et al., 2021). Second, to capture the unique, holistic and broad practice of ACNPs. Third, to identify specific variables that influence adherence to best practice guidelines by interprofessional teams in the post-operative cardiac surgery setting. Past studies (Gurses et al., 2010; Larrazet et al., 2011; Reich et al., 2018) have suggested that several variables related to patients (e.g., severity of illness, type of cardiac procedure) and interprofessional teams (e.g., consultations done by social worker or a nutritionist) increase or decrease adherence to best practice guidelines by interprofessional teams. However, to date, no existing tool has included the broad range of variables that influence adherence to best practice guidelines by interprofessional teams with ACNPs in post-operative cardiac surgery settings. Fourth, to facilitate future experimental and non-experimental studies in this area. Finally, to serve as a first step to measure adherence to best practice guidelines by interprofessional teams that specifically include ACNPs in other types of acute and critical care specialties (e.g., oncology, nephrology, etc.). More specifically, it is important to measure the practice of the whole interprofessional team rather than the solo practice of ACNPs. Past studies have shown that clinicians work collaboratively to provide high quality of care to patients and families. However, within interprofessional teams, many aspects of the ACNPs' practice rely on the collaboration and actions of other members of the healthcare team (Audet et al., 2021).

Aim

The aim of this study was to develop, validate, and pilot-test an extraction tool to measure adherence to best practice guidelines by interprofessional teams with ACNPs practising in a post-operative cardiac surgery setting for patients who had undergone a coronary artery bypass graft (CABG) procedure.

Methods

Study design

A multi-step development process was undertaken, including a systematic review of randomized control trials, content and criterion validation, and a pilot-test. The Consensus-based Standards for the selection of health Measurement Instruments (COSMIN) guidelines (Terwee et al., 2018) were used for the development and validation of

the tool. The COSMIN guidelines were followed to develop a rigorous and high-quality method, to set targeted values (e.g., Cohen's kappa, content validity index [CVI], etc.), and to identify the number of experts and minimum number of rounds of revision needed for the content validation step.

Systematic review of randomized controlled trials

As the initial step in this project, we conducted a systematic review of randomized controlled trials and an environmental scan of reports published by international cardiovascular organizations. The detailed process of the systematic review is published elsewhere (Audet et al., 2021). Based on the results of the systematic review, our team was able to describe the practice of interprofessional teams with ACNPs and enhance our understanding of the efficacy of ACNPs within teams in post-operative cardiac surgery settings. We retrieved a wide range of best practice guidelines related to the clinical and psychosocial care of patients and families by interprofessional teams. In addition, we identified several variables influencing the adherence to best practice guidelines by interprofessional teams related to patient and team characteristics. Ultimately, we selected 12 best practice guidelines and 15 influencing variables to be included in the extraction tool.

Content validation

Content validation was conducted using the three steps outlined in the COSMIN guidelines (Terwee et al., 2018; note: specific application of the COSMIN guidelines is available on request from the lead author [LAA]). In the first step, a total of 10 nursing experts (i.e., nurses with a minimum of one year of clinical or research experience in a post-operative cardiac surgery acute or critical care area) were recruited. The nursing experts included five ACNPs, three researchers, one manager, and one clinical nurse specialist (CNS). Experts practising within ($n = 4$) and outside ($n = 6$) our affiliated healthcare center were recruited. All 10 experts completed the first round of revisions, and nine experts completed the second round of revisions.

In the second step, we created an electronic survey, which included all items of the draft tool. The development of the electronic survey followed the method proposed by Holt and Lorass (2019) and Streiner, Normand and Cairney (2015). Members of the nursing expert committee assessed the relevance of each item using a five-point Likert scale. Additional spaces for qualitative comments and suggestions were included in the survey. Two rounds of revisions were conducted for the content validation of the tool.

In the third step, for each round of revisions the percentage of agreement between the members of the expert committee was calculated for all items of the tool. Scores on the five-point Likert scale were regrouped into three categories to calculate the agreement between experts who gave a score of 1 and 2 (group 1 – strongly disagree/disagree), 3 (group 2 – neutral), and 4 and 5 (group 3 – agree/strongly agree). An average agreement higher than 60% was targeted and an average

agreement higher than 80% was considered very good. The content validity index (CVI) was then calculated for each individual item from the proportion of expert committee members who rated the item 4 or 5 on the Likert scale. The average of the CVI for all items was then calculated (Terwee et al., 2018). A CVI higher than 0.80 was targeted for the individual CVI of each item, as well as the average CVI of all items (Terwee et al., 2018). Items with a percentage of agreement between experts lower than 60% and items with an individual CVI lower than 0.80 were rejected or modified. Qualitative comments and suggestions were analyzed using content analysis following the method proposed by Vaismoradi et al., (2013).

Criterion validation

The criterion validation was conducted in three steps. First, the best practice guidelines of the Society of Thoracic Surgeons (STS; Shahian et al., 2022) were selected as the gold standards of comparison for the criterion validation of the tool. In 2007, the STS developed and validated 21 performance measures focusing on the delivery of safe and high quality of care to patients who underwent a CABG, a valve repair, or a CABG/valve repair (Shahian et al., 2022). The STS performance measures were selected as gold standards of comparison for this project because they 1) specifically target patients who underwent a CABG procedure, 2) are internationally recognized and have been used by interprofessional teams practising in post-operative cardiac surgery, and 3) are based on robust and high-quality evidence that is still current today. Since their publication in 2007, these performance measures have been submitted to several psychometrics evaluations and updates (Shahian et al., 2022). For our project, the following five STS performance measures were selected as gold standards of comparison: 1) prolonged mechanical ventilation longer than 24 hours in the intensive care unit (ICU), 2) 30-day readmission rate to the post-operative cardiac surgery unit after hospital discharge, and the prescription of 3) anti-platelets, 4) beta-blockers, or 5) lipid-lowering agents during the hospitalization in the post-operative cardiac surgery unit and at discharge (Shahian et al., 2022).

The second step included the independent review of 30 patient health records (see study procedures below) by two reviewers (i.e., first author, LAA, and one RA) over two rounds of revisions. For the first round of revisions, the records were reviewed with the tool, and for the second round of revision, the records were reviewed with the selected STS performance measures.

Third, Spearman correlations were calculated to assess the relationship between the proportions obtained from the STS performance measures and the proportions obtained from the tool. Spearman correlations above 0.70 were targeted (Terwee et al., 2018).

Pilot test

Setting and sample. The tool was tested on a retrospective cohort of 30 patients hospitalized in a university healthcare

centre in Québec, Canada. Annually, this healthcare centre performs approximately 1,000 cardiac surgeries and procedures. The post-operative cardiac surgery unit of our healthcare centre was composed of 36 beds divided between interprofessional teams with and without ACNPs. Interprofessional teams with ACNPs were assigned 16 beds (44%) and interprofessional teams without ACNPs were assigned 20 beds (56%). Upon their admission to the post-operative cardiac surgery unit, each patient was assigned to interprofessional teams with and without ACNPs. Team assignment depended on the current workload of each team and the availability of the beds within the unit. At the time of data collection, seven ACNPs were practising within the post-operative cardiac surgery unit of our affiliated healthcare centre, based on a monthly rotation. Two ACNPs simultaneously practise on the unit with a ratio of 8 patients per ACNP.

Patients included in the cohort had undergone a CABG procedure and were hospitalized in the post-operative cardiac surgery unit between January 1, 2019, and January 30, 2020. This specific cardiac procedure was selected because 1) internationally, it is the most common and widely performed type of cardiac surgery, 2) robust and high-quality evidence is available to support several best practice guidelines for interprofessional teams focusing on the care of patients who have undergone this procedure, and 3) several ACNPs practicing within interprofessional teams in post-operative cardiac surgery provide direct care to patients who have undergone a CABG procedure (Benjamin et al., 2018). Other types of cardiac procedures (e.g., heart transplant, percutaneous coronary intervention [PCI]) were not included in the development of the extraction tool because the best practice guidelines, care provided, and the recovery pathways are different.

Study procedures. Ethics approval was obtained from the McGill University Health Centre Research Ethics Board on September 15, 2021 (#2022-8094) prior to the initiation of the study procedures.

A total of 15 patients under the care of interprofessional teams with ACNPs were randomly selected and matched with 15 patients under the care of interprofessional teams without ACNPs. Matching criteria included 1) age (i.e., a five-year gap was tolerated), and 2) sex (i.e., male/female). These criteria were chosen based on past retrospective studies conducted in post-operative surgical settings (Kuhns et al., 2017; Oichi et al., 2017; Ravi et al., 2018; Tremblay, et al., 2020). Patients under the care of teams with and without ACNPs were included within our sample for two important reasons. First, to obtain an overall representation of the patients admitted in the post-operative cardiac surgery unit of our affiliated healthcare centre. Second, to assess if patients under the care of teams with ACNP are comparable to patients under the care of teams without ACNP. All 30 patients were included in the criterion validation process.

A total of six patients were randomly selected for the training session with the first author (LAA) and two research assistants (RAs) and 24 patients were included in the pilot test. An assessment of all 30 patient health records was also conducted by the first author (LAA) to ensure the diversity of the included health records. Patients included within the pilot test had a wide range of comorbidities, ages, lengths of stay, and cardiac conditions. Our goal was to include a broad variety of patients to ensure that the extraction tool captured the diversity of patients who undergo cardiac surgery.

A pilot test was performed to assess the feasibility of the tool, update the tool as needed, and examine the quality and availability of data collected from the tool. Four iterative steps were included within the pilot test. Those steps were selected based on past studies who used a similar process (Dubois et al., 2013; Gearing et al., 2006; McHugh, 2012; Vassar & Holzmann, 2013). Data collection was conducted by the first author (LAA) and two RAs. All reviewers were registered nurses (RNs), with a minimum of five years of nursing experience within acute and critical care settings.

First, training sessions with six patient health records were held and documentation (e.g., draft copies of the extraction tool, step-by-step demonstration of the data collection, etc.) were provided to the reviewers. Second, data of 24 patients' health records were independently extracted with the tool by two reviewers. Inter-rater reliability was assessed with the Cohen kappa statistic and a value higher than 0.60 was targeted (McHugh, 2012). Third, triangulation of the available data was performed to assess the quality and accessibility of the data collected with the tool with all 30 patients' health records by the first author (LAA). Multiple data sources were screened between electronic databases and patient health records. Items with a high quantity of missing data or items with discordances between data sources were modified or removed from the tool. Finally, frequent meetings among all the members of the research team were conducted to discuss divergences, strengthen convergences, and to establish consensus.

Results

Content and criterion validation

After the first round of revision, the average of the CVI (0.67) for all items was lower than the targeted value (targeted value of ≥ 0.80 ; see Table 1). The extraction tool was updated and resubmitted to the members of the expert committee for a second round of revision. The average of the CVI of all items for the second round of revision (0.82) was higher than the targeted value. The extraction tool was updated again after the second round of revision and a final average CVI of all items was calculated (0.89).

After the first round of revision, the qualitative comments of the expert committee members focused on misunderstanding specific items and feedback from their own clinical practice. For example, several experts thought some items were too broad (e.g., prescription of laboratory tests)

Table 1
Average Content Validation Index and Average Inter-rater Agreement of the Categories of the Extraction Tool

Categories	First round of revision		Second round of revision	
	Average content validation index	Average inter-rater agreement	Average content validation index	Average inter-rater agreement
Patient general information	0.78	0.63	0.89	0.77
Pharmacotherapy	0.89	0.77	0.93	0.85
Laboratory tests	0.75	0.61	0.67	0.48
Post-operative assessment	0.77	0.60	0.74	0.55
Confounding variables related to patient characteristics	0.75	0.65	0.93	0.85
Confounding variables related to interprofessional teams' characteristics	0.67	0.51	0.80	0.65
Overall	0.77	0.61	0.82	0.68

Table 2
Criterion Validation Between the Items of the Extraction Tool and the Performance Measures of the Society of Thoracic Surgeons

Items	Spearman correlation
Prolonged mechanical ventilation longer than 24 hours in ICU	1.00
30-day readmission rate at the post-operative cardiac surgery unit after hospital discharge	1.00
Prescription of anti-platelet at discharge	1.00
Prescription of beta-blocker at discharge	0.69
Prescription of lipid-lowering agent at discharge	0.69
Overall	0.91

and suggested modifying or renaming these items to be more specific (e.g., number of laboratory tests prescribed). Also, several experts suggested removing extraction tool items that were not applicable within their specific setting (e.g., removing the variable related to “consultation done by a physiotherapist” because all patients are followed daily by the physiotherapist in their setting). Unclear items were modified or renamed, and experts were reminded that the tool targets interprofessional teams at the international scale before conducting the second round of revision.

The Spearman correlation was calculated between the measures taken from the extraction tool and the measures taken with the STS performance indicators. Overall, a 0.91 Spearman correlation was identified (range = 0.69 – 1.0; see Table 2).

Pilot test

Six records were used for training and 24 records were used for the inter-reliability analysis. Each RA reviewed 12 records and compared them with the records reviewed by the first author (LAA). Overall, a Cohen’s kappa of 0.69 and a percentage of inter-rater agreement of 84.56% were identified.

Discrepancies between reviewers were related to the understanding and interpretation of clinical notes written by healthcare practitioners and random omissions, such as the types of contraindications precluding the prescription of pharmacotherapy and the date of the transfer of the patient between the intensive care and the post-operative cardiac surgery units. These issues were resolved by frequent meetings among reviewers, additional training, and quality verification of the extracted data by the first author (LAA).

The extraction tool

Overall, our extraction tool includes 12 best practice guidelines and 15 influencing variables related to patient and interprofessional teams’ characteristics. The extraction tool is composed of 99 items, which were divided into six categories, including 1) general patient information (e.g., patient research number, date of the cardiac surgery), 2) best practice guidelines related to the prescription and management of pharmacotherapy (e.g., prescription of beta blocker, presence/absence of complications or side effects), 3) monitoring of laboratory tests (e.g., number of potassium test ordered, number of serum glucose test ordered), 4) post-operative assessment (e.g., daily assessment of the patient’s pain, daily assessment of the surgical wound), 5) influencing variables related to patient characteristics (e.g., comorbidities, total length of stay at the hospital), and 6) influencing variables related to interprofessional team’ characteristics (e.g., cardiac surgery who performed the surgery, consultation

done by a social worker). Details related to the specific items and the full version of the extraction tool are available on from the first author (LAA).

Discussion

The aim of this study was to develop, validate, and pilot-test an extraction tool to measure adherence to best practice guidelines by interprofessional teams with ACNP practising in post-operative cardiac surgery. When measuring the adherence to best practice guidelines by interprofessional teams, the findings of our study suggest it is crucial to include best practice guidelines related to the clinical and psychosocial condition of the patient, as well as influencing variables related to patients and interprofessional teams' characteristics.

Four important factors contributed to the selection of the 12 best practice guidelines for our extraction tool. First, these guidelines were recognized internationally and they were supported by several robust and high-quality publications and guidelines (Alkhalil, 2020; Chaudhary et al., 2019; Clar et al., 2017; Gupta et al., 2020; Masuda et al., 2020; Neves et al., 2022; Xi et al., 2019). Second, several international randomized controlled trials have demonstrated the efficacy of these guidelines on preventing adverse events and post-operative complications for patients who have undergone cardiac surgery, including a decreased risk of stroke, atrial fibrillation, and thromboembolism. (Benjamin et al., 2018). Third, a consensus of the literature highlighted the importance of the high adherence to those guidelines by interprofessional teams to ensure the delivery of high-quality and safe care to patients in post-operative cardiac surgery settings (Engelman et al., 2019). Fourth, these best practice guidelines reflect the holistic practice of ACNPs within interprofessional teams and focus on the management of the patient's clinical and psychosocial care after undergoing cardiac surgery (Audet et al., 2021).

A total of 15 influencing variables were included in the extraction tool. These variables were selected based on their influence on the level of adherence to best practice guidelines by interprofessional teams (Audet et al., 2021, Gurses et al., 2010). To explain these associations, Gurses et al., (2010) argues that depending on the patients' clinical and psychosocial status, as well as their individual needs, interprofessional teams will adhere (or not adhere) to certain best practice guidelines. Also, characteristics of the interprofessional teams will impact on their adherence to best practice guidelines. For example, the inclusion of an ACNP will likely enhance the adherence to best practice guidelines related to the preparation of the patient discharge from the hospital and readiness to go home (e.g., preparing prescriptions, wound care) by the interprofessional team (Audet et al., 2021). The inclusion of these influencing variables was crucial to accurately measure the level of adherence to best practice guidelines by interprofessional teams.

The validation of the extraction tool included content validation with an expert committee, as well as criterion validation. The category of the prescription and management of pharmacotherapy was associated with the highest CVI and the highest inter-rater agreement between experts for both rounds of revision. For several years, a consensus of robust and high-quality findings supports the efficacy of pharmacotherapy on the prevention of adverse events and post-operative complications for patients after a cardiac surgery (Alkhalil, 2020; Gupta et al., 2020; Masuda et al., 2020). Moreover, the guidelines related to the pharmacotherapy are widely known and mastered by interprofessional teams, which has led to high adherence to these guidelines by teams in post-operative cardiac surgery settings (Benjamin et al., 2018). The influencing variables related to interprofessional team characteristics and the prescription and monitoring of laboratory results were associated with the lowest average CVI and inter-rater agreement for the first and second round of revisions. From the qualitative feedback and comments provided by the members of the expert committee, underlying reasons, such as the misunderstanding of the items and the variability of the practice of each expert within their own clinical setting may have contributed to the low CVI for both categories and rounds of revisions.

Two indicators were associated with the lowest correlations between the measures taken with the extraction tool and the measures taken with the performance measures of the STS: the prescription of 1) a beta-blocker, and 2) a lipid-lowering agent at discharge. Discrepancies may be related to challenges for care providers to prescribe certain medications for patients with contraindications, or those with complex conditions at discharge.

For the pilot-testing of the extraction tool, a total of 24 patients were randomly selected from a retrospective cohort of patients who had undergone CABG surgery. The inter-rater agreement between the three reviewers was above the targeted value. We believe that the frequent meetings among all reviewers and their clinical backgrounds within acute and critical care settings contributed to the high inter-rater agreement between reviewers.

Limitations

Three key limitations must be acknowledged. First, our extraction tool was developed, validated, and pilot-tested in Quebec, Canada, leading to a risk that the extraction tool does not represent the practice of interprofessional teams at a national or international level. However, a systematic review of the randomized controlled trials and healthcare organizations was performed to identify internationally-recognized best practice guidelines and influencing variables (Audet et al., 2021).

Second, the members of the expert committee and the reviewers involved in the pilot-test were all nurses who volunteered to participate, thus limiting the representation of other

clinicians (e.g., physiotherapists, nutritionists, etc.) practising in the interprofessional team. Also, each member of the expert committee had unique characteristics and clinical backgrounds (e.g., years of experience, culture of the practice in their own setting, etc.), which may have biased the results of the content validation process. However, clinicians from several healthcare centres across Canada were recruited to ensure the diversity of backgrounds of the members of the expert committee.

Finally, the small sample size used to perform the criterion validation and the pilot-test is a study limitation. Several influencing variables related to patients (e.g., smoking status) and interprofessional team characteristics (e.g., years of experience as an ACNP) could potentially influence our measure of adherence to best-practice guidelines by interprofessional teams with ACNPs. The small sample size might also limit the reliability and validity, as well as the generalizability of our findings. Nonetheless, a systematic review of randomized controlled trials and a content validation with an expert committee were conducted to retrieve a wide range of influencing variables to be included in the extraction tool. Finally, past studies have supported the relevance of pilot studies with sample sizes of 12 participants per group, as the aim of this study was to validate and pilot-test the extraction tool (In, 2017).

Implications for Cardiovascular Nurses

The ACNP represents a key role for nurses and interprofessional teams practicing in post-operative cardiac surgery, as well as other types of cardiovascular care settings. Past studies have shown that ACNPs facilitate communication and collaboration between nursing and medical teams and encourage nurses to participate in clinical rounds with the interprofessional teams (McDonnell et al., 2015). ACNPs represent a trusting and accessible figure to ask questions and discuss clinical cases and support novice nurses to develop their practice (Kilpatrick, 2013). Therefore, it is crucial to conduct further studies that provide empirical data to support ACNP practice in cardiovascular care settings. Our extraction tool is ideal for cardiovascular nursing researchers who wish to examine the practice of interprofessional

teams with ACNPs in their clinical setting. For example, the extraction tool could be used to assess care quality following the integration of a new ACNP within an interprofessional team or a change in the organization. Our process of developing the extraction tool could also be used as a template for researchers who are aiming to examine the contributions of advanced practice nurses into their clinical teams.

Conclusion

This is the first validated extraction tool that measures the level of adherence to best practice guidelines by interprofessional teams with ACNPs in the post-operative cardiac surgery setting. The extraction tool also represents a foundational canvas to the development of additional tools measuring the adherence to best practice guidelines of interprofessional teams with advanced practice nurses in various types of settings. Finally, our extraction tool will be available to the scientific community to conduct future quantitative studies to examine the level of adherence to best practice guidelines by interprofessional teams with ACNPs, and ultimately, improve the quality of care provided to patients and families.

Funding

This project was funded by the Réseau de recherche en interventions en sciences infirmières du Québec (RRISIQ). No funding sources were involved in the study's conception and design, data collection, analysis, interpretation, or in the final decision to submit this manuscript for publication.

Acknowledgements

The authors would like to acknowledge the contribution received from Stéphanie Bordeleau, Bruno Provost-Bazin, Alain Biron, Kim Laflamme, Millie Firmin, Amale Ghandour, Marsha Guzman, Tanya Mailhot, Emanuel Marier-Tetrault (Centre intégré universitaire de l'Université de Montréal, CHUM), Jean-Dominic Rioux (Centre intégré universitaire de l'Université de Montréal, CHUM), Myriam Dumont, Martha Mackay, Alexandra Merfu, and Sandra Lauck.

REFERENCES

- Alkhalil, M. (2020). Effects of intensive lipid-lowering therapy on mortality after coronary bypass surgery: A meta-analysis of seven randomised trials. *Atherosclerosis*, 293, 75–78. <https://doi.org/10.1016/j.atherosclerosis.2019.12.006>
- Audet, L.-A., Paquette, L., Bordeleau, S., Lavoie-Tremblay, M., & Kilpatrick, K. (2021). The association between advanced practice nursing roles and outcomes in adults following cardiac surgery: A systematic review of randomized controlled trials. *International Journal of Nursing Studies*, 122. <https://doi.org/10.1016/j.ijnurstu.2021.104028>
- Benjamin, E. J., Virani, S. S., Callaway, C. W., Chamberlain, A. M., Chang, A. R., Cheng, S., Chiuve, S. E., Cushman, M., Delling, F. N., Deo, R., de Ferranti, S. D., Ferguson, J. F., Fornage, M., Gillespie, C., Isasi, C. R., Jiménez, M. C., Jordan, L. C., Judd, S. E., Lackland, D., ... Muntner, P. (2018). Heart disease and stroke statistics – 2018 update: A report from the American Heart Association. *Circulation*, 137(12), 492. <https://doi.org/10.1161/CIR.0000000000000558>
- Bourgon Labelle, J., Audet, L.-A., Farand, P., & Rochefort, C. M. (2019). Are hospital nurse staffing practices associated with postoperative cardiac events and death? A systematic review. *PLOS ONE*, 14(10), 0223979. <https://doi.org/10.1371/journal.pone.0223979>
- Chaudhary, R., Garg, J., Turagam, M., Chaudhary, R., Gupta, R., Nazir, T., Bozorgnia, B., Albert, C., & Lakkireddy, D. (2019). Role of prophylactic magnesium supplementation in prevention of postoperative atrial fibrillation in patients undergoing coronary artery bypass grafting: A systematic review and meta-analysis of 20 randomized controlled trials. *Journal of Atrial Fibrillation*, 12(1). <https://doi.org/10.4022/jafib.2154>

- Clar, C., Al-Khudairy, L., Loveman, E., Kelly, S. A. M., Hartley, L., Flowers, N., Germanò R., Frost, G., & Rees, K. (2017). Low glycaemic index diets for the prevention of cardiovascular disease. *Cochrane Database of Systematic Reviews*, 7(7). <https://doi.org/10.1002/14651858.CD004467.pub3>
- Dubois, C.-A., D'amour, D., Tchouaket, E., Clarke, S., Rivard, M., & Blais, R. (2013). Associations of patient safety outcomes with models of nursing care organization at unit level in hospitals. *International Journal for Quality in Health Care*, 25(2), 110–117. <https://doi.org/10.1093/intqhc/mzt019>
- Engelman, D. T., Ben Ali, W., Williams, J. B., Perrault, L. P., Reddy, V. S., Arora, R. C., Roselli, E. E., Khoyneshad, A., Gerdisch, M., Levy, J. H., Lobdell, K., Fletcher, N., Kirsch, M., Nelson, G., Engelman, R. M., Gregory, A. J., & Boyle, E. M. (2019). Guidelines for perioperative care in cardiac surgery: Enhanced recovery after surgery society recommendations. *Journal of the American Medical Association Surgery*, 154(8), 755–766. <https://doi.org/10.1001/jamasurg.2019.1153>
- Gearing, R. E., Mian, I. A., Barber, J., & Ickowicz, A. (2006). A methodology for conducting retrospective chart review research in child and adolescent psychiatry. *Journal of the Canadian Academy of Child and Adolescent Psychiatry*, 15(3), 126–134. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2277255/>
- Gupta, S., Belley-Cote, E. P., Panchal, P., Pandey, A., Basha, A., Pallo, L., Rochweg, B., Mehta, S., Schwalm, J.-D., & Whitlock, R. P. (2020). Antiplatelet therapy and coronary artery bypass grafting: A systematic review and network meta-analysis. *Interactive Cardiovascular and Thoracic Surgery*, 31(3), 354–363. <https://doi.org/10.1093/icvts/ivaa115>
- Gurses, A. P., Marsteller, J. A., Ozok, A. A., Xiao, Y., Owens, S., & Pronovost, P. J. (2010). Using an interdisciplinary approach to identify factors that affect clinicians' compliance with evidence-based guidelines. *Critical Care Medicine*, 38(8 Suppl), 282–291. <https://doi.org/10.1097/CCM.0b013e318e69e02>
- Holt, T. P., & Loraas, T. M. (2019). Using qualtrics panels to source external auditors: A replication study. *Journal of Information Systems*, 33(1), 29–41. <https://doi.org/10.2308/isys-51986>
- International Council of Nurses (2020). *Guidelines on advanced practice nursing*. https://www.icn.ch/system/files/documents/2020-04/ICN_APN%20Report_EN_WEB.pdf
- In, J. (2017). Introduction of a pilot study. *Korean Journal of Anesthesiology*, 70(6), 601–605. <https://doi.org/10.4097/kjae.2017.70.6.601>
- Khalil, V., Danninger, M., Wang, W., & Khalil, H. (2017). An audit of adherence to heart failure guidelines in an Australian hospital: A pharmacist perspective. *Journal of Evaluation in Clinical Practice*, 23(6), 1195–1202. <https://doi.org/10.1111/jep.12760>
- Kilpatrick, K. (2013). How do nurse practitioners in acute care affect perceptions of team effectiveness? *Journal of Clinical Nursing*, 22(17–18), 2636–2647. <https://doi.org/10.1111/jocn.12198>
- Kleinpell, R., Cook, M. L., & Padden, D. L. (2018). American Association of Nurse Practitioners national nurse practitioner sample survey: Update on acute care nurse practitioner practice. *Journal of the American Association of Nurse Practitioners*, 30(3), 140–149. <https://doi.org/10.1097/JXX.0000000000000030>
- Kleinpell, R. M., Grabenkort, W. R., Kapu, A. N., Constantine, R., & Sicoutris, C. (2019). Nurse practitioners and physician assistants in acute and critical care: A concise review of the literature and data 2008-2018. *Critical Care Medicine*, 47(10), 1442–1449. <https://doi.org/10.1097/CCM.00000000000003925>
- Kuhns, B. D., Hannon, C. P., Makhni, E. C., Alter, J., Mather, R. C., Salata, M. J., & Nho, S. J. (2017). A comparison of clinical outcomes after unilateral or bilateral hip arthroscopic surgery: Age- and sex-matched cohort study. *The American Journal of Sports Medicine*, 45(13), 3044–3051. <https://doi.org/10.1177/0363546517719020>
- Larrazet, F., Folliguet, T., Laborde, F., Bachel, J., & Hervé, C. (2011). Mortality meetings: Ethical considerations and adherence to evidence-based practice from 6 years of experience in a mixed cardiac department. *European Journal of Cardio-Thoracic Surgery: Official Journal of the European Association for Cardio-Thoracic Surgery*, 40(5), 1039–45. <https://doi.org/10.1016/j.ejcts.2011.02.050>
- Mares, M. A., McNally, S., & Fernandez, R. S. (2018). Effectiveness of nurse-led cardiac rehabilitation programs following coronary artery bypass graft surgery: A systematic review. *The Joanna Briggs Institute Evidence Synthesis*, 16(12), 2304–2329. <https://doi.org/10.11124/JBISRIR-2017-003565>
- Masuda, Y., Luo, H. D., Kang, G. S., Teoh, K. L.-K., & Kofidis, T. (2020). Meta-analysis of the benefit of beta-blockers for the reduction of isolated atrial fibrillation incidence after cardiac surgery. *Journal of Thoracic and Cardiovascular Surgery*, 3, 66–85. <https://doi.org/10.1016/j.xjon.2020.07.004>
- McConnell, G., Woltz, P., Bradford, W. T., Ledford, J. E., & Williams, J. B. (2018). Enhanced recovery after cardiac surgery program to improve patient outcomes. *Nursing*, 48(11), 24–31. <https://doi.org/10.1097/01.NURSE.0000546453.18005.3f>
- McDonnell, A., Goodwin, E., Kennedy, F., Hawley, K., Gerrish, K., & Smith, C. (2015). An evaluation of the implementation of advanced nurse practitioner (ANP) roles in an acute hospital setting. *Journal of Advanced Nursing*, 71(4), 789–799. <https://doi.org/10.1111/jan.12558>
- McHugh, M. L. (2012). Interrater reliability: The kappa statistic. *Biochemia Medica*, 22(3), 276–282. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3900052/#:~:text=The%20kappa%20statistic%20is%20frequently,representations%20of%20the%20variables%20measured>
- Neves, I. A., Magalhaes, A., da Silva, G. L., Almeida, A. G., Borges, M., Costa, J., Ferreira, J. J., Pinto, F. J., & Caldeira, D. (2022). Anticoagulation therapy in patients with post-operative atrial fibrillation: Systematic review with meta-analysis. *Vascular Pharmacology*, 142, 106929. <https://doi.org/10.1016/j.vph.2021.106929>
- Norful, A. A., Ye, S., Van der-Biezen, M., & Poghosyan, L. (2018). Nurse practitioner–physician comanagement of patients in primary care. *Policy, Politics, & Nursing Practice*, 19(3–4), 82–90. <https://doi.org/10.1177/1527154418815024>
- Oichi, T., Chikuda, H., Ohya, J., Ohtomo, R., Morita, K., Matsui, H., Fushimi, K., Tanaka, S., & Yasunaga, H. (2017). Mortality and morbidity after spinal surgery in patients with parkinson's disease: A retrospective matched-pair cohort study. *The Spine Journal: Official Journal of the North American Spine Society*, 17(4), 531–537. <https://doi.org/10.1016/j.spinee.2016.10.024>
- Ravi, B., Pincus, D., Wasserstein, D., Govindarajan, A., Huang, A., Austin, P. C., Jenkinson, R., Henry, P. D. G., Paterson, J. M., & Kreder, H. J. (2018). Association of overlapping surgery with increased risk for complications following hip surgery: A population-based, matched cohort study. *JAMA Internal Medicine*, 178(1), 75–83. <https://doi.org/10.1001/jamainternmed.2017.6835>
- Reich, E. N., Then, K. L., & Rankin, J. A. (2018). Barriers to clinical practice guideline implementation for septic patients in the emergency department. *Journal of Emergency Nursing*, 44(6), 552–562. <https://doi.org/10.1016/j.jen.2018.04.004>
- Shahian, D. M., Badhwar, V., Kurlansky, P. A., Bowdish, M. E., Lobdell, K. W., Furnary, A. P., Thourani, V. H., Jacobs, J. P., Wyler von Ballmoos, M. C., Kim, K. M., Vassileva, C., Antman, M. S., Grau-Sepulveda, M. V., & O'Brien, S. M. (2022). The STS participant-level, multi-procedural composite measure for adult cardiac surgery. *The Annals of Thoracic Surgery*, 114(2), 467–475. <https://doi.org/10.1016/j.athoracsur.2021.06.084>
- Smigorowsky, M. J., Sebastianski, M., Sean McMurtry, M., Tsuyuki, R. T., & Norris, C. M. (2020). Outcomes of nurse practitioner-led care in patients with cardiovascular disease: A systematic review and

- meta-analysis. *Journal of Advanced Nursing*, 76(1), 81–95. <https://doi.org/10.1111/jan.14229>
- Streiner, D. L., Norman, G. R., & Cairney, J. (2015). *Health measurement scales: A practical guide to their development and use* (Fifth). Oxford University Press. <https://mcgill.on.worldcat.org/search?queryString=Health%20measurement%20scales%3A%20a%20practical%20guide%20to%20their%20development%20and%20use&clusterResults=true&groupVariantRecords=false>.
- Terwee, C. B., Prinsen, C., Chiarotto, A., De Vet, H., Bouter, L. M., Alonso, J., Westerman, M. J., Patrick, D. L., & Mokkink, L. B. (2018). *The COSensus-based Standards for the selection of health Measurement INstruments methodology for assessing the content validity of PROMs–user manual*. <https://www.cosmin.nl/wp-content/uploads/COSMIN-methodology-for-content-validity-user-manual-v1.pdf>
- Tremblay, J.-A., Laramée, P., Lamarche, Y., Denault, A., Beaubien-Souligny, W., Frenette, A.-J., Kontar, L., Serri, K., & Charbonney, E. (2020). Potential risks in using midodrine for persistent hypotension after cardiac surgery: A comparative cohort study. *Annals of Intensive Care*, 10(1). <https://doi.org/10.1186/s13613-020-00737-w>
- Vaismoradi, M., Salsali, M., Turunen, H., & Bondas, T. (2013). A qualitative study on Iranian nurses' experiences and perspectives on how to provide safe care in clinical practice. *Journal of Research in Nursing*, 18(4), 351–365. <https://doi.org/10.1177/1744987112451578>
- Vassar, M., & Holzmann, M. (2013). The retrospective chart review: Important methodological considerations. *Journal of Educational Evaluation for Health Professions*, 10(12). <https://doi.org/10.3352/jeehp.2013.10.12>
- Witwer, M., Dobbins, G., Uher, C., & McFarren, M. D. (2019). Auditing CAUTI best practices bundle adherence in a 24-bed neurovascular/cardiovascular/intensive care unit. *American Journal of Infection Control*, 47(6, Suppl), S30. <https://doi.org/10.1016/j.ajic.2019.04.062>
- Xi, H., Yu, R.-H., Wang, N., Chen, X.-Z., Zhang, W.-C., & Hong, T. (2020). Serum potassium levels and mortality of patients with acute myocardial infarction: A systematic review and meta-analysis of cohort studies. *European Journal of Preventive Cardiology*, 26(2), 145–156. <https://doi.org/10.1177/2047487318780466>

Primary Care for Individuals with Obesity: A Critical Overview and Recommendations

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Abstract

Obesity is a chronic, relapsing, and complex disease resulting from the dysregulation of individual genetic, physiological, and environmental factors overlaying environmental biology. The prevalence of obesity has increased dramatically over the last 50 years, with an estimated one in four Canadians considered obese. The purpose of this paper is to provide a critical overview of the current evidence on obesity management and best practice for primary healthcare providers and nurses, in particular. We discuss the negative effects of weight stigma and bias, false assumptions about obesity, and convincing evidence that cardiometabolic and cardiorespiratory measures are more relevant factors than BMI

in assessing health. We present recommendations, based on current clinical practice guidelines, that include approaches such as increased physical activity, medications, and surgery. Cardiovascular nurses can contribute to improving the care and clinical management of individuals with obesity by embracing the paradigm shift from a focus on measuring weight to promoting healthy behaviours and quality of life.

Keywords: body mass index, cardiorespiratory fitness, health promotion, nursing, obesity, primary health care, weight bias, weight stigma

Broadberry, A. E., McKay, M., Kelly, M. T., & Oliffe, J. L. (2024). Primary care for individuals with obesity: A critical overview and recommendations. *Canadian Journal of Cardiovascular Nursing*, 34(1), 22–27.

Key Highlights

- Obesity is a chronic, relapsing disease that is often misattributed to an individual's lack of willpower or understanding about this health issue.
- Nurses and other primary care providers must consider the harmful effects of weight bias and stigma on people with obesity while providing judgement-free care.
- A weight-inclusive approach to management includes removal of barriers, effective pharmacologic options, and partnered agreement of health expectations.
- Nurses and other primary care providers should focus on patient health, not weight.

Obesity is a chronic, prevalent, and relapsing disease, characterized by excess adiposity that impairs health (Wharton et al., 2020). Obesity is a complex health issue resulting from the dysregulation of individual genetic, physiological, and environmental factors overlaying environmental biology (Wharton et al., 2020). The prevalence of individuals with obesity and excess body weight has increased dramatically over the decades (World Health Organization [WHO], 2021). More than one-third of Canadian adults have a body mass index (BMI) classifying them as overweight, and one in four Canadians are considered obese (Statistics Canada,

2019). Regardless of the measurement tool used, two to three times more Canadians are obese today than 50 years ago (Elfien, 2023). Importantly, many of these individuals are receiving suboptimal care (Mauldin et al., 2022).

In this critical overview, we synthesize current evidence about obesity management and recommend best practices related to obesity care for primary care providers, and cardiovascular nurses in particular. By challenging the current weight-centric paradigm and offering a weight-neutral alternative, care providers can shift the focus from weight loss to health promotion (Mauldin et al., 2022; Mensinger et al., 2016; Dimitrov Ulian et al., 2022). A better understanding of this complex condition and the negative influence of social stigma and weight bias affirms the need to revisit obesity management in Canadian primary care (Rubino et al., 2021).

Background to Obesity Care

The Canadian Medical Association recognized obesity as a chronic disease in 2015 (Wharton et al., 2020). Official disease status facilitates the development of, and access to treatment programs and specialty clinics, and legitimizes research in the field. In addition, disease status provides individuals with obesity with a medical diagnosis, which may help reduce feelings

of self-blame (Wharton et al., 2020). However, the debate continues: those opposed to classifying obesity as a disease argue that it implies bigger bodies are sick and that to be healthy, bigger bodies must become smaller (Luli et al., 2023). This critical perspective is referred to as the weight-neutral paradigm (Mauldin et al., 2022). Weight-neutral care avoids pathologizing people with bigger bodies and shifts the focus to health behaviours and risk reduction (Bacon & Aphramor, 2011; Gaesser & Angadi, 2021).

Although BMI is the current metric used to define obesity, its usefulness is limited due to several flaws. For example, at the population level, a high BMI does not necessarily correspond to health complications. Tomiyama et al. (2016) analyzed population-based data (N = 40,420) and demonstrated how reliance on the BMI leads to misclassifications in health status. Among the participants classified as obese, 29% were healthy based on their cardiometabolic data. The BMI is also inaccurate for individual assessment (Rasmussen, 2019) because it does not take into account the location or percentage of adipose tissue, which is essential for understanding the degree to which weight impacts health. The likelihood of health complications increases depending on location and distribution of adiposity, as well as genetic, physiological, and socioeconomic factors (Warburton & Bredin, 2017). Despite its flaws, BMI is considered helpful to identify population-based trends and, by extension, to provide directives for prevention programs (Global BMI Mortality Collaboration et al., 2016).

While individuals with obesity are not necessarily unwell, obesity is a predisposing factor for several health issues, including type 2 diabetes mellitus, gallbladder disease, non-alcoholic fatty liver disease, joint pain, and gout (Wharton et al., 2020). Additionally, specific cancers are linked to excess adiposity, including colon, kidney, esophageal, and endometrial cancers (Wharton et al., 2020). Several mental health disorders are also linked to obesity. For example, depression and obesity tend to have a bi-directional relationship; many symptoms of, and medications for depression are obesogenic and people with obesity often develop depression (Milaneschi et al., 2019). Obesity is also associated with several cardiovascular diseases. However, the connection is complex; for some individuals with obesity comorbidities increase the risk of cardiovascular disease, and for others, obesity may be a direct risk factor (Mandviwala et al., 2016).

The interconnectedness between obesity and co-morbidities, layered upon social, behavioural, economic, and biologic factors, challenges many primary care providers (PCPs), including nurses to provide optimal care for their patients (Sharma et al., 2019). Sustained weight loss reduces the risk of acquiring an obesity-related co-morbidity (Rubino et al., 2021). However, PCPs commonly advise weight loss through diet and exercise only (Mensingher et al., 2016). Emerging evidence shows that diet and exercise are generally ineffective in the long term, and can cause individuals to cycle between weight levels (Bacon & Aphramor, 2011; Kheniser et al., 2021;

Sharma et al., 2019), which has harmful metabolic and psychological consequences (Mensingher et al., 2016). In fact, there is evidence that weight cycling is a risk factor for cardiometabolic diseases (Montani et al., 2015). Despite a complex constellation of conditions, more empathetic and effective treatment and management for obesity is possible – and critical. However, the harmful effects of weight stigma, bias, and discrimination must also be addressed (O’Hara & Taylor, 2018).

Weight Bias and Stigma

Weight bias and stigma cause harm to individuals living in bigger bodies (Mauldin et al., 2022). Weight bias is defined as negative attitudes, beliefs, assumptions, and judgements about individuals who are overweight or obese (Mauldin et al., 2022). Weight bias stems from the weight-centric paradigm (Talumaa et al., 2022), the belief that obesity is caused by an individual’s failure to control food intake, and is associated with traits including laziness, lack of motivation, and non-compliance with medical advice (Forhan & Salas, 2013). Implicit weight bias involves assumptions beyond conscious awareness, whereas explicit bias is conscious (Mauldin et al., 2022).

Weight stigma is a social phenomenon defined as “the social rejection and devaluation that accrues to those who do not comply with prevailing social norms of adequate body weight and shape” (O’Hara & Taylor, 2018, p. 1). Research has highlighted the multiple harms of weight stigma and adverse-related health outcomes (Calogero et al., 2016; Talumaa et al., 2022; Tomiyama et al., 2018; Wu & Berry, 2018). Stigmatized people with obesity experience discrimination and loss of social status, which impacts multiple life domains, including employment and education (Lee & Pausé, 2016).

The daily stress of social stigma for persons with obesity may negatively impact their behaviour and psychological health, and cause physiologic changes. In a systematic review of the impact of weight stigma (N = 33 studies), Wu and Berry (2018) reported higher perceptions of weight stigma were associated with the following behavioural changes: higher incidence of disordered eating, decreased medication adherence, and healthcare avoidance. This review and others have also found that weight stigma is associated with changes to physical health including increased cortisol, glycated hemoglobin, and C-reactive protein, causing dysregulation of glucose and lipid metabolism and inflammation (Talumaa et al., 2022; Wu & Berry, 2018). These weight stigma experiences may also contribute to poor psychological health, including depression, low self-esteem and body dissatisfaction, followed by decreased exercise and disordered eating (Mauldin et al., 2022; Talumaa et al., 2022; Wu & Berry, 2018).

The widespread perception of obesity as an individual behavioural disorder oversimplifies its complex nature. Therefore, it is not surprising that healthcare professionals can hold explicit and implicit weight biases (Mauldin et al., 2022; Talumaa et al., 2022; Tomiyama et al., 2018). Nursing and medical students may not knowingly endorse anti-obese

attitudes; however, in a review of studies using validated measures ($N = 3,554$), healthcare professionals (HCPs) scored more weight bias than they were consciously aware of (Talumaa et al., 2022). This dilemma is thought to be driven by the weight-centric paradigm that promotes the association of slimness with health (Mauldin et al., 2022). As a result, individuals with obesity are less likely to access healthcare and less likely to receive evidence-based and judgement-free care (Lee & Pausé, 2016). For example, in a fairly recent systematic review ($n = 38,988$), Graham et al. (2022) reported that individuals with obesity are less likely to receive cancer screening than people who are thin.

Weight stigma is reinforced through the use of BMI; the categories of normal/ideal weight (i.e., 18–24.9 kg/m²), overweight (25–29.9 kg/m²), or obese (BMI > 30 kg/m²; WHO, 2021) imply there are right and wrong weights and quantify the magnitude of the obesity problem. Critics have challenged the utility of the BMI, arguing that it is a weak predictor of health status, unhelpful in non-white populations and women, and that its use increases health inequities (Bacon & Aphramor, 2011; Mauldin et al., 2022; Rasmussen, 2019; Wharton et al., 2020).

Challenging False Assumptions

An improved understanding of obesity has been shown to reduce bias in healthcare professionals, with de-stigmatizing effects for individuals with obesity (Talumaa et al., 2022). Therefore, we review several common assumptions of the weight-centric paradigm to provide clarity on this complex health issue.

Assumption 1: Increased Weight Equals Increased Mortality

Several populations-based studies have evaluated the relative risk of mortality associated with various BMIs, after controlling for confounding factors, such as age and smoking (Flegal et al., 2005; Visaria & Setoguchi, 2023). These authors reported that relative to the normal weight category, excess weight (BMI = 25–29.9 kg/m²) was not associated with excess mortality. However, individuals classified as underweight and obese were at higher mortality risk (Flegal et al., 2005; Visaria & Setoguchi, 2023). While there is evidence that individuals with very high body weight have increased mortality rates, for those with mild obesity, BMI only weakly predicts longevity.

Key message: Individuals classified as overweight or mildly obese based on their BMI alone are not necessarily at increased risk of death and warrant further assessment.

Assumption 2: Increased Weight Causes Increased Comorbidities

The association between obesity and multiple comorbidities is well-established (WHO, 2021). However, there is controversy regarding the degree to which this relationship is causative (Bacon & Aphramor, 2011; Mauldin et al., 2022).

Factors such as the social determinants of health, health inequities, weight stigma, weight cycling, mental health, fitness, and nutrient intake all play a role in determining the health risk of obesity, but these multiple factors are difficult to measure and disentangle, and are often unaccounted for in studies (Bacon & Aphramor, 2011). However, when these factors are included, the increased risk of disease is greatly reduced, regardless of weight (Bacon & Aphramor, 2011; Visaria & Setoguchi, 2023).

Key message: We cannot assume weight is the sole reason for comorbidities.

Assumption 3: Dieting Works

Many healthcare practitioners advise weight loss through decreased calorie consumption and increased energy expenditure. A fairly recent Canadian study of 255 healthcare practitioners ($n = 131$ nurses) indicated that professionals continue to focus on excess food intake and inactivity as the primary causes of obesity (Van Stiphout et al., 2022). However, weight loss from these methods is not usually sustained and often leads to weight cycling (Mensing et al., 2016; Dimitrov Ulian et al., 2022). This, in turn, may lead to negative physical health consequences, such as insulin resistance, hypertension, dyslipidemia, and cardiovascular disease (Bacon & Aphramor, 2011; Jeong et al., 2021). Weight cycling can also invoke shame for patients, frustration for clinicians, and the erosion of therapeutic relationships (Lee & Pausé, 2016; Mauldin et al., 2022). Dieting has also been associated with disordered eating, increased social stigma, and healthcare avoidance (Mauldin et al., 2022; O'Hara & Taylor, 2018).

Key message: Advising weight loss only in the plan of care for patients with obesity is often ineffective and potentially harmful.

Assumption 4: All Individuals with Obesity are Unhealthy

It is common to assume a person is unhealthy based solely on a high BMI (Frederick et al., 2020). However, a subset of individuals with obesity are metabolically healthy (Linares-Pineda et al., 2022). Fitness and diet affect health, independent of weight, which means an overweight/obese person can be fit and healthy, and a thin person can be unhealthy (Talumaa et al., 2022). Research indicates that cardiorespiratory fitness (CRF) may be a better predictor of mortality than BMI (Gaesser & Angadi, 2021). In a comprehensive review, Gaesser and Angadi (2021) argue that the increased mortality risk associated with obesity can be significantly reduced and sometimes eliminated with moderate to high levels of cardiorespiratory fitness and that improvements in cardiometabolic risk markers with exercise are comparable to weight loss programs. Moreover, physical activity has multiple benefits, and may curb symptoms of disordered eating (Campos et al., 2022).

Key message: CRF is a better indicator of health and is independent of a person's body weight.

A Path Forward: Primary Care Recommendations for Individuals with Obesity

Despite the research evidence regarding obesity and weight stigma, the rates of effective weight management in primary care are low (Luig et al., 2018; Ogunleye et al., 2015). Based on a review of the weight science literature, Mauldin et al. (2022) proposed a weight-inclusive model of caring for individuals with obesity, with the targets for interventions conceptualized at three levels of influence: the clinician, the practice environment, and systemic issues (Mauldin et al., 2022). Weight-inclusive care is an approach that asserts everyone can attain health and well being regardless of their body weight or BMI, assuming they have non-stigmatized care (Mauldin et al., 2022). Weight-inclusive care raises awareness of body size diversity, challenges healthcare that assumes a weight-centric approach, focuses on behaviour change to treat and manage obesity, and values quality of life over weight loss.

The clinician

Prior to treating patients with obesity, clinicians should reflect on their own biases. Understanding one's implicit biases brings awareness and objectivity to decision-making. The Harvard Implicit Association Test is a tool that measures the strength of associations between concepts and evaluations or stereotypes, and can identify the care provider's degree of implicit weight bias (Talumaa et al., 2022). Use of this tool and self-reflection are important steps for combating the dominant clinical and cultural narratives that frame obesity as irresponsibility and lack of will power, and move toward providing respectful, non-judgemental care.

Obesity Canada has developed clinical practice guidelines to streamline care for people with obesity (Wharton et al., 2020). The guidelines are arranged in five sequential steps. These steps can be augmented by the 5As of assessment and intervention, which are also recommended for obesity management: ask, assess, advise, agree, assist (Wharton et al., 2020). Based on these current clinical practice guidelines, the following five recommendations are presented for nurses and other providers who work with people experiencing obesity.

1. Recognize obesity as a chronic disease and ask the patient permission to offer advice. Obesity is a heterogeneous disease with diverse drivers and presentations for individual patients and, therefore, requires customized treatment like any chronic disease (Wharton et al., 2020). However, unlike most chronic diseases, obesity is often associated with shame and traumatic healthcare experiences (Mauldin et al., 2022). Using neutral language, such as 'a person with obesity' rather than 'an obese person,' demonstrates empathy and separates the individual from their diagnoses (Puhl, 2020). Current guidelines recommend asking to discuss weight, which shows respect and does not assume every person with obesity wants to engage treatment[s]. As well, specific

appointments to address obesity are an important consideration, as this disentangles comorbidities and highlights obesity as a separate health issue (Ogunleye et al., 2015). For example, "Your blood pressure is still high; if you lost weight, your blood pressure would likely improve" embeds obesity with hypertension management and may result in guilt and shame that the hypertension is their fault.

2. Assessment. It is important for PCPs to integrate a holistic approach that addresses the root cause of weight gain and the potential metabolic, mechanical, and mental comorbidities, while avoiding stigmatizing behaviours and oversimplification (Wharton et al., 2020). The initial visit for obesity should include measurement of BMI and waist circumference, history of weight gain with cardiometabolic indices and assessment of comorbidities. Obtaining a thorough history will help to identify the root causes of obesity, which could be a combination of genetics, epigenetics, neurohormonal mechanisms, chronic diseases, medications, cultural practices and beliefs, built environment, adverse childhood experiences, mood disorders, eating disorders, attention-deficit/hyperactivity disorder and identity (Luig et al., 2018). Understanding the root cause of obesity and the barriers to weight loss provides a target for care and an explanation for the patient. Making sense of root causes and barriers, along with reframing misconceptions about obesity are key discussions that support patients in their capacity to make changes (Luig et al., 2018).

3. Discussion of treatment options. Treatment for adults living with obesity is multimodal and interdisciplinary, and often includes pharmacologic, behavioural, psychological, and potentially surgical components (Wharton et al., 2020). Prior to 2021, on-label medical management options provided modest results, but had a relatively high burden of side effects. Semaglutide/Ozempic is a new and more effective treatment option for people with obesity (Xie et al., 2022). Clinical trial results indicate that semaglutide not only reduces body weight, but also lowers blood pressure, hemoglobin A1C and lipid levels, improves physical functioning, and has less side effects than earlier obesity medication (Rubino et al., 2021). Although this evidence suggests that semaglutide can be an effective treatment option for some people with obesity, the clinical trials of semaglutide have been criticized for their small sample sizes and short-term follow-up (Sodhi et al., 2023). Conversations with individuals about pharmacological management of obesity must include the benefits and risks of these medications.

Behavioural treatment for obesity involves nutrition and physical activity. However, diet modifications for weight loss are not effective when used alone because compensatory mechanisms may ultimately lead to weight gain (Khasteganan et al., 2019). This process is mediated by many factors including hormones, neurotransmitters and the effect of the

microbiome on hunger and satiety (Wharton et al., 2020). A growing field of research promotes intuitive eating as a safe and effective dietary change for people with obesity (Braun et al., 2022). Intuitive eating involves recognizing how various foods make the body feel, and making decisions based on this sensation-based awareness while avoiding restriction or policing of food choices (Braun et al., 2022). Additionally, some people with obesity benefit from screening for eating disorders and counselling from allied health providers, as necessary (Campos et al., 2022).

Increased physical activity has positive impacts on metabolic functions and can help to stabilize weight and improve physical functioning, but the amount of activity required is different for each individual, depending on their baseline CRF (Boulé & Prud'homme, 2020). Mental health in people with obesity is improved with physical activity as well, especially brisk walking, jogging, and social forms of exercise (Xu et al., 2022). While PCPs are generally able to provide basic counselling on nutrition, physical activity, and mental health, referrals to specialists may be needed for more in-depth care (Ogunleye et al., 2015).

Bariatric surgery should be considered for people with BMI $>40 \text{ kg/m}^2$ or $>35 \text{ kg/m}^2$ with an obesity-related comorbidity (Wharton et al., 2020). For these groups, surgery offers superior outcomes compared to best medical management in terms of weight loss and quality of life (Anvari et al., 2018). Bariatric surgery is under-accessed in Canada; though the number of surgeries has increased, it has not kept pace with the growth of referrals (Anvari et al., 2018). Unfortunately, bariatric surgery is available annually to only one in 171 adults with severe obesity, and referred patients may wait up to eight years for the procedure (Obesity Canada, 2019).

4. Agreement regarding goals of therapy. Obesity is a chronic disease that requires life-long management. Agreement regarding weight loss expectations, sustainable behavioural goals and treatment plans should be frequently revisited (Wharton et al., 2020). Weight loss expectations that are clearly communicated based on the patient's best weight and their stated goals will avoid disappointment, non-adherence, and distrust (Wharton et al., 2020). A personalized action plan, based on the patient's obesity drivers, can help sustain behaviour change goals (Wharton et al., 2020). Nurses and other PCPs can emphasize success as measured by improvements in health and wellbeing, rather than a number on the scale.

5. Follow up and Advocacy. Primary care for individuals living with obesity requires a holistic approach to follow-up care that includes environmental, socioeconomic, emotional and medical factors that may be contributing to this health issue. For example, socioeconomic factors may prohibit a gym membership, healthy food choices, or medication options. Outcomes are optimized with an interdisciplinary follow-up approach that includes nurses, physicians,

registered dietitians, mental health specialists, and/or social work colleagues (Ogunleye et al., 2015).

Nurses working with the obesity population can play an important role in advocacy through involvement in causes that aim to improve care for individuals with obesity. Advocacy can be aimed at improving education at the clinical level for nurses working with individuals with obesity, and at university nursing programs to improve obesity health education in their curricula. Advocacy is also important at the government level to fund weight-loss medications and more bariatric surgeries (Mauldin et al., 2022; Wharton et al., 2020).

Practice environment

The practice environment, as identified in Mauldin's framework, refers to how individuals feel in the space where they receive care, and partly determines whether they feel accepted or unwelcome (Mauldin et al., 2022). From blood pressure cuffs to gowns and chairs, appropriately-sized equipment must be available (Mauldin et al., 2022). Additionally, the clinic space should avoid media that promotes the slim ideal or promotes diet cultures, as depicted in common fashion and lifestyle magazines. Training should be provided for all office staff to use neutral language and eliminate micro-aggression (Ogunleye et al., 2015). Creating a safe space for treatment improves care for people with obesity (Wharton et al., 2020).

Systemic issues

There are major systemic barriers to obesity care in Canada, including lack of interdisciplinary obesity management programs, inadequate access to providers with expertise in obesity, low provider adherence to management guidelines, beliefs that guidelines are ineffective, lack of public health coverage for prescription drug treatment (Obesity Canada, 2019; Sharma et al., 2019), and low interest in treating this health issue (Van Stiphout et al., 2022).

In Canada, medications for weight loss are not covered by health insurance, because they are considered lifestyle medications. Semaglutide (aka Ozempic), originally developed for diabetes, was approved for weight loss use in Canada in 2021; however, it is not reimbursed under most public or private drug insurance/subsidy plans (Canadian Agency for Drugs and Technology in Health [CADTH], 2022). This medication is expensive and, therefore, only available to those who are well-resourced, thereby increasing health inequities.

In a busy primary care practice, addressing systemic issues may be daunting, but awareness and advocacy can begin to shift cultural perceptions, decrease weight bias, and create lasting social change. Systemic structures and services would benefit from a mandated equity, diversity, and inclusion policy that fully addresses the health inequity experienced by individuals with obesity (Petticrew et al., 2022). Too often, broad changes target individuals without associated structural-level change, such as ensuring access to healthy food, but not banning unhealthy food in schools and public institutions.

Nurses, in particular, are educated to recognize the impact of the social determinants of health, and can overcome the tendency to focus on weight by applying their knowledge of health inequities to their patients with obesity (Biro et al., 2016; Mauldin et al., 2022).

Conclusion

Obesity affects one in four Canadian adults. Despite its prevalence, obesity is frequently oversimplified and mischaracterized as a personal failing, even (and sometimes

especially) by healthcare providers, including nurses. However, a burgeoning field of research is providing insight regarding the complex nature of obesity, the multiple negative effects of weight stigma, and the need for nurses to focus on health promotion for patients with obesity rather than fixating on achieving weight loss. There is much nurses can do, from self-reflection and education, to building an empathetic practice environment, to advocating for system-level change. These actions will increase momentum for a shift in how obesity is seen, experienced, and managed in primary care.

REFERENCES

- Anvari, M., Lemus, R., & Breau, R. (2018). A landscape of bariatric surgery in Canada: For the treatment of obesity, type 2 diabetes and other comorbidities in adults. *Canadian Journal of Diabetes*, 42(5), 560–567. <https://doi.org/10.1016/j.cjcd.2017.12.007>
- Bacon, L., & Aphramor, L. (2011). Weight science: Evaluating the evidence for a paradigm shift. *Nutrition Journal*, 10(1), 9. <https://doi.org/10.1186/1475-2891-10-9>
- Biro, S., Williamson, T., Leggett, J. A., Barber, D., Morkem, R., Moore, K., Belanger, P., Mosley, B., & Janssen, I. (2016). Utility of linking primary care electronic medical records with Canadian census data to study the determinants of chronic disease: An example based on socioeconomic status and obesity. *BMC Medical Informatics and Decision Making*, 16(1), 1–8. <https://doi.org/10.1186%2Fs12911-016-0272-9>
- Boulé, N. G., & Prud'homme, D. (2020). *Canadian adult obesity clinical practice guidelines: Physical activity in obesity management*. <https://obesitycanada.ca/guidelines/physicalactivity>
- Braun, T. D., Unick, J. L., Abrantes, A. M., Dalrymple, K., Conboy, L. A., Schifano, E., Park, C. L., & Lazar, S. W. (2022). Intuitive eating buffers the link between internalized weight stigma and body mass index in stressed adults. *Appetite*, 169, 105810.
- Calogero, R. M., Tylka, T. L., & Mensinger, J. L. (2016). Scientific weightism: A view of mainstream weight stigma research through a feminist lens. In T.-A. Roberts, N. Curtin, L. E. Duncan, & L. M. Cortina (Eds.), *Feminist Perspectives on Building a Better Psychological Science of Gender* (pp. 9–28). Springer International. https://doi.org/10.1007/978-3-319-32141-7_2
- Campos, M. B., Menezes, I. H. C. F., Peixoto, M. do R. G., & Schincaglia, R. M. (2022). Intuitive eating in general aspects of eating behaviors in individuals with obesity: Randomized clinical trial. *Clinical Nutrition ESPEN*, 50, 24–32. <https://doi.org/10.1016/j.clnesp.2022.06.002>
- Canadian Agency for Drugs and Technology in Health (CADTH). CADTH Reimbursement Recommendation: Semaglutide (Wegovy). (2022). *Canadian Journal of Health Technologies*, 2(10). www.cadth.ca/sites/default/files/DRR/2022/SR0725%20Wegovy%20-%20CADTH%20Final%20Recommendation-meta.pdf
- Elflein, J. (2023, November). Percent of overweight or obese Canadian adults based on BMI 2015–2021. <https://www.statista.com/statistics/748339/share-of-canadians-overweight-or-obese-based-on-bmi/>
- Flegal, K. M., Graubard, B. I., Williamson, D. F., & Gail, M. H. (2005). Excess deaths associated with underweight, overweight, and obesity. *Journal of the American Medical Association*, 293(15), 1861–1867. <https://doi.org/10.1001/jama.293.15.1861>
- Forhan, M., & Salas, X. R. (2013). Inequities in Healthcare: A review of bias and discrimination in obesity treatment. *Canadian Journal of Diabetes*, 37(3), 205–209. <https://doi.org/10.1016/j.cjcd.2013.03.362>
- Frederick, D. A., Tomiyama, A. J., Bold, J. G., & Saguy, A. C. (2020). Can she be healthy at her weight? Effects of news media frames on anti-fat attitudes, dieting intentions, and perceived health risks of obesity. *Stigma and Health*, 5(3), 247–257. <https://doi.org/10.1037/sah0000195>
- Gaesser, G. A., & Angadi, S. S. (2021). Obesity treatment: Weight loss versus increasing fitness and physical activity for reducing health risks. *Iscience*, 24(10).
- Global BMI Mortality Collaboration, Di Angelantonio, E., Bhupathiraju, S. N., Wormser, D., Gao, P., Kaptoge, S., de Gonzalez, A. B., ... Hu, F. B. (2016). Body-mass index and all-cause mortality: Individual-participant-data meta-analysis of 239 prospective studies in four continents. *The Lancet*, 388(10046), 776–786. [https://doi.org/10.1016/S0140-6736\(16\)30175-1](https://doi.org/10.1016/S0140-6736(16)30175-1)
- Graham, Y., Hayes, C., Cox, J., Mahawar, K., Fox, A., Yemm, H. (2022). A systematic review of obesity as a barrier to accessing cancer screening services. *Obesity Science & Practice*, 8(6), 715–727. <https://doi.org/10.1002/osp4.606>
- Jeong, J., Choi, S., Chang, J., Kim, K., Kim, S. M., Hwang, S. Y., Son, J. S., Lee, G., & Park, S. M. (2021). Association of weight fluctuation with cardiovascular disease risk among initially obese adults. *Scientific Reports*, 11, 10152. <https://doi.org/10.1038/s41598-021-89666-7>
- Khasteganan, N., Lycett, D., Furze, G., & Turner, A. P. (2019). Health, not weight loss, focused programmes versus conventional weight loss programmes for cardiovascular risk factors: A systematic review and meta-analysis. *Systematic Reviews*, 8(1), 200. <https://doi.org/10.1186/s13643-019-1083-8>
- Kheniser, K., Saxon, D. R., & Kashyap, S. R. (2021). Long-term weight loss strategies for obesity. *Journal of Clinical Endocrinology and Metabolism*, 106(7), 1854–1866. <https://doi.org/10.1210/clinem/dgab091>
- Lee, J. A., & Pausé, C. J. (2016). Stigma in practice: Barriers to health for fat women. *Frontiers in Psychology*, 7, 2063. <https://doi.org/10.3389/fpsyg.2016.02063>
- Linares-Pineda, T. M., Boughanem, H., Gutiérrez-Repiso, C., Macías-González, M., Andrés-León, E., Rojo-Martínez, G., Valdés, S., Tinahones, F. J., & Morcillo, S. (2022). Epigenetic changes in the metabolically healthy obese: A case-control versus a prospective study. *European Journal of Clinical Investigation*, 52(8), e13783. <https://doi.org/10.1111/eci.13783>
- Luig, T., Anderson, R., Sharma, A. M., & Campbell-Scherer, D. L. (2018). Personalizing obesity assessment and care planning in primary care: Patient experience and outcomes in everyday life and health. *Clinical Obesity*, 8(6), 411–423. <https://doi.org/10.1111/cob.12283>
- Luli, M., Yeo, G., Farrell, E., Ogden, J., Parretti, H., Frew, E., Bevan, S., Brown, A., Logue, J., Menon, V., Isack, N., Lean, M., McEwan, C., Gately, P., Williams, S., Astbury, N., Bryant, M., Clare, K., Dimitriadis, G. K., ... & Miras, A. D. (2023). The implications of defining obesity as a disease: A report from the Association for the Study of Obesity 2021 annual conference. *EClinicalMedicine*, 58, 101962. <https://doi.org/10.1016/j.eclinm.2023.101962>

- Mandviwala, T., Khalid, U., & Deswal, A. (2016). Obesity and cardiovascular disease: A risk factor or a risk marker? *Current Atherosclerosis Reports*, 18, 1–10. <https://doi.org/10.1007/s11883-016-0575-4>
- Mauldin, K., May, M., & Clifford, D. (2022). The consequences of a weight-centric approach to healthcare: A case for a paradigm shift in how clinicians address body weight. *Nutrition in Clinical Practice*, 1–16. <https://doi.org/10.1002/ncp.10885>
- Mensingher, J. L., Calogero, R. M., Stranges, S., & Tylka, T. L. (2016). A weight-neutral versus weight-loss approach for health promotion in women with high BMI: A randomized-controlled trial. *Appetite*, 105, 364–374. <https://doi.org/10.1016/j.appet.2016.06.006>
- Milaneschi, Y., Simmons, W. K., van Rossum, E. F., & Penninx, B. W. (2019). Depression and obesity: Evidence of shared biological mechanisms. *Molecular Psychiatry*, 24(1), 18–33. <https://doi.org/10.1038/s41380-018-0017-5>
- Montani, J. P., Schutz, Y., & Dulloo, A. G. (2015). Dieting and weight cycling as risk factors for cardiometabolic diseases: Who is really at risk? *Obesity Reviews*, 16, 7–18. <https://doi.org/10.1111/obr.12251>
- Obesity Canada. (2019). *Report card on access to obesity treatment for adults in Canada*. <https://obesitycanada.ca/wp-content/uploads/2019/05/OC-Report-Card-2019-English-Final.pdf>
- Ogunleye, A., Osunlana, A., Asselin, J., Cave, A., Sharma, A. M., & Campbell-Scherer, D. L. (2015). The 5As team intervention: Bridging the knowledge gap in obesity management among primary care practitioners. *Bio Med Central Research Notes*, 8, 810. <https://doi.org/10.1186/s13104-015-1685-8>
- O'Hara, L., & Taylor, J. (2018). What's wrong with the 'war on obesity?' A narrative review of the weight-centered health paradigm and development of the 3C framework to build critical competency for a paradigm shift. *SAGE Open*, 8(2). <https://doi.org/10.1177/2158244018772888>
- Petticrew, M., Maani, N., & van Schalkwyk, M. C. (2022). The role of commercial influences in public understanding of harms, causes, and solutions. In N. Maani, M. Petticrew, & S. Galea (Eds.), *The commercial determinants of health*. Oxford University Press. <https://doi.org/10.1093/oso/9780197578742.003.0006>
- Puhl, R. M. (2020). What words should we use to talk about weight? A systematic review of quantitative and qualitative studies examining preferences for weight-related terminology. *Obesity Reviews*, 21(6), e13008. <https://doi.org/10.1111/obr.13008>
- Rasmussen, N. (2019). Downsizing obesity: On Ancel Keys, the origins of BMI, and the neglect of excess weight as a health hazard in the United States from the 1950s to 1970s. *Journal of the History of the Behavioral Sciences*, 55(4), 299–318. <https://doi.org/10.1002/jhbs.21991>
- Rubino, D., Abrahamsson, N., Davies, M., Hesse, D., Greenway, F. L., Jensen, C., Lingvay, I., Mosenzon, O., Rosenstock, J., Rubio, M. A., Rudofsky, G., Tadayon, S., Wadden, T. A., & Dicker, D. (2021). Effect of continued weekly subcutaneous semaglutide vs placebo on weight loss maintenance in adults with overweight or obesity: The STEP 4 randomized clinical trial. *Journal of the American Medical Association*, 325(14), 1414–1425. <https://doi.org/10.1001/jama.2021.3224>
- Sharma, A. M., Bélanger, A., Carson, V., Krah, J., Langlois, M. F., Lawlor, D., Lepage, S., Liu, A., Macklin, D. A., MacKay, N., Pakseresht, A., Pedersen, S. D., Ramos Salas, X., & Vallis, M. (2019). Perceptions of barriers to effective obesity management in Canada: Results from the ACTION study. *Clinical Obesity*, 9(5), e12329.
- Statistics Canada. (2019). *Overweight and obese adults, 2018*. <https://www150.statcan.gc.ca/n1/pub/82-625-x/2019001/article/00005-eng.htm>
- Sodhi, M., Rezaeianzadeh, R., Kezouh, A., & Etmiman, M. (2023). Risk of gastrointestinal adverse events associated with glucagon-like peptide-1 receptor agonists for weight loss. *Journal of American Medical Association*, 330(18), 1795–1797. <https://doi.org/10.1001/jama.2023.19574>
- Talumaa, B., Brown, A., Batterham, R. L., & Kalea, A. Z. (2022). Effective strategies in ending weight stigma in healthcare. *Obesity Reviews*, 1–16. <https://doi.org/10.1111/obr.13494>
- Tomiyama, A. J., Hunger, J. M., Nguyen-Cuu, J., & Wells, C. (2016). Misclassification of cardiometabolic health when using body mass index categories in NHANES 2005–2012. *International Journal of Obesity*, 40(5), 883–886. <https://doi.org/10.1038/ijo.2016.17>
- Tomiyama, A. J., Carr, D., Granberg, E. M., Major, B., Robinson, E., Sutin, A. R., & Brewis, A. (2018). How and why weight stigma drives the obesity 'epidemic' and harms health. *Bio Med Central Medicine*, 16, 123. <https://doi.org/10.1186/s12916-018-1116-5>
- Dimitrov Uliam, M., Pinto, A. J., de Moraes Sato, P., Benatti, F. B., Lopes de Campos-Ferraz, P., Coelho, D., Roble, O. J., Sabatini, F., Perez, I., Aburad, L., Vessoni, A., Fernandez Unsain, R., Rogero, M. M., Sampaio, G., Gualano, B., & Scagliusi, F. B. (2022). Health at every size®-based interventions may improve cardiometabolic risk and quality of life even in the absence of weight loss: An ancillary, exploratory analysis of the Health and Wellness in Obesity study. *Frontiers in Nutrition*, 9, 598920. <https://doi.org/10.3389/fnut.2022.598920>
- Van Stiphout, C., Alex, R., Turner, K., Twyman, K., Brown, J., Bowes, B., Charlebois, A., & Quinlan, B. (2022). A quality improvement project to determine the knowledge, attitudes, and beliefs of healthcare providers regarding the treatment of patients with obesity. *Canadian Journal of Cardiovascular Nursing*, 32(2), 11–17.
- Visaria, A., & Setoguchi, S. (2023). Body mass index and all-cause mortality in a 21st century US population: A National Health Interview Survey analysis. *PLoS ONE*, 18(7), e0287218.
- Warburton, D. E. R., & Bredin, S. S. D. (2017). Health benefits of physical activity: A systematic review of current systematic reviews. *Current Opinion in Cardiology*, 32(5), 541–556. <https://doi.org/10.1097/HCO.0000000000000437>
- Wharton, S., Lau, D. C. W., Vallis, M., Sharma, A. M., Biertho, L., Campbell-Scherer, D., Adamo, K., Alberg, A., Bell, R., Boulé, N., Boyling, E., Brown, J., Calam, B., Clarke, C., Crowshoe, L., Divalentino, D., Forhan, M., Freedhoff, Y., Gagner, M., ... Wicklum, S. (2020). Obesity in adults: A clinical practice guideline. *Canadian Medical Association Journal*, 192(31), E875–E891. <https://doi.org/10.1503/cmaj.191707>
- World Health Organization. (2021). *Obesity and overweight*. <https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight>
- Wu, Y.-K., & Berry, D. C. (2018). Impact of weight stigma on physiological and psychological health outcomes for overweight and obese adults: A systematic review. *Journal of Advanced Nursing*, 74(5), 1030–1042. <https://doi.org/10.1111/jan.13511>
- Xie, Z., Yang, S., Deng, W., Li, J., & Chen, J. (2022). Efficacy and safety of liraglutide and semaglutide on weight loss in people with obesity or overweight: A systematic review. *Clinical Epidemiology*, 14, 1463–1476. <https://doi.org/10.2147/CLEP.S391819>
- Xu, P., Huang, Y., Hou, Q., Cheng, J., Ren, Z., Ye, R., Yao, Z., Chen, J., Lin, Z., Gao, Y., & Chen, Y. (2022). Relationship between physical activity and mental health in a national representative cross-section study: Its variations according to obesity and comorbidity. *Journal of Affective Disorders*, 308, 484–493. <https://doi.org/10.1016/j.jad.2022.04.037>



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