REVIEW ARTICLE

Patient navigation across the cancer care continuum: An overview of systematic reviews and emerging literature

Raymond J. Chan RN, PhD[1,2] | Vivienne E. Milch MBBS(Hons), MHPol[1,3,4] | Fiona Crawford-Williams PhD[1] | Oluwaseyifunmi Andi Agbejule BRadTherapy[1] | Ria Joseph MNutrDiet[1] | Jolyn Johal BND(Hons)[1] | Narayanee Dick BSc(Hons)[1] | Matthew P. Wallen PhD[1,5] | Julie Ratcliffe PhD[1] | Anupriya Agarwal MBBS[3,6,7] | Larissa Nekhlyudov MD[8] | Matthew Tieu PhD[1] | Manaf Al-Momani BPharm[3] | Scott Turnbull PhD[3] | Rahul Sathiaraj MPH[3] | Dorothy Keefe MBBS, MD[3,9] | Nicolas H. Hart PhD[1,2,10,11,12]

[1]Caring Futures Institute, College of Nursing and Health Sciences, Flinders University, Adelaide, South Australia, Australia

[2]Cancer and Palliative Care Outcomes Centre, School of Nursing, Queensland University of Technology, Brisbane, Queensland, Australia

[3]Cancer Australia, Sydney, New South Wales, Australia

[4]School of Medicine, The University of Notre Dame Australia, Sydney, New South Wales, Australia

[5]Institute of Health and Wellbeing, Federation University Australia, Ballarat, Victoria, Australia

[6]National Health and Medical Research Council Clinical Trials Centre, The University of Sydney, Sydney, New South Wales, Australia

[7]Faculty of Medicine and Health, Sydney Medical School, The University of Sydney, Sydney, New South Wales, Australia

[8]Internal Medicine, Brigham and Women's Hospital, Harvard Medical School, Boston, Massachusetts, USA

[9]School of Medicine, University of Adelaide, Adelaide, South Australia, Australia

[10]Institute for Health Research, The University of Notre Dame Australia, Perth, Western Australia, Australia

[11]Exercise Medicine Research Institute, Edith Cowan University, Perth, Western Australia, Australia

[12]Human Performance Research Centre, Innovative Solutions for Well-being and Health (INSIGHT) Research Institute, Faculty of Health, University of Technology Sydney (UTS), Sydney, New South Wales, Australia

Correspondence

Raymond J. Chan, Caring Futures Institute, College of Nursing and Health Sciences, Flinders University, Bedford Park, South Australia 5042, Australia.
Email: raymond.chan@flinders.edu.au

Abstract

Patient navigation is a strategy for overcoming barriers to reduce disparities and to improve access and outcomes. The aim of this umbrella review was to identify, critically appraise, synthesize, and present the best available evidence to inform policy and planning regarding patient navigation across the cancer continuum. Systematic reviews examining navigation in cancer care were identified in the Cochrane Central Register of Controlled Trials (CENTRAL), PubMed, Embase, Cumulative Index of Nursing and Allied Health (CINAHL), Epistemonikos, and Prospective Register of Systematic Reviews (PROSPERO) databases and in the gray literature from January 1, 2012, to April 19, 2022. Data were screened, extracted,

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and appraised independently by two authors. The JBI Critical Appraisal Checklist for Systematic Review and Research Syntheses was used for quality appraisal. Emerging literature up to May 25, 2022, was also explored to capture primary research published beyond the coverage of included systematic reviews. Of the 2062 unique records identified, 61 systematic reviews were included. Fifty-four reviews were quantitative or mixed-methods reviews, reporting on the effectiveness of cancer patient navigation, including 12 reviews reporting costs or cost-effectiveness outcomes. Seven qualitative reviews explored navigation needs, barriers, and experiences. In addition, 53 primary studies published since 2021 were included. Patient navigation is effective in improving participation in cancer screening and reducing the time from screening to diagnosis and from diagnosis to treatment initiation. Emerging evidence suggests that patient navigation improves quality of life and patient satisfaction with care in the survivorship phase and reduces hospital readmission in the active treatment and survivorship care phases. Palliative care data were extremely limited. Economic evaluations from the United States suggest the potential cost-effectiveness of navigation in screening programs.

INTRODUCTION

Worldwide, over 19 million people were diagnosed with cancer and nearly 10 million cancer deaths were reported in 2020, resulting in more than 50 million people estimated to be living with cancer,[1,2] a figure that continues to increase because of a growing and ageing population, early detection, improved diagnostic methods, and improved treatment. Optimal cancer care requires evidence-based guidelines across the cancer care continuum (i.e., early detection, diagnosis, treatment, survivorship, palliative care, end of life)[3] for screening and surveillance, ongoing evaluation of the effects of cancer and its treatment, interventions for symptom management, coordination between specialists and primary care providers, and provision of sustainable and cost-effective follow-up care. It is also recommended to include personalization of care that aims to empower cancer survivors and support self-management.[4,5]

Despite advances in cancer screening, early detection, and cancer treatments, significant racial, ethnic, and socioeconomic disparities in cancer outcomes remain globally.[6–10] These disparities occur across the cancer care continuum and may be attributed in part to several factors, including limited access and engagement with health care services and insufficient or inequitable allocation of health resources.[11,12] These disparities can manifest in various ways. For developed nations like the United States, there is growing evidence for significant disparities across the cancer care continuum for racial and ethnic minorities or culturally and linguistically diverse populations, such as African American, Asian American, indigenous, Latino or Hispanic, and Pacific Islander populations.[13] Because of several social determinants of health, including lack of health insurance coverage and other financial resources, the disparate outcomes across the cancer continuum may include reduced access to screening and follow-up of abnormal findings, reduced adherence to treatment regimens, and less favorable outcomes in length of survival and quality of life.[14,15] From an international perspective, indigenous populations of Australia and Canada are also less likely to access cancer screening,[1,6] are diagnosed at a later cancer stage,[16,17] and are less likely to receive cancer treatment compared with their nonindigenous peers for the same primary site, age, and diagnostic periods.[16–19]

As cancer care continues to improve, the treatment process for many cancers becomes more complex, with multistep evaluation methods for diagnosing screening abnormalities and cancer symptoms and for multimodal treatment regimens.[8] There is growing recognition that navigating the health care system as a person with cancer or an informal caregiver can be an overwhelming experience, especially for those facing multiple barriers to accessing health care. Barriers faced by people with cancer include structural, cultural, and individual characteristics, such as a lack of personal knowledge and financial means, lack of health insurance coverage, geographic distances from care providers, and the lack of resources for cancer care. These challenges can begin at the time of diagnosis and continue throughout treatment, follow-up care, and survivorship.[20,21] Well established optimal care pathways for people with cancer can help them to better understand, and engage with, complex health systems and know which questions to ask of their health care professionals to ensure they are receiving the best care.[22] However, because cancer care is complex, individuals will require further support at different stages throughout the cancer continuum. Among the many clinical

interventions that have been developed to address barriers to clinical care, patient navigation has been identified as a strategy for overcoming patient-level and system-level barriers, to reduce cancer-related disparities, and to improve access to and coordination of timely care for those most in need.[8,23]

The history and early conception of *patient navigation* can be traced back to its development after the American Cancer Society National Hearings on Cancer in the Poor in late 1980s.[24] Based on the findings of these hearings, the first patient navigation program was developed and launched by Dr Harold Freeman in 1990. This program originally aimed to save lives by eliminating barriers to facilitate early detection and time to cancer treatment.[24] Subsequently, there were milestones, such as the Patient Navigator and Chronic Disease Prevention Act being passed by Congress, which became law in 2005.[24] After >30 years of evolution, there are various definitions of *patient navigation* in practice today.[25–27] However, patient navigation generally refers to the role and activities that enable people affected by cancer to overcome health care barriers and facilitate access to quality health and psychosocial care across the cancer care continuum.[27,28] Patient navigation programs for people with cancer can differ significantly in terms of the staffing and services provided. Patient navigation may be delivered by health care professionals (e.g., nurses, social workers) or lay workers (e.g., peer supporters, people with cancer) with different educational backgrounds and training or may be delivered through digital systems (i.e., automated systems). Depending on the needs of the individual (i.e., the person with cancer and their caregivers), identified barriers, and individualized cancer care goals, navigators provide a wide range of support to help people with cancer overcome barriers to obtain optimal and timely cancer services and effectively use available care resources.

Findings from several reviews in the literature indicate that patient navigation has potential to improve access and continuity of care, cancer screening rates, timeliness of diagnosis, and cancer treatment completion rates. Improvements in quality-of-life indicators, including emotional well-being, have previously been reported.[29] Although the literature has suggested the benefits of patient navigation in cancer, it is somewhat unclear whether: (1) findings are directly applicable to the diverse settings worldwide where *navigation* and navigation programs or platforms are still in their infancy or nonexistent; (2) which components are most critical and effective for improving experiences, outcomes, and efficiency; and (3) how learnings from implementation and evaluation efforts can inform workforce and policy planning across health systems globally. Therefore, it is critical to review existing evidence in the literature to provide a contemporary understanding of patient navigation models in cancer care. Accordingly, the aim of this review was to provide an overview of the existing literature in patient navigation in cancer care and the status of cancer patient navigation models and to promote consistency in expectations across the international community by conceptualizing cancer patient navigation using existing evidence. To achieve this, we conducted an overview of systematic reviews and a review of emerging primary studies that address the following research questions:

Primary research question:

1. What is the effectiveness and cost-effectiveness of different cancer patient navigation models and programs?

Secondary research questions:

1. What is cancer patient navigation, and what are the patient requirements and needs for navigation through the cancer care pathway?
2. What are the key elements (domains) of patient navigation? Which components of navigation models and programs are effective? Which groups of individuals benefit from them?
3. What does the literature and evidence report in relation to cancer patient navigation, and what are the key gaps and limitations in the literature or evidence?
4. What are the facilitators and barriers associated with implementation of cancer patient navigation?
5. What are the patient, caregiver, and provider experiences with patient navigation in cancer care?

METHODS

This overview of systematic reviews and emerging literature (i.e., primary studies published beyond the coverage of included systematic reviews) was prepared and reported according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 guidelines,[14] and was prospectively registered with the Prospective Register of Systematic Reviews database (PROSPERO identification number CRD42022327013).

Search strategy

Databases were searched for peer-reviewed, systematic reviews published in English from 2012 through April 19, 2022, including the Cochrane Database of Systematic Reviews (CENTRAL), PubMed, EMBASE, Cumulative Index of Nursing and Allied Health (CINAHL; on EBSCOhost [EBSCO Industries, Inc.]), Epistemonikos, and PROSPERO databases. Searches were also conducted through the Turning Research into Practice (TRIP) and World Health Organization databases, Google Scholar, and the Agency for Health Research and Quality platform to ensure the retrieval of all relevant articles. Reference lists of eligible studies were also scrutinized. The search strategy (see Table S1) focused on the following key terms and overlapping concepts: *navigation* (e.g., navigator, care coordination, case management) and *cancer* (e.g., malignancy, oncology, neoplasm).

Despite the extensive literature in the field, there was no universally agreed conceptualization of the term *navigation*. Therefore, a separate set of narrative reviews and systematic reviews was retrieved with the same search terms from the main screening and

selection of systematic reviews that were used to address the primary and relevant secondary questions. Moreover, we applied an organic process in developing a definition of *navigation*, whereby our initial working definition evolved in line with the ongoing synthesis of evidence. To address primary and secondary research questions (independent from the definition of navigation), we incorporated the use of methodological search filters, controlled vocabulary terms, and specific search terms to limit the search results to reviews, systematic reviews, and meta-analyses. To ensure recency of review findings, concurrent supplemental searches for primary research articles published beyond the coverage of the included systematic reviews (i.e., from January 1, 2021, to May 25, 2022) were also performed using the same databases but omitting use of the review-focused methodological search filters. Figure 1 depicts the approach adopted in this review to answer the research questions of interest.

Eligibility criteria

Eligibility criteria were developed in accordance with the PICO (population, intervention, comparison/control, outcome) framework. The populations of interest for this review were threefold:

1. Individuals of any age at risk of, or diagnosed with, cancer;
2. Their caregivers; or
3. Providers of cancer care (e.g., patient navigators, oncologists, hematologists, primary care, allied health professionals, nurses); this wider approach has been adopted in this umbrella review in an attempt to capture the international literature in case there are providers who are delivering patient navigation but not labelled as *navigators*.

Regarding the intervention, an operational definition of *patient navigation* models consistent with Wells and colleagues[30] was used, which refers to barrier-focused interventions that are harmonized by five key characteristics involving:

1. Provision of services for an individual for a defined episode of cancer care,
2. A defined end point at which provided services are complete,
3. A defined set of health services required to finalize an episode of cancer-related care,
4. The identification of individual patient-level barriers to accessing cancer care, and
5. The aim to reduce delays in accessing cancer care services (e.g., timelines of diagnosis and treatment) and in the number of patients lost to follow-up.

In addition to the description provided by Wells and colleagues,[30] we also integrated elements of patient navigation services summarized by Dalton and colleagues,[31] which included activities involving: (1) care coordination, (2) facilitating linkages to follow-up services, or (3) reducing or eliminating barriers to cancer care.

In terms of study designs, quantitative systematic studies incorporating any comparator (e.g., treatment as usual or standard care) were eligible for inclusion, as were all relevant qualitative or mixed-methods systematic reviews. To address the primary and secondary research questions, reviews that incorporated the collection of data pertaining to the following discrete outcome categories were included: clinical outcomes, process outcomes, economic outcomes, and perceptions and experiences of the specific populations.

Study screening and selection

After searching the databases and de-duplication, identified articles were imported into Covidence for screening. Two reviewers (O.A.A. and J.J.) independently screened titles and abstracts of retrieved articles from the search strategy that potentially adhered to the study eligibility criteria. Full texts were then reviewed by the same two reviewers for inclusion in the review. Disagreements were initially resolved by discussion or, when consensus could not be reached, by adjudication from a third reviewer (R.J.).
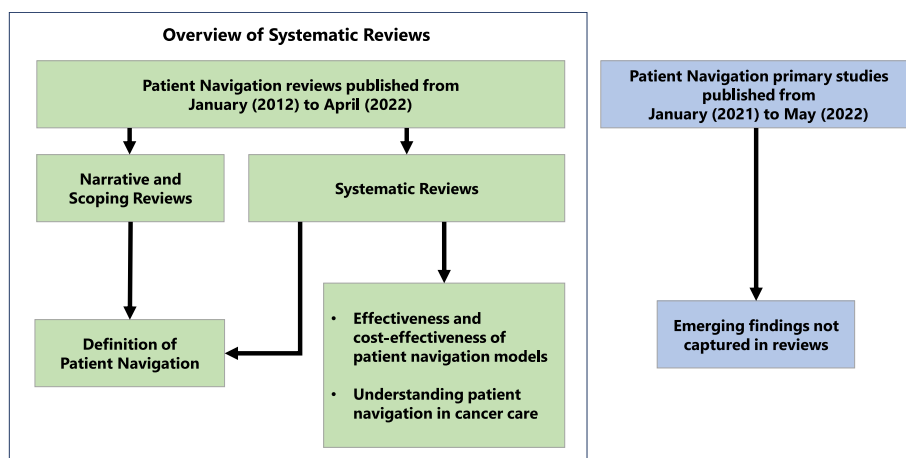

FIGURE 1 Schematic overview of search strategies for reviews and primary studies.

Critical appraisal

The JBI Critical Appraisal Checklist for Systematic Review and Research Syntheses (JBI; formerly the Joanna Briggs Institute) was used by two independent reviewers (any two reviewers from the following assessed each included systematic review: O.A.A., J.J., F.C. W., R.J., or Y.D.) to assess the quality of studies that systematically evaluated outcomes related to effectiveness, cost-effectiveness, or phenomena of interest. This tool evaluates systematic reviews across 11 study quality domains, with each domain rated as *yes, no, unsure,* or *not applicable.* Disagreements were resolved by discussion until consensus was achieved. No appraisal of study quality was conducted for the primary research articles that were published beyond the coverage of the included systematic reviews.

Data extraction, analysis, and synthesis

Data extraction was performed using a standardized data extraction form. Relevant systematic review characteristics and findings related to effectiveness, cost-effectiveness, and other phenomena of interest were extracted independently by reviewers (O.A.A., J.J., F.C.W., R.J., or Y.D.) and were checked for accuracy by additional reviewers (F.C. W. or J.J.). Any disagreements were resolved by discussion or, if required, by a third reviewer (R.J.). Where outcome data were missing or inadequately and/or inconsistently reported, data were directly extracted from the primary research article if possible.

Descriptive analyses of all included studies were performed using narrative synthesis. Effect sizes and relevant numerical results derived from quantitative analyses were presented in tabulated format. The final or major findings from qualitative analyses were presented in tabulated format and supplemented with relevant contextual information. For any study that conducted an economic evaluation, a health economist (J.R.) and member of the authorship team (F.C.W.) conducted the data synthesis/analysis.

This umbrella review included two distinct types of evidence, namely, systematic reviews (meta-analyses) and primary studies. It was an a priori decision that the narrative synthesis of systematic review evidence and emerging evidence from primary studies were to be conducted separately. It was expected that this approach could enable readers to clearly identify what evidence had been included in the systematically reviewed literature versus newer primary studies.

Within the analysis and synthesis, special consideration was given to overall cancer diagnoses or specified cancer subtypes, various population subgroups (e.g., different age groups, culturally and linguistically diverse people, indigenous people), equity of access to cancer patient navigation, equity in outcomes related to cancer patient navigation, intervention components, type of delivery personnel, as well as defined episodes of cancer-related care or general cancer-related care across the cancer care continuum. Indigenous people were of particular interest for nations (e.g., Australia and Canada) with First Nations populations who experience inequity in cancer outcomes.

Definition of cancer care continuum

For the purpose of analysis in this review, the cancer care continuum comprised stages from early detection, diagnosis, treatment, survivorship, and palliative care and end of life.[3] The survivorship phase refers to the period after primary cancer treatment, and the palliative care phase refers to those living with advanced, chronic, or terminal cancer.[32] The end-of-life phase refers to the last weeks and days of life.[33] There is also an increasing recognition of the importance of supportive and palliative care throughout the cancer journey rather than only at the end of life.[34]

RESULTS

Characteristics of included studies

Of 2062 unique records identified, in total, 61 systematic reviews were included in this umbrella review, as represented in the umbrella review PRISMA diagram illustrated in Figure S1. The characteristics and outcomes of individual reviews are reported in Table S2. Fifty-four reviews were quantitative or mixed-methods reviews that reported on effectiveness, of which $N = 12$ reviews[29,35–45] also reported costs or cost-effectiveness outcomes. Seven reviews[46–52] were qualitative reviews that explored navigation needs, barriers, and experiences.

Quantitative or mixed-methods reviews investigating effectiveness

Of the quantitative or mixed-methods reviews on effectiveness ($N = 54$), most ($N = 30$; 56%) were exclusively on navigation interventions (according to our definition of patient navigation in this umbrella review) as well as cancer populations, whereas 24 reviews (44%) included only a subset of studies that reported on navigation and cancer.[15,39,43,44,53–72] For purposes of this umbrella review, only the primary studies that focused on patient navigation along the cancer continuum were considered (hereinafter referred to as *primary studies of interest*). Overall, the publication dates of primary studies of interest ranged from 1981 to 2021.

The total number of included primary studies of interest in each quantitative or mixed-methods review ranged from three to 113. Where specified, the total number of participants included in primary studies in each review ranged from 307 to 187,613. Twenty quantitative or mixed-methods reviews included solely primary studies that were conducted in the United States,[6,36,39,44,55,56,58,60,65–70,72–77] whereas 32 reviews included primary studies from various countries,[15,29–31,35,37,38,40–43,45,53,54,57,59,61–64,71,78–88] which included the United States, the US Territory of American Samoa, Belgium, the United Kingdom (unspecified), China, Korea, Botswana, Turkey, Netherlands, Scotland, England, Sweden, Taiwan, Australia, New Zealand, Germany, Switzerland, Denmark, France, Italy, Canada,

Guatemala, Brazil, India, Kenya, Nigeria, Mexico, Malaysia, Iran, Pakistan, Bangladesh, Thailand, Singapore, and Hong Kong. Two reviews[89,90] did not report the countries of their primary studies.

Multiple quantitative or mixed-methods reviews focused exclusively on single cancer types, as follows: breast (N = 1),[6] cervical (N = 5),[41,55,58,80,87] colorectal (N = 8),[36,42,56,60,65,68,71,76] and lung (N = 1)[70] cancer. The remaining reviews (N = 39) included more than one cancer type, including breast, lung, gynecologic (ovarian, endometrial, and cervical), genitourinary (prostate, testicular, bladder, and uterine), colorectal, endocrine, hematologic (lymphoma and leukemia), head and neck (oral, throat, buccal, and thyroid), gastric, gastrointestinal, liver, melanoma, brain, or sarcomas. In terms of cancer continuum stage, reviews either were exclusively on early detection (N = 20),[35,36,40,41,55,56,58,60–62,65,67,68,72,75–80] diagnosis (N = 1),[71] treatment (N = 6),[39,74,85,86,89,90] and survivorship (N = 2)[57,81]; or consisted of various stages (N = 23),[6,15,28,29,31,37,38,42–44,53,54,59,63,64,66,69,70,73,82–84,87] which may include prevention, early detection, diagnosis, treatment, survivorship, palliative or end of life. No systematic reviews focused on palliative or end-of-life care. In two reviews,[45,88] the cancer continuum stage was unclear.

Interventions that met the criteria of this umbrella review, and were considered to be *navigation*, were referred to by other terms in their reviews, such as case management,[38,43,45,54,59,81,86,87] care management,[87] coordination,[59] community-based health worker interventions,[61,78] peer counselling,[60] interpersonal counselling,[67] telephone counselling,[81] and nurse-led follow-up care.[43] Some interventions involved culturally tailored components.[6,29,40,42,55,56,60,74] Behavioral theory frameworks were used to inform several interventions, including social theory learning,[55,68] social ecological model,[75] social cognitive theory,[75] cognitive behavioral therapy,[84] health belief model,[68] and theory of reasoned action.[68]

Patient navigation intervention components that were included in reviews were wide-ranging and included the following, where reported: identifying and assessing or addressing barriers (e.g., cultural, family, logistical, financial, structural)[6,28,29,31,35–37,40,42,44,45,55–57,60,62–68,71–73,76–78,80,82,83,86,87,89]; assessing or addressing patients' needs[28,43,45,81]; problem solving with individual patients (e.g., physical, psychological, and social issues)[15,54]; care coordination[6,28,44,45,54,82–86,88,89]; case management[6,40,44,81]; education (including one-on-one or group education)[6,15,28,29,31,35–38,40–42,45,53,54,57,58,60–64,66,67,74–89]; providing information (which may be tailored, may include use of decision aids, may involve clarifying doubts/providing explanations, or may include information about available services and resources or test instructions)[6,15,29,36–38,41,54–56,60,63,65,66,68,71,72,74–76,81–83,87–89]; support (e.g., emotional, social, psychosocial), which may also involve accompanying patients during appointments or providing practical advice or coping strategies[6,15,28,29,36,38,45,53,54,57,61,63–65,67,72,74–76,82,83,85–89]; encouragement (e.g., using strengths-based approach or video testimonials)[29,31,36,63,66,71,89]; guidance (e.g., guiding patients to identify concerns or preferences, guidance in administering self-test)[15,54,84]; providing direct nursing care or services[15,54,84]; assisting in self-management (e.g., psychosocial stress management)[54,90]; symptom management[38,39,45]; self-help group support[15,29]; promoting self-care (e.g., home-based exercise and relaxation)[15,83]; caregiver

support or family counselling[45,83]; strengthening family capacity to provide support[31]; fostering social interventions[57]; providing a culturally safe environment[57]; peer modelling (e.g., through survivor narratives)[78,89]; advocacy[54,76,86,87,89]; counselling (e.g., psychosocial, medical, or barriers counselling)[31,36,38,54,60–64,67,69,71,74,76,78,84,86,89]; coming up with individualized plans (e.g., action plans, return-to-work plans)[6,28,45,81]; skills training or building[74,78,80]; reminders to patients or providers[6,29,35–37,40,42,56,60–62,64–67,71,77–79]; serving as primary contact person or reference of care[28,44,82,84]; providing a link between acute and community services[54,76]; assisting transitions across settings and providers[39]; facilitating linkages or providing referrals to follow-up services and support[65,66,83,89]; liaising or communicating with health care providers[40,78]; communication coaching or facilitating communication between patients and health care providers[31,82]; scheduling and arranging appointments[6,28,29,31,36,37,39,40,45,58,60,62,64–67,71–73,76,77,79]; sending out invitations for screening[63,80,83]; ensuring availability of medical records[31,82]; monitoring or following up with patients[28,37,44,45,64,71,82,84,86]; use of media campaign or materials[40,41,55,58,78]; providing take-home learning materials[63,80,83]; outreach[29,43,55,60,68,76,77,86]; and spiritual support.[31] See Table 1, which includes the domains of patient navigation activities meeting individuals' needs and preferences.

Specific strategies used to address structural barriers included providing or assisting in obtaining transportation services,[6,28,29,35,36,40,42,57,59,60,63–67,73,77,80,87] providing translation services and assistance,[6,29,35,36,57,79] modifying service hours,[29] offering services in residential communities,[35] offering mobile screening services (e.g., mammography vans at worksites),[35,40,75] providing direct access to screening tests (e.g., mailing of screening kits, navigators performing the screening themselves),[29,36,42,62,63,66–68,72,76,77] providing tours of the clinics,[31] and obtaining medications.[57] Strategies to address financial barriers included providing assistance with financial and health insurance,[6,36,51] helping to complete paperwork or make financial applications,[27,57,77] subsidizing costs for transportation,[36] reducing out-of-pocket costs through vouchers and reimbursements,[35] assisting in sourcing for low-cost sources of care,[58] offering free or subsidized screening services,[40,67] and offering financial incentives for screening.[40] Strategies to address family barriers included eldercare or childcare arrangements,[6,29,31,57,67,80] whereas strategies to address cultural or social barriers included ensuring the availability of female physicians.[40]

Across the included reviews, delivery personnel were diverse and included professional as well as lay navigators who also may have received training. Navigators could be members of same community as the target populations (e.g., indigenous or African American navigators). Navigators included multidisciplinary teams, psychosocial teams, cancer depression clinical specialists (e.g., psychologists or psychiatrists), physicians (e.g., general practitioners, primary care providers, or medical interns), nurses (e.g., nurse case managers, advanced practice nurses, specialized screening nurses, nurse specialists, nurse practitioners, advanced nurse practitioners, registered nurses, enrolled nurses, nurse coordinators [who may be clinic-based, community-based or home-based and who may be specializing in oncology], social workers, dental hygienists, case managers,

TABLE 1 Key domains of patient navigation care and intervention components in the included reviews.

Domain	Patient navigation intervention components
Care coordination	- Coming up with individualized plans (e.g., action plans, return-to-work plans) - Reminders to patients and/or providers - Ensuring availability of medical records - Scheduling and arranging appointments - Facilitating linkages and/or providing referrals to follow-up services and support - Liaising/communicating with health care providers - Serving as primary contact person or reference of care - Providing a link between acute and community services - Assisting transitions across settings and providers - Monitoring and/or following up with patients
Education/information provision	- Education (including one-on-one or group education) - Information provision (which may also be tailored, include use of decision aids, involve clarifying doubts/providing explanations, or include information about available services and resources or test instructions) - Providing take-home learning materials - Use of media campaign or materials
Empowerment	- Problem solving with individuals (e.g., physical, psychological, and social issues) - Encouragement/motivation (e.g., using strengths-based approach or video testimonials) - Guidance (e.g., guiding patients to identify concerns/preferences, guidance in administering self-test, guidance on treatment and diagnostic tests) - Communication coaching (to facilitate communication between patients and health care providers) - Counselling (e.g., psychosocial, medical, or barriers counselling, motivational interviewing) - Promoting self-care (e.g., home-based exercise and relaxation) - Assisting in self-management (e.g., psychosocial stress management, symptom management) - Self-help group support - Caregiver support or family counselling - Fostering social interactions - Peer modelling (e.g., via survivor narratives) - Skills training/building
Comfort/emotional support	- Emotional, social, or psychosocial support (e.g., accompanying patients during appointments, providing practical advice or coping strategies, or providing an avenue for patients to get help or advice) - Providing culturally safe environment - Ensuring female physicians are available - Spiritual support
Direct care provision	- Provision of direct nursing care/services - Symptom management
Advocacy	- Advocacy
Language assistance	- Translation services and assistance
Logistics assistance	- Outreach - Sending out invitations for screening - Providing direct access to screening tests (e.g., mailing of screening kits, navigators performing the screening themselves) - Transportation services and assistance - Modifying service hours - Offering services in residential communities - Offering mobile screening services (e.g., mammography vans at worksites) - Assisting in eldercare and/or childcare arrangements - Providing tours of the clinics - Assisting in obtaining medications

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T A B L E 1 (Continued)

Domain	Patient navigation intervention components
Financial assistance	- Subsidizing costs for transportation - Providing assistance with financial and health insurance - Assisting in completing paperwork and/or making financial applications - Reducing out-of-pocket costs using vouchers and reimbursements - Assisting in sourcing for low-cost sources of care - Offering free or subsidized screening services - Offering financial incentives for screening

community-based health workers, community health advisors, community research representatives, community collaborators, health care facilitators, health counselors, outreach workers, link workers, field workers, prevention care managers, *promotoras*, peers (e.g., peer leaders, peer educators, peer counselors, cancer survivors), teachers, educators, volunteers, media role models, researchers, and program coordinators. Of the included reviews, three also included interventions that were delivered without a third-party navigator (i.e., digital or paper-based).[74,76,89]

Intervention duration and frequency were not well reported across reviews. Where reported, individual navigation sessions ranged from 5 minutes to 3 hours, and the period ranged from 1 week to 7 years. Navigation frequency ranged from a single contact to multiple contacts (i.e., 18 contacts), or navigation could be carried out weekly, monthly, or as needed. Of the $N = 54$ quantitative or mixed-methods reviews, $N = 16$[39,53,55,56,60,62,75,77,78,81] were meta-analyses that included the primary studies of interest, of which pooled findings are also presented in Table S3. The remaining $N = 38$ reviews used narrative synthesis instead of meta-analysis, often citing heterogeneity as a reason.

Qualitative reviews exploring navigation needs, experiences, and barriers

Seven reviews focused solely on qualitative research, with publication dates of primary studies ranging from 2002 to 2018. Within these qualitative reviews, the number of included primary studies ranged from three to 29, whereas the total number of participants included in each review ranged from 38 to 114. Two reviews included only primary studies that were conducted in the United States,[49,51] whereas the remaining five reviews[46–48,50,52] consisted of primary studies from different countries, including the United States, the United Kingdom, Canada, Australia, England, Belgium, France, Ireland, Italy, Norway, Sweden, Netherlands, Ghana, Kenya, Uganda, Malawi, Nigeria, Zambia, India, China, and Hong Kong.

Two reviews[48,49] consisted of primary studies focusing on a single cancer type (i.e., cervical cancer), whereas the remaining $N = 5$ reviews[46,47,50–52] consisted of different cancer types, including breast, brain, head and neck, lung, colorectal (bowel, colon, and rectum), gynecologic (cervical, endometrial, ovarian, and uterine), genitourinary (prostate, and bladder), gastrointestinal, hematologic (leukemia, lymphoma, and multiple myeloma), skin, and sarcoma. In terms of stage on the cancer continuum, reviews were exclusive to

early detection ($N = 2$)[48,49] or treatment ($N = 1$),[50] or they included different stages across the continuum, which may be early detection, diagnosis, treatment, survivorship, and/or end of life ($N = 4$).[46,47,51,52] The phenomena of interest of each individual review were: patient perceptions; experiences or needs related to care coordination between primary care providers and oncologists[46]; experiences of patients with significant mental health difficulties and health care professionals' attitudes toward accessing cancer care[47]; barriers preventing women from using cervical cancer screening services in sub-Saharan Africa[48]; barriers and facilitators to cervical cancer screening among refugee women in the United States[49]; cancer patients' needs, values, and preferences during their cancer treatment experiences[50]; experiences of adult patients with cancer who used patient navigation programs in hospital, including how patient navigators affect the challenges patients encounter in the cancer care continuum[51]; and experiences of adult patients with cancer who received counselling from nurses.[52]

Critical appraisal

Our critical quality appraisal of the included systematic reviews is presented in Table S3. Overall, the reviews generally met the majority of the requirements in the checklist, with 97% of studies ($n = 59$) achieving greater than six of 11 items in the JBI checklist, and 36% ($n = 22$) achieving 10 or 11 of the items.[91] Almost all studies clearly stated the review question ($n = 60$; 98%), had appropriate inclusion criteria ($n = 60$; 98%), used appropriate sources and resources ($n = 61$; 100%), used appropriate methods to combine studies ($n = 59$; 97%), and specified appropriate recommendations for future research ($n = 57$; 93%). Most studies had an appropriate search strategy ($n = 47$; 77%), used appropriate criteria for appraising studies ($n = 46$; 75%), reported methods to reduce error in data extraction ($n = 41$; 67%), and provided recommendations for practice or policy supported by the findings ($n = 42$; 69%). However, fewer studies reported that critical appraisal was conducted by two or more reviewers ($n = 32$; 52%) or reported the likelihood of publication bias (yes or not applicable/available, $n = 26$; 43%).

Effectiveness of navigation

The effectiveness of cancer patient navigation on various patient outcomes across the cancer continuum is summarized in Table S4,

which presents the number of systematic reviews and the number of unique primary studies that reported on each outcome. Navigation components, population groups, and cancer types are also reported for each outcome. An overview of the evidence of effectiveness of patient navigation for outcomes that were investigated in more than two primary studies across the cancer continuum is provided in Figure 2. Outcomes within the palliative care phase of the continuum were not included in the figure because only one primary study investigated each outcome. Evidence of effectiveness was considered strong for outcomes in which multiple reviews and multiple primary studies reported corresponding positive findings. Evidence of effectiveness was reported as inconclusive for outcomes in which reviews and primary studies reported conflicting findings or there was a small number of primary studies. Evidence of effectiveness was limited for outcomes that were only included in only one systematic review and a small number of primary studies.

Early detection

Twenty-six of the reviews included primary studies focusing on uptake or adherence to cancer screening programs, predominantly for breast, colorectal, cervical, and lung cancer. There was overwhelming evidence from 172 unique primary studies across the 26 reviews that

OUTCOME	RATING	COMMENTARY
EARLY DETECTION		
Cancer Screening Rates	🟢	Strong evidence that patient navigation improves rates of cancer screening.
DIAGNOSIS		
Diagnostic resolution	🟢	Strong evidence that patient navigation reduces the time to diagnosis.
TREATMENT		
Treatment Initiation	🟩	Some evidence that navigation reduces the time from diagnosis to initiation of primary treatment
Treatment Completion	🟠	Evidence on the impact of patient navigation on treatment completion is inconclusive.
Hospital Readmission	🟢	Strong evidence that patient navigation reduces hospital readmissions.
Enrolment & Adherence to Clinical Trials	🟡	Limited evidence that patient navigation improves clinical trial enrolment and adherence.
SURVIVORSHIP		
Adherence to Surveillance	🟢	Strong evidence that patient navigation increases adherence to surveillance appointments.
Decision-making and Treatment Knowledge	🟢	Strong evidence that navigation improves the decision-making and treatment knowledge of cancer survivors.
Return to work	🟠	Evidence on the impact of patient navigation on return to work is inconclusive.
Communication	🟡	Limited evidence that patient navigation improves communication.
Fatigue	🟡	Limited evidence that patient navigation reduces cancer-related fatigue.
Patient Satisfaction	🟢	Strong evidence that patient navigation improves patient satisfaction with care.
Quality of Life	🟢	Strong evidence that patient navigation improves cancer survivor QOL.
Emotional Distress	🟠	Evidence on the impact of patient navigation on emotional distress is inconclusive.

Legend 🟢 = Strong evidence of effectiveness   🟩 = Some evidence of effectiveness

🟡 = Limited evidence of effectiveness   🟠 = Evidence not conclusive

FIGURE 2 Effectiveness of patient navigation on outcomes across the cancer continuum. QOL indicates quality of life.

various patient navigation interventions were effective at improving rates of cancer screening. Evidence from reviews suggested that interventions delivered in the home, community, face-to-face, via telephone, individually, or in group sessions were equally effective in improving screening rates. However, a combination intervention approach (navigation combined with mass media or general education) appeared to be most effective.[36,41,53,56,58,67,78] In particular, navigation increased screening rates when combined with education or multi-strategy interventions.[66,67] For example, Bellhouse and colleagues reported that community-based patient navigation programs that included external media such as videos, flipcharts, and computer programs, along with general in-person education significantly improved screening adherence when compared to control conditions (odds ratio [OR], 2.40; 95% confidence interval [CI], 1.85–3.11; $p < .001$; $N = 20$; $n = 12,768$).[78] Intervention components to increase screening rates in underserved populations included several barrier-resolution services, including help with transportation, health insurance, traditional patient reminder systems, and implementation of culturally and linguistically appropriate screening education.[42] Components of navigation, including outreach, mass media, and mailed print materials, produced inconsistent evidence of improving screening rates.[40,41]

It was unclear whether culturally tailored navigation interventions were more effective than standard navigation interventions, with subgroup analyses revealing significant effects in certain population groups (Latino, Asian American) but not others (African American).[56,65,76,92] Reviews on Latino men,[76] Hispanic women,[75] Appalachian populations,[67] African American men,[68] minority populations in general,[36] patients with limited English proficiency,[79] and populations adversely affected by health disparities[77]; as well as among Hispanic, African American, low-income Chinese American women[66] and medically underserved populations[42] indicated that navigation was effective in improving screening rates. For example, Luque and colleagues' review on community-based screening navigation programs targeting Hispanic women identified that navigation improved screening uptake compared with usual care (OR, 1.67; 95% CI, 1.24–2.26; $N = 5$; $n = 2343$).[75] Similarly, Rogers and colleagues reported that patient navigation was significantly better than control interventions at increasing colorectal cancer screening uptake among African American men, with an OR of 2.84 (95% CI, 1.23–6.49; $p = .01$).[68] Reviews focused on Asian women in western or Asian countries[40] and women of lower socioeconomic status[41] indicated that effectiveness in increasing screening rates was limited to certain intervention components only. One review[65] on racial and ethnic minority groups found inconsistent evidence on the effectiveness of navigation on screening completion but consistent evidence that patient navigation reduced rates of discontinuation of appointments.

Overall, interventions that were tailored to an individual were most effective based on a thorough understanding of the barriers affecting their health promotion behavior. In addition, screening rates were seen to improve when the navigators received rigorous training.[61] Two reviews included outcomes relating to cancer screening knowledge[62,80] and reported that patient navigation interventions, particularly with nurse navigators, were effective at improving patient knowledge regarding breast, lung, cervical, or colorectal cancer screening.

Cancer diagnosis

Ten reviews included primary studies focused on diagnostic resolutions, measuring the time from abnormal screening test to diagnosis predominantly in breast, colorectal and cervical cancers. Evidence from 51 unique primary studies across the 10 reviews indicated that a range of patient navigation programs, varying from community health workers to nurses, telephone and in-person were mostly effective at reducing the time to diagnosis compared with usual care controls For example, Yang and colleagues' systematic review identified that individuals who received patient navigation had higher rates of diagnostic resolution within two months compared to those who didn't receive navigation (OR, 2.35; 95% CI, 1.26–4.37; $n = 2308$, heterogeneity [I^2], 86%; $p < .00001$).[87] Another meta-analysis by Ali-Faisal and colleagues highlighted that patient navigation increased the likelihood of patients obtaining a diagnostic resolution regarding cancer, however while favorable, this result was not statistically significant (OR, 1.57; 95% CI, 0.85–2.88; $p = .15$).[53]

Cancer treatment

Overall evidence from 43 unique primary studies across nine reviews suggested that patient navigation interventions were effective at reducing the time from diagnosis to initiation of primary treatment. For example, Wu and colleagues reported that patients who received navigation had a significantly shorter time from diagnosis to treatment (difference of −9.07 days; 95% CI, −14.08 to −4.06 days; $p = .0004$).[86] However, two reviews concluded that the evidence was mixed or was not significant,[6,90] with one review showing improvements in the time to treatment initiation that were more pronounced among Hispanic women than non-Hispanic White women.[6] Patient navigation programs that assessed the time to treatment initiation often included decision aids, cultural messaging, and bilingual support. Thirteen unique primary studies across eight reviews reported on adherence to treatment or treatment completion outcomes produced mixed evidence. Four reviews reported that patient navigation programs were effective at improving treatment (i.e., surgery, chemotherapy, radiotherapy) adherence,[29,31,53,86] and Ali-Faisal and colleagues' review comprising 23 primary studies, reported increased adherence to treatment for patient navigation versus usual care (OR, 2.53; 95% CI, 1.02–6.30; $p = .05$).[53] Four reviews suggested there were no significant differences in treatment completion between patients who were provided navigation and those who received usual care.[6,63,64,74] However, Wu and colleagues' meta-analysis ($N = 3$) showed that individuals who received patient navigation had a significantly higher treatment completion rate (OR, 2.45; 95% CI,

1.56–3.87; p = .0001) compared with those who did not receive navigation.[86] It was unclear from the reporting within these reviews how treatment adherence or treatment completion were measured and whether these outcomes differed substantially. Three unique primary studies reported across two reviews suggested that patient navigation was associated with increases in enrolment and adherence to clinical trials.[29,59] Outcomes, including treatment interruption and receipt of appropriate treatment, were included in one review[59] investigating the efficacy of care coordination, but evidence came from individual primary studies. One review[38] reported that patient navigation provided to patients during active treatment resulted in fewer unplanned hospital admissions and reduced length of hospital stay, intensive care unit admission rates, and emergency visits.

Evidence from eight reviews consisting of 21 unique primary studies suggested that generally patient navigation significantly improved the quality of life of patients with cancer; however, two of those reviews reported inconclusive findings regarding the effects of nurse-led navigation interventions on quality-of-life outcomes.[43,85] For example, Tho and Ang[85] identified no significant differences between patient navigation and usual care in improving the quality of life for patients with cancer who were undergoing treatment (pooled weighted difference, 0.41; 95% CI, −2.89, 3.71; p = .81; N = 3; n = 477). Similarly, evidence from eight reviews consisting of 18 unique primary studies suggested that navigation could improve the patient satisfaction with care, but two reviews reported inconclusive findings.[28,43] Wells and colleagues' pooled standardized mean difference from nonrandomized controlled trials (N = 4) was 0.39 (95% CI, −0.02, 0.80; p = .06), indicating that patients who received patient navigation (n = 241) were not more satisfied than those who did not (n = 176).[28] The positive effects on patient satisfaction and quality of life were often most significant in racial and ethnic minority populations, including indigenous populations,[57] and when navigation programs included culturally sensitive care as well as addressing logistical and practical barriers and providing counselling and emotional support.[28,64,69] There was no clear evidence whether community health workers, lay navigators, or nurse case managers were better placed to deliver effective navigation.

Cancer survivorship

Patient navigation programs appeared to increase adherence to surveillance appointments in women who had breast or cervical cancer compared with women who received usual care.[6,87] For example, Yang and colleagues[87] reported that patient navigation significantly increased adherence to cervical follow-up appointments within 12 months (OR, 3.23; 95% CI, 2.14–4.88; N = 2; n = 707), and >12 months (N = 1; n = 565). Individual reviews also reported that patient navigation had positive effects on communication,[74] decision making,[89] and treatment knowledge[74] but inconclusive effects on fatigue[38] and return-to-work outcomes (intervention vs. control: OR, 0.61; 95% CI, 0.24–1.57; p = .31; N = 2; n = 221).[81] Improvements in anxiety, depression, and distress after patient navigation programs were generally not supported by the literature. One review[69] conducted in socially disadvantaged groups found inconsistent effects of navigation on quality of life but significant improvements in depression.

Palliative care

There was only one review, which was limited to breast cancer patients, that included two primary studies reporting on outcomes relevant to palliative care.[90] One primary study suggested that patients receiving palliative-intent treatments may have less contact with a patient navigator than those receiving curative-intent treatment, and one primary study reported that a patient navigation program may result in fewer patients missing palliative care appointments. No included reviews or primary studies reported specifically on the effectiveness of patient navigation during end-of-life care.

Cost and cost-effectiveness of navigation

Nine systematic reviews and two additional, recent primary studies (not covered in the reviews) were identified with health economics evidence pertaining to the cost-effectiveness of patient navigation in cancer care. The first primary study, by Bucho-Gonzalez and colleagues,[93] focused on individuals from low-income and underinsured communities presenting for colorectal cancer screening in the United States and was undertaken to assess the budgetary effects of start-up and roll-out of a colorectal cancer screening program for this population. Given its targeted focus in this specific population in the United States and its focus on budgetary effects only, the study provided no evidence relevant to cost-effectiveness, and the results may not be generalizable to the international context (i.e., other health care systems). The second primary study, by Herman and colleagues,[94] assessed the cost-effectiveness of screening promotion for English-speaking or Spanish-speaking adults from a medically underserved or underinsured community who were not adherent with colorectal cancer screening guidelines in the United States. Cost-effectiveness in this case was assessed in terms of the cost per additional person screened, and it was demonstrated that tailored community-to-clinic navigation was likely to be highly cost-effective with low incremental costs (<$650 US dollars on average) per additional person screened. Again, because of its limited focus in a specific population in the United States and because cost-effectiveness was assessed in terms of an interim outcome of additional persons screened (as opposed to the quality-of-life and/or survival effects of patient navigation in cancer care), it is not possible to draw any definitive conclusions about the cost-effectiveness of patient navigation in cancer care or the applicability of this study to other health systems.

Three systematic reviews focused on the health economics evidence pertaining to patient navigation across the cancer care

continuum, including all types of cancer.[29,35,39] Two systematic reviews have focused on specific populations/cancer types only including colorectal cancer[37,42] and older patients with cancer (aged 70 years and older).[44] One systematic review assessed the evidence relating to the impact of case management on improving the quality of life of patients with cancer.[45] Limited numbers of eligible studies were identified by all these systematic reviews of variable methodological quality, with the majority of available evidence emanating from the United States. Three systematic reviews focused on patient navigation specifically to increase cancer screening.[35,40,42] Those systematic reviews indicated that patient navigation was cost-effective and potentially cost saving when increasing screening completion is the primary outcome of interest. One of those reviews focused on cost-effectiveness evidence for interventions to increase breast and cervical cancer screening uptake among Asian women in western or Asian countries noted that a significant gap exists in relation to evidence of cost-effectiveness and the long-term sustainability of these programs.[40] The authors concluded that vigorous study design and economic evaluation methodologies should be used in future studies to generate valid evidence on the cost-effectiveness of intervention programs to increase breast and cervical cancer screening uptake among Asian women. Three reviews[29,35,37] included health outcomes in their cost-effectiveness analyses, suggesting that quality-adjusted life-years saved through patient navigation interventions outweighed the intervention costs.

Overall, these reviews determined that patient navigation has the potential to improve health care use, cost, quality-of-care, and quality-of-life outcomes. However, the limited numbers of included studies and their heterogeneity in terms of populations investigated, study settings, and methodological quality suggest that more rigorous research is needed before definitive conclusions can be reached about the cost-effectiveness of patient navigation in cancer care.

Synthesized qualitative findings on patient experiences, needs, and preferences

An overview of the qualitative findings of patient experiences, needs, and preferences reported in nine of the included reviews is provided in Table S5.

Experiences

Five reviews provided information on experiences of navigation.[46,51,52,57,88] Four reviews[51,52,57,88] (comprising 12 distinct qualitative studies) described patient experiences of specific patient navigation programs. Across all four reviews, navigation was considered valuable. Patients described navigators as an important part of successful cancer care coordination and felt that navigation improved access to (and understanding of) cancer care services, helped improve physical and emotional well-being, and also

facilitated better patient-centered cancer care. Across the four reviews, benefits of navigation included demystifying the health system, ensuring comprehension of relevant information, improved symptom management, and reduced personal and familial stress and anxiety. Overall, perceived effective patient navigation was experienced as having a trusting and empathetic relationship between the patient, their family, and an accessible navigator that incorporated holistic services, such as educational support, individualized and extended family support, information and resource provision (including information that is understandable to cancer survivors), and the provision of emotional, physical, and psychological needs, with particular emphasis placed on emotional support. However, for indigenous populations, tensions between indigenous navigators and nonindigenous health care service providers around the structure and delivery of a navigation service can threaten intervention success and sustainability, with health care service providers and navigators reporting negative experiences.[57]

One review by Hohmann and colleagues,[46] comprising nine qualitative studies involving people who had cancer and multiple chronic conditions, reported insufficient navigation support, including suboptimal provider–provider communication and care coordination, along with inadequate provision of information and records, absence of support, and lack of access to care because of finances or distance. Consequently, patients reported facing challenges, such as discontinuity in care, inadequate resources, feelings of abandonment, loss of support, financial difficulties, inappropriate recovery expectations, and lack of direction about what to do for survivorship care.

Needs

Six reviews[46–51] comprising 28 qualitative studies explicitly stated the navigation needs of individuals diagnosed with or being screened for cancer. Three of the six reviews[46,50,51] presented navigation needs at all phases of the cancer continuum. This included the provision of information (e.g., concerning physical effects, finances, and emotional effects as well as supportive services, additional resources, and care coordination), timely access and scheduling of care, holistic care, advising and answering patient questions, addressing financial and logistical barriers, providing practical assistance even at completion of treatment, the provision of physical and emotional support, being available and accessible for support at all phases of the cancer continuum, sharing information from the multidisciplinary team, and emotional support from other cancer survivors.

The remaining three reviews detailed the navigation needs specifically related to early detection.[47–49] Luft and colleagues described the needs of refugee women in the United States regarding cervical cancer screening and observed that individuals sought navigation services that addressed language barriers, logistical issues, knowledge limitations, and cultural barriers, such as modesty, cancer stigma, fear, and religious beliefs.[49] Furthermore, participants

expressed that receiving navigation from someone from their own community who knows the native language and is trained in health education increases trust. Similar needs were expressed by participants in a review of women in sub-Saharan Africa.[48] Leahy and colleagues presented the views of individuals with significant mental health difficulties who presented for cancer screening and concluded that the development of a patient navigator role was needed to facilitate communication between patients with significant mental health difficulties, health care professionals, and mental health care professionals.[47]

Although a review on navigation in indigenous populations in Australia by Gifford and colleagues did not include any qualitative studies that explicitly listed needs, further analysis of all studies noted that interventions often had little relevance to the Australian indigenous communities that participated in them.[57] Furthermore, the review highlighted the importance of focusing on all aspects of wellness—emotional, spiritual, mental, as well as physical—and emphasized a need to engage indigenous communities to develop, deliver, and evaluate navigation services.[57]

Individuals' preferences

Two reviews[50,52] comprising 32 qualitative studies provided information on preferences of navigation. Tay and colleagues identified cancer survivors' preferences for patient navigation as providing patient-centered coordination and an explanation of clinical care (e.g., symptom management, resource assistance, coordination of care, coordination of services) or as individualized holistic support (e.g., providing practical assistance, emotional support, and empowerment when navigators are present for patients at key phases of the cancer care continuum) that was contingent on the patient's personal circumstances and existing support networks.[52] Mitchell and colleagues highlighted that individuals with cancer appreciated navigation delivered in the form of home visits, telephone, and email communication because it reduced stress and issues with transportation.[50] However, they also noted that patients with cancer valued the peer interaction that often came from attending clinic visits. There was a strong preference for peer support and navigation provided by other cancer survivors. Preferences for decision making and information delivery (quantity, timing, source) varied.

Facilitators and barriers associated with the implementation of navigation

Early detection

Eight reviews[36,41,56,62,68,72,80,92] provided insights into barriers and facilitators related to the implementation of navigation programs for cancer screening and early detection. System-level barriers to the implementation of navigation screening programs included inability to maintain an updated electronic medical records system and sustain funding to support a navigator position and the inability to bill (insurers or payers) for or to reimburse nonclinical navigators working in community settings. Provider-level barriers included the inability to contact individuals for follow-up. Individual-level barriers to uptake of navigation services included lack of referral from providers, distrust in the health care system, low health literacy, geographic isolation, and societal beliefs.

Organization-level or system-level facilitators to navigation implementation included the development and integration of screening policies, clinic protocols, and tracking mechanisms and the establishment of partnerships between navigation services, screening clinics, and specialists. Provider-level facilitators included ensuring well developed training procedures, competency assessment, and proper supervision for navigators. Strategies that facilitated individual uptake of navigation services included education on early detection and access to care, using telecommunication, additional tailored phone calls to assess barriers and provide practical support, and incorporating culturally specific and sensitive content.

Other stages of the cancer continuum: General population

The remaining three reviews[45,64,84] detailed barriers that included the lack of clear selection criteria for navigators and the extensive time and resources involved in holistic navigation (e.g., multiple phone calls with each patient at different time points, responding to requests for services, hiring personnel to be available and accessible). Facilitators to implementation included effective communication between navigation service providers, patients, and health care providers; making sure the role of the navigator is clear and that navigators are well trained; and centralizing services or incorporating a triage or computer centralized system that reduces resources used.

Other stages of the cancer continuum: Underserved populations

Seven reviews described barriers and facilitators to implementation or uptake at various stages of the cancer continuum. Of these seven, four reviews[65,83,89,90] provided insight into barriers and facilitators relating to underserved populations (e.g., racial or ethnic minorities, low socioeconomic status, etc.). Failure to recognize and account for literacy skills, education levels, and cultural beliefs of ethnic minorities prevented successful implementation. Furthermore, navigation that was facilitated by bilingual, culturally competent personnel who understood the language and the social and cultural context of target participants bridged the gap between cultures and eliminated low health literacy barriers.

For a list of barriers and facilitators to patient navigation at the system, provider, and individual levels, see Figure 3.
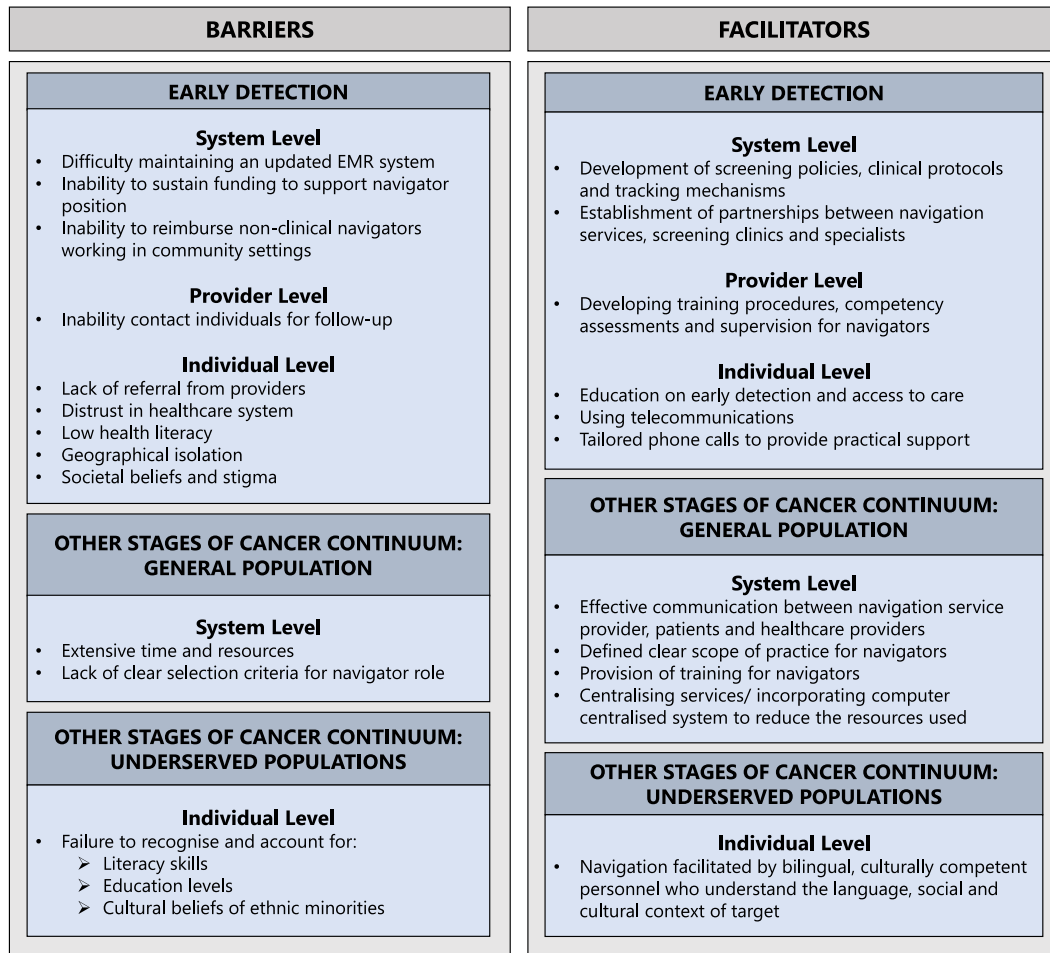
BARRIERS

EARLY DETECTION

System Level
- Difficulty maintaining an updated EMR system
- Inability to sustain funding to support navigator position
- Inability to reimburse non-clinical navigators working in community settings

Provider Level
- Inability contact individuals for follow-up

Individual Level
- Lack of referral from providers
- Distrust in healthcare system
- Low health literacy
- Geographical isolation
- Societal beliefs and stigma

OTHER STAGES OF CANCER CONTINUUM: GENERAL POPULATION

System Level
- Extensive time and resources
- Lack of clear selection criteria for navigator role

OTHER STAGES OF CANCER CONTINUUM: UNDERSERVED POPULATIONS

Individual Level
- Failure to recognise and account for:
  - ➢ Literacy skills
  - ➢ Education levels
  - ➢ Cultural beliefs of ethnic minorities

FACILITATORS

EARLY DETECTION

System Level
- Development of screening policies, clinical protocols and tracking mechanisms
- Establishment of partnerships between navigation services, screening clinics and specialists

Provider Level
- Developing training procedures, competency assessments and supervision for navigators

Individual Level
- Education on early detection and access to care
- Using telecommunications
- Tailored phone calls to provide practical support

OTHER STAGES OF CANCER CONTINUUM: GENERAL POPULATION

System Level
- Effective communication between navigation service provider, patients and healthcare providers
- Defined clear scope of practice for navigators
- Provision of training for navigators
- Centralising services/ incorporating computer centralised system to reduce the resources used

OTHER STAGES OF CANCER CONTINUUM: UNDERSERVED POPULATIONS

Individual Level
- Navigation facilitated by bilingual, culturally competent personnel who understand the language, social and cultural context of target

FIGURE 3 Summary of barriers and facilitators across the cancer continuum at the system, provider, and individual levels. EMR indicates electronic medical record.

Findings from emerging literature (primary studies)

Descriptive characteristics of included primary studies

Of 2119 unique records identified, in total, 53 relevant primary studies published since 2021 were included, as presented in the PRISMA diagram for primary studies (see Figure S2, with study characteristics and outcomes presented in Table S6). Overall, 20 of the 53 studies (37.3%) focused on screening, reporting on adherence, screening knowledge, no-show rates, and attitudes and beliefs regarding screening. Across these studies, five reported using technology other than email or telephone calls. This included Google Hangouts and WhatsApp,[95] an online patient navigation tool,[96] social media and phone applications,[97] Zoom,[98] and web-based tool and video conferencing.[99] Four implementation and feasibility studies were also included.[95,100–102] Most studies reported on breast cancer (14 studies; 26.4%) and colorectal cancer (13 studies; 24.5%). Other reported cancer types included lung, head and neck, hepatopancreatobiliary, gastrointestinal (including gastric cancer), genitourinary (including renal and prostate), gynecologic (including cervical, ovarian, vulvar, and endometrial), and hematologic (including large B-cell lymphoma) cancers as well as primary brain tumors and osteosarcoma. There was a lack of studies that reported cancer stages, with only four studies explicitly specifying study participants' stage of cancer. Primarily, study participants were people with cancer or at risk of cancer, with 12 studies reporting on the perceptions, needs, or barriers of informal caregivers and health care professionals.

Early detection

Studies assessing the efficacy of patient navigation on cancer screening reported marked improvements in screening rates.[103–109] Multicomponent patient navigation interventions (navigation combined with education and media) proved to be effective in promoting screening in both general and underserved populations, with higher screening uptakes.[103,105,107,109,110] Evidence from the studies suggests that culturally tailored or community-based programs with a focus on education, assistance with payments, transportation, and social networks with underserved populations (e.g., high-poverty rural counties in Texas, low-income Latina women, African

American patients) were equally effective in improving screening rates.[104,106,108,111–113] Furthermore, the collaboration with a local health system through the inclusion of a community health worker navigator led to better screening knowledge and attitudes toward screening along with a reduction in cancer stigma.[114] Therefore, patient navigation involving community health care workers is also an effective method of increasing screening adherence in underserved populations.[112,115]

Cancer diagnosis and treatment

There were significant improvements in follow-up and treatment adherence rates as well as attendance at cancer peer support groups after the implementation of patient navigation programs.[97,116,117] The inclusion of patient navigation for organizing appointments, orientating patients to tailored resources, coordinating team care, and establishing communication using social media applications from the time of diagnosis through to treatment reduced abandonment rates.[117,118] In addition, it has been demonstrated that navigation components focused on patients' knowledge of the health care system and available financial aids increase patient accrual, particularly in late-phase clinical trials.[119]

Cancer survivorship

Seven studies assessed the effects of patient navigation on psychosocial outcomes, such as quality of life, distress, satisfaction, anxiety, and depression.[96,120–125] Two studies showed no significant effects of patient navigation on health-related quality of life or distress,[120,122] whereas the remaining five studies showed improvements in quality of life and psychological well-being after patient navigation.[96,121,123–125] Studies also focused on the effects on screening knowledge, stigmas, and access to care.[114,126] Patient navigation resulted in improved access to supportive cancer care, completion of advanced care directives, and pain symptoms.

Perceptions of patients and providers

Six studies focused on participant perceptions. Patients from underserved populations with unmet basic needs reported highly valuing their patient navigator during initial appointments because they provided key information, were person-centered, and brought comfort to patients.[127–129] Commonly reported unmet needs included housing, financial, legal, and transportation issues.[130] Participants highlighted the need for patient navigation to address institutional barriers by setting recruitment goals for minority participation in clinical trials and ensuring that interventions are accessible to minorities and that community outreach is used to build awareness.[131] In addition, participants highlighted the importance of public education and advocacy to combat the ongoing financial barriers.[132] Furthermore, patients

identified the need for patient navigators to be consistent contact persons who cater to more general patients' needs (i.e., offering practical and emotional assistance) rather that fulfilling disease-specific tasks.[133] This need for communication and collaboration was echoed among people with cancer from underserved populations along with a highlighted need for culturally sensitive navigation services.[132] Navigators highlighted the importance of their roles in the delivery of advanced care planning and symptom screening.[134] They also associated sociodemographic-related (e.g., lower education and lower income), clinic-related (e.g., experiencing chemotherapy toxicities), psychological-related (e.g., high patient anxiety), and health system-related (e.g., longer diagnostic interval) factors with a greater need for navigation services.[135]

Barriers and facilitators to the implementation of patient navigation

Common barriers reported included the inconvenience of in-person support[136]; limited experience using technology[95]; hesitance to use a patient navigator[137]; logistical-related, psychological-related, and knowledge-related barriers[138]; the lack of social support and culturally and linguistically concordant patient navigators[139]; limited regular feedback to stakeholders[98]; and institutional barriers.[131] Facilitators included interpretation services, pre-prepared patients, high-quality flexible services, and highly accessible patient navigators.[98]

Summary of findings from primary studies as emerging literature

Overall, the emerging evidence reinforced the findings of the overview of systematic reviews; however, three emerging themes of evidence with a focus on indigenous populations, digital health, and caregivers were identified.

Indigenous populations

Two studies[18,19] focused on patient navigation in indigenous populations in Canada. Various barriers to care were reported, including finances, transportation, distance from service providers, language barriers, lack of indigenous representation in the health care system, and lack of culturally safe care, with ongoing perceptions of paternalism in current health care models.[18,19] Furthermore, distance and extended travel times were more than just a risk factor for delayed diagnosis and treatment because they represented a loss of income, extended isolation from community and family, as well as an interruption in the grief process.[18,19] Participants suggested that indigenous navigators could potentially offer better culturally tailored support, linguistically tailored resources, and promote patient–provider trust.

Digital health

Three primary studies included information on digital health. One study found that using caregiver navigators in combination with web-based tools could connect participants to existing social support services, resulting in valued discussions with patients.[99] Another study indicated that using an online patient navigator tool to complement the information provided during a consultation with a health care provider resulted in increased patient satisfaction, with lower reported anxiety levels.[96] Finally, a study on navigation delivered by telemedicine (with the mode of delivery depending on patient preference) was identified as feasible and useful in a resource-limited setting.[95] Furthermore, study authors reported few barriers to implementation and delivery.

Caregivers

Three studies focused on patient navigation concerning caregivers. Caregivers from one study reported that their use of an online navigation tool was helpful, and they were satisfied, appreciating having someone focused on their unique needs.[99] Another study found improvements in anxiety and depression in caregivers and patients who received navigation through telehealth.[121] That study also indicated efficacy for patients, suggesting that the support provided to caregivers through navigation enabled them to care for patients more effectively to the benefit of patient outcomes.[121] Another study found that the perceptions of care coordination among family caregivers were poorer than among patients because of their previous experiences.[140]

DISCUSSION

Although several systematic reviews already existed in the literature, this umbrella review adds to the literature because it is the first to summarize and harmonize the existing reviews and emerging literature. This umbrella review approach is useful because it provides a helicopter view of the systematic reviews available concerning patient navigation. For example, the cancer types, demographics of populations, navigation types, and delivery covered by a wide array of systematic reviews varied significantly (see Table S4). Although the positive benefits and evidence gaps highlighted in this umbrella review do not differ from the conclusions made by previous systematic reviews, this consistency further adds to the confidence and robustness of the existing evidence that underpins patient navigation.

Effectiveness and cost-effectiveness

Current evidence demonstrates that patient navigation in cancer care is effective for improving the uptake of cancer screening programs, predominantly among screenings for breast, cervical, colorectal, and lung cancers, and for shortening the duration from screening to diagnosis and from diagnosis to treatment initiation. Although most evidence investigating the effectiveness of patient navigation has been conducted in the cancer screening and pre-diagnostic phases of the cancer care continuum, there is emerging evidence suggesting that patient navigation improves quality of life and patient satisfaction with care in the survivorship phase and reduces hospital readmission in the active treatment and survivorship care phases. Unfortunately, there is a lack of evidence pertaining to the palliative care and end-of-life phases. Relative to the body of evidence describing the clinical effectiveness of patient navigation in cancer care, this review has exposed a dearth of health economics evidence pertaining to the cost-effectiveness of patient navigation care interventions. Most evidence to date emanates from the United States, and the extent to which this evidence is generalizable to other contexts is unclear and highly improbable. Although a small, albeit promising, body of international evidence indicates that patient navigation could be a cost-effective strategy to increase cancer screening completion, this review has identified a significant evidence gap for health policy and decision making in relation to cost-effectiveness in health systems outside of the United States. Further modeling work underpinned by the available evidence in the United States may provide an understanding of the potential cost-effectiveness of navigation programs focused on cancer screening in other countries. There were few studies suggesting the effectiveness of patient navigation in reducing health service use (reducing length of stay and readmission).[29,38,87] However, further research dedicated to robustly evaluating the cost-effectiveness of patient navigation across the cancer care continuum in contexts other than the United States is urgently required. Such health economic evaluations should take a multiperspective approach to understand values to patients, organizations, and the society more broadly. The benefits of patient navigation on reducing time to diagnosis and time to initiation of treatment reported in this review may also translate to improved efficiency of the health care system.

Although the cost-effectiveness data in patient navigation have mainly focused on screening and prediagnosis, and have been limited to the United States, it is important for policy makers and cancer care leaders to go beyond cost-effectiveness data and consider the *value* of patient navigation using a value-based approach. Considering the state of science underpinning patient navigation and implementation challenges in relation to the workforce and the lack of sustainable funding models, applying a quintuple aim approach[141] in policy, resource allocation, and evaluation of the effects of patient navigation programs becomes extremely important. That is, how does patient navigation contribute *value* in terms of (1) health equity, (2) clinician well-being, (3) better patient experiences, (4) improved outcomes, and (5) lower cost? In addition to cost-effectiveness analysis and economic modelling, novel approaches, such as discrete choice experiments, should be applied to understand patient preferences, community expectations, and willingness to pay (for patient navigator services) from the patient perspective.

Consistent with navigation programs or interventions developed in the United States, findings from this umbrella review highlight that the central ethos of any patient navigation role in cancer care is to identify and overcome barriers and disparities that influence access to quality health care over the cancer care continuum. According to our findings, underserved segments of the population, such as those from racial and ethnic minority groups, those living in rural and remote areas, those from non-English–language backgrounds in English-speaking countries, and those in lower socioeconomic or medically underserved communities, can benefit from patient navigation that provides culturally appropriate and relevant education and assistance. In particular, patient navigation could provide information for these underserved communities that supports their understanding of the health system and facilitates the accessibility of the health system while simultaneously addressing any barriers to accessing quality health care.

Implementation considerations for policy makers

Definition of navigation

The systematic reviews and primary studies included in this review confirm that the operational definition used in this umbrella review is sufficiently inclusive in capturing navigation interventions. Although there is no specific reason to propose any drastic changes to the operational definition, after synthesizing the available evidence, we propose slight adjustments to current nomenclature and recommend that the international cancer care community consider adopting the definition presented in Figure 4. This proposed definition for international use is mostly consistent with the definition statements of the 2010 position statement of the Oncology Nursing Society, the Association of Oncology Social Work, and the National Association of Social Workers,[142] as well as the recent American National Navigation Roundtable.[27] Because patient navigation is potentially being adopted in countries outside the United States, it is important for policy makers to be explicitly clear about the intent and conceptual definition at the start of any navigation program implementation.

Addressing barriers to access care

Addressing barriers to cancer care is one of the central aims of patient navigation and thus a significant proportion of the currently available evidence focused on racial and ethnic minority groups and those from non-English–language backgrounds, with research predominantly conducted in the United States. Our overview of systematic reviews suggests that patient navigation is effective toward increasing access to cancer care for these underserved groups of the population, especially with patient navigation programs that embed bilingual navigators, translation services, or cultural components.

Other underserved groups that were evaluated in the literature included populations with low income and low socioeconomic status, lower education levels, and those who are medically underserved (e.g., lack health insurance or living in rural remote areas). In underserved groups, addressing access barriers, including transport and finance, were generally required in patient navigation programs, whereas all population groups found that the education, care coordination, and emotional support components of patient navigation programs were effective and beneficial. Ideally, individually tailored navigation programs are required to address personal barriers to accessing cancer care.

The most common component of patient navigation was patient education and information, which was provided through one-on-one

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Patient Navigation
Patient navigation in cancer care is an individualised intervention that aims to address barriers and facilitate timely access to healthcare services, diagnosis, and treatments and care, with the following common characteristics:
- Identifies barriers to accessing care experienced by individuals
- Overcomes barriers (e.g., healthcare system, literacy, language, cultural, social, financial, and logistical) experienced by individuals
- Addresses disparities from contextual barriers (e.g., geographical, racial/ethnic, financial, socioeconomic)
- Can occur anywhere along the cancer care continuum (from early detection to end-of-life)
- Can be delivered by various personnel (including but not limited to the following), with or without third-party facilitator (e.g., digital technology or artificial intelligence):
    o *Clinical Navigators*: nurses and oncology social workers.
    o *Non-Clinical Navigators*: case managers, outreach workers, community health workers/aides/representatives/volunteers, counsellors, educators, health coaches, peers, cancer survivors, and lay personnel

Patient navigation in cancer care may include support for individuals, families, and caregivers to (i) navigate the health system; and (ii) address holistic, emotional, educational/informational, and carer needs. Navigation can also be delivered at an individual level or targeted at a community level, or a combination of both.
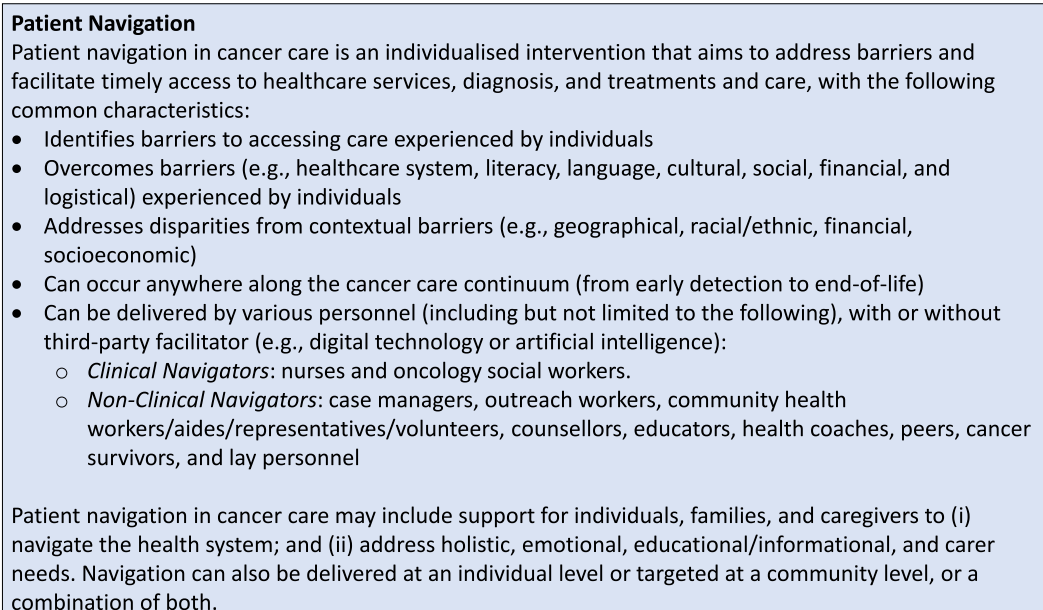
FIGURE 4 Recommended definition of patient navigation across the cancer care continuum.

sessions, either face-to-face or by telephone, in group education sessions, and by means of written information and mass media. Videos and flipcharts were also used in specific patient navigation programs, principally for people from ethnic and racial minority groups. Regular contact with a navigator during clinic appointments or by phone was commonly reported; however, the length of engagement with a navigator was rarely reported. Emotional support was another key component of effective patient navigation. Overall, multicomponent interventions that addressed multiple barriers to accessing care are most effective. The use of videoconferencing or telehealth navigation was reported in some primary studies within the included reviews, with emphasis on the delivery of patient counselling or the organization of multidisciplinary case-management appointments.

Screening in practice

In many health systems, cancer screening and prediagnostic activities are predominantly delivered in the primary care and general practice setting.[143] It is therefore important to consider strategies that ensure patient navigation programs and navigator roles in cancer are able to work collaboratively and synergistically within the primary care setting. Navigation activities within screening programs need to be properly planned and implemented. One example of navigation activities can be observed through the Colorado Cancer Screening Program in the United States.[144]

Settings and mode of delivery

Depending on the target population groups and available resourcing, effective navigation services can be delivered across acute care or community settings, providing home visits, in-person clinics, attendance at appointments, or telephone and telehealth services. Multicomponent patient navigation programs that can be tailored to an individual's needs are likely to be most effective, and partnership between navigation services and health care providers is essential.

Workforce planning and preparation

Although patients who have cancer and caregivers appreciate support and navigation at every step of the trajectory, it may not necessarily be beneficial or practical for navigation to be provided by the same person or type of professional throughout the cancer continuum. Accordingly, it is important for health service planners and policymakers to undertake robust workforce planning and determine how navigation support can be implemented across the continuum. Skill sets of the patient navigation workforce may be a key factor for consideration. For example, a recent mixed-methods study[145] conducted in the United States suggested that nonclinical navigators experienced more difficulties providing navigation activities for the treatment to palliative care phases of the continuum and that clinical navigators can be directed to support phases of the journey that require significantly more direct clinical oncology expertise.[145] Such findings give rise to the potential of a team-based approach (between clinical and nonclinical navigators) that should be facilitated to ensure navigation is supported across the cancer journey.

No clear differences were evident in the effectiveness of patient navigation programs delivered by health care workers, such as nurses and oncology social workers, compared with navigation programs delivered by nonclinical navigators. However, the type of profession or personnel delivering patient navigation services can affect the type or level of navigation provided, with peers able to provide emotional support and improve knowledge, and nurses able to help coordinate appointments and provide appropriate referrals. Although only 19 of the included reviews described the training components of their patient navigators, it was highlighted that adequate training was a fundamental component of effective patient navigation. Training for lay-person, peer, or community navigators may include interactive modules focused on disease-specific education, motivational interviewing techniques and communication skills, case management, person-centered care, and identification of local available resources. Where described, training was provided face-to-face using lectures, group discussion, and role play, and the length of training varied considerably across primary studies. Nurse navigators were usually not provided with extra training above and beyond the educational requirements of their advanced practice role. Comparisons of navigation effectiveness based on the type of training provided to navigators has not been conducted and was not present in the literature.

Clarification of roles in patient navigation (for navigators) is of critical importance. In particular, there has been a recent call for actions to further differentiate patient navigators and community health workers.[146] It is vital that the public has confidence in accessing a workforce that has a level of consistency in their service provision and outcomes. Wells and colleagues advocated for a consensus approach to determine core competencies of patient navigators[147] in which such competencies would be able to inform subsequent training curriculum and approaches.

Another consideration relating to workforce planning and preparation is the effect of funding models and lack of reimbursement on job security and a sense of being valued as an individual and as a workforce more broadly.[146] Indeed, Garfield and colleagues[148] report that nonclinical patient navigators in the United States described significantly lower levels of job security and stability because grant funding provides the main source of funding for this workforce, which highlights a potential for service disruption and a lack of personnel and workforce continuity during periods when grant funding is unable to be received.

Navigation support throughout the cancer continuum

In some countries, such as the United Kingdom, Australia, and Canada, there may already be professional workforces that provide some level of navigation support for people with cancer during the treatment, survivorship, and palliative or end-of-life care phases. Prominently, these professional groups may be specialist cancer nurses, care co-ordinators, and oncology social workers. Although *navigation* may not be the sole focus of their role, as discussed above, their day-to-day role is dynamic and may cover a range of patient navigation activities.[149]

It is also important to recognize that our overview of systematic reviews found very limited numbers of studies in the literature on the effectiveness of patient navigation in the palliative and end-of-life care phase. There are two potential implications. First, patient navigation as a model of care may have a limited role for people with cancer in the palliative and end-of-life care phase; and, second, specialist palliative care providers, primary care providers, or community programs may already be providing the level of support required by these people with cancer in the palliative and end-of-life care phases.

Evaluation of cancer patient navigation effects

Evaluating the effect of patient navigator services in cancer care is an important requirement within a value-based care system. Battaglia and colleagues[150] surveyed 538 patient navigation programs across the continuum of care in the United States, highlighting that only one half of these programs used data for reporting purposes. Of the 538 programs, 374 used electronic medical records, and only 25% of those 374 had an identifier for navigated patients using their service. Program funding was identified as the key limiting factor associated with data collection. Respondents participating in an oncology accreditation program were more likely to collect and use outcome data across the continuum. Lack of time (55%) and lack of support (50%) for complex data system/platforms were the most common barriers to outcome data collection/reporting. In the survey used by Battaglia and colleagues,[150] there were useful metrics for consideration in future data-collection and reporting activities. These metrics covered screening (eight items), cancer treatment (five items), survivorship (five items), and end-of-life care (five items).

Future directions

Based on the findings and lessons learned from the literature, a list of recommended considerations is outlined in Figure 5. In addition, this overview of systematic reviews identified multiple key evidence gaps in research. First, most of the research was conducted in the United States, and, although we acknowledge that the United States itself has different health care systems, there is limited evidence assessing the effectiveness of patient navigation in different countries. This includes health economic cost-effectiveness because the US data have limited applicability to other systems when evaluating this measure. Second, most patient navigation research has focused on cancer screening programs and prediagnosis phases, predominantly for breast, cervical, and colorectal cancers. Future research should dedicate focus toward evaluating the effectiveness of patient

IMPLICATIONS FOR CANCER PATIENT NAVIGATION

CARE PROVIDERS

❖ Patient navigation can be designed to prioritise areas where effectiveness outcomes have been demonstrated: (1) improving participation in cancer screening; (2) reducing time from screening to diagnosis, and diagnosis to treatment initiation; (3) improving quality of life and patient satisfaction with care in the survivorship phase; and (4) reducing hospital utilization in the active treatment and survivorship phases.

❖ Incorporation of emotional support, promotion of healing, caregiver support, and facilitation of coping is a key feature of person-centered, navigation programs.

❖ Patient navigation is needed in underserved segments of the population who can benefit from culturally appropriate and relevant education and assistance.

❖ Indigenous people require navigation support that is delivered in a culturally safe, sensitive, and competent manner.

RESEARCHERS

❖ Research is needed to inform consensus-based, best-practice standards for cancer patient navigation and to explicitly define the work scope and training requirements of the patient navigation workforce (including various types of navigators).

❖ Standardized outcome data collection addressing the quintuple aim for healthcare improvement is likely helpful to support program sustainability and enable benchmarking at all levels (local, national, and international).

❖ Development, evaluation and optimization of technology-based patient navigation solutions including the use of artificial intelligent systems can enhance the longer-term efficiency and sustainability of patient navigation.

❖ More research is required to address evidence gaps including the effectiveness and cost-effectiveness of patient navigation: (1) beyond the United States; (2) in survivorship and palliative care phases; (3) for Indigenous populations; and (4) in rare cancer types, hematological malignancies, and for patients with advanced or metastatic cancers.

POLICY MAKERS

❖ Policy makers and healthcare leaders can consider program sustainability at a system level, including connectivity between workforce (including role delineation and capabilities), service delivery, financing, leadership and governance, technology, and information.

❖ A sustainable business funding model at the outset of implementation is reported to be a significant implementation factor for consideration.

❖ Education and training for the navigation workforce requires the development of consensus-based, competency frameworks and practice frameworks to enhance consistency and quality of patient navigation.
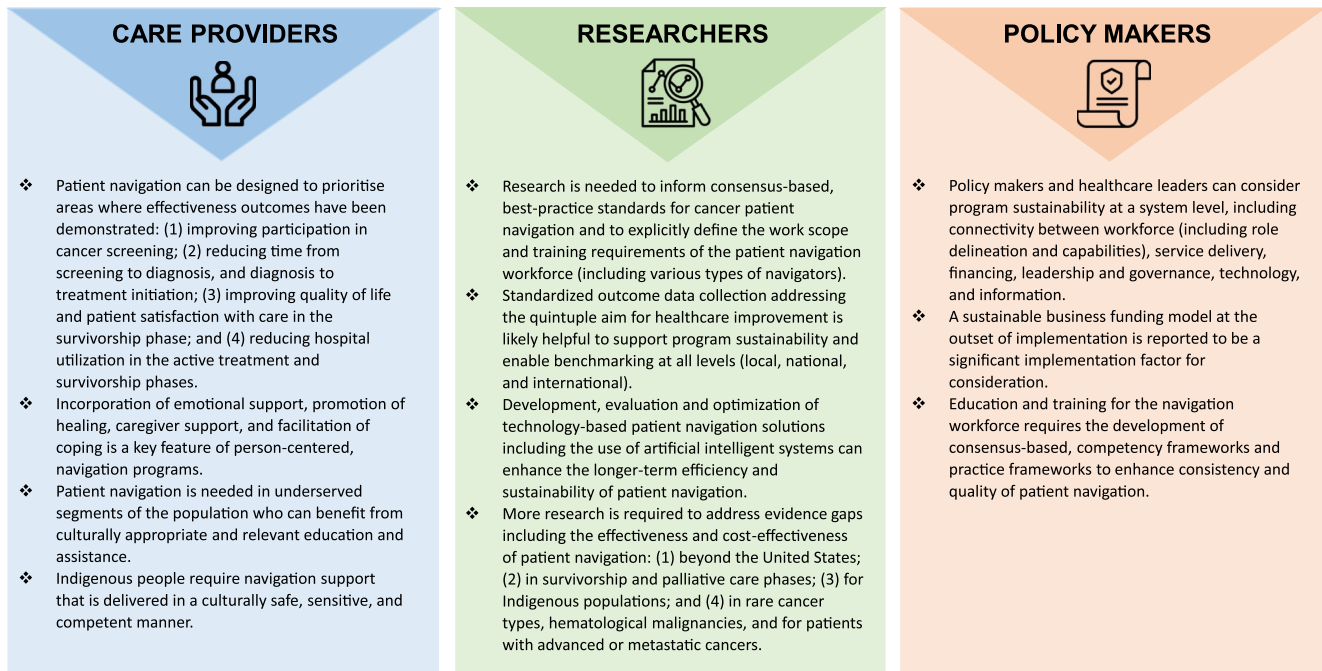
FIGURE 5 Implications for cancer patient navigation for providers, researchers and policy makers.

navigation in other common cancers, such as prostate cancer, lung cancer, and melanoma; rare cancer types; and hematologic malignancies. Furthermore, cancer stage was rarely reported in the literature, and the effectiveness of patient navigation interventions for patients with advanced or metastatic cancers and those in palliative care and end-of-life care settings needs to be explored.[151] Third, there is also a lack of evaluation including solid clinical end points (such as survival). Although such clinical end points may be more distal outcomes of navigation, it is important for future evaluations to consider the inclusion of such end points to further support the sustainability of such programs. Fourth, a scarcity of evidence was published pertaining to technology-based patient navigation solutions, including the use of online bots or artificially intelligent systems. It is expected that electronic aids or tools can assist with enhancing the longer term efficiency, sustainability, and scalability of patient navigation interventions. Fifth, because of the heterogeneity and various practices in the vast literature, it was not within scope of this overview of systematic reviews to dissect the literature at the microlevel to differentiate navigation provided by various professional groups (e.g., social worker navigators vs. other social workers). Future policy research is needed to inform consensus best-practice standards (including standardized definitions and criteria) for cancer patient navigation that are specific to the context. Such a practice framework should seek to definitively clarify the work scope and training requirements of the patient navigation workforce in cancer care. Finally, research into indigenous populations worldwide is needed to understand the unique cultural factors facing indigenous people, including their pathways to health and well-being and their access barriers to cancer care. This information is vital for developing appropriate patient navigation services that support indigenous peoples.

CONCLUSION

To our knowledge, this review is the first overview of systematic reviews and emerging literature of patient navigation across the cancer continuum, highlighting patient navigation as effective for improving uptake of cancer screening programs for breast, cervical, and colorectal cancer as well as shortening time frames from screening to diagnosis and from diagnosis to treatment initiation. There is also some emerging evidence suggesting that patient navigation has positive effects on patients' quality of life, satisfaction with care in the survivorship phase, and hospital use from active treatment to survivorship. Economic evaluations from the United States suggest the potential cost-effectiveness of navigation in screening programs. Further evaluations outside the US context are required. Patient navigation interventions hold significant promise for optimizing cancer control. This review contains recommendations and future directions for consideration. Careful, context-specific planning that includes policy actions to facilitate funding models is required to maximize the consistency, sustainability, and effectiveness of patient navigation in cancer across various countries.

CONFLICT OF INTEREST STATEMENT

Raymond Chan and Larissa Nekhlyudov report personal fees from UpToDate outside the submitted work. Dorothy Keefe reports personal fees from Entrinsic Bioscience outside the submitted work. The remaining authors disclosed no conflicts of interest.

ORCID

Raymond J. Chan https://orcid.org/0000-0003-3578-6579
Jolyn Johal https://orcid.org/0000-0002-4380-0580
Nicolas H. Hart https://orcid.org/0000-0003-2794-0193

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