

Initiatives to reduce the waiting time to initiate oncological treatment: a scoping literature review

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ABSTRACT

Objective. To identify the managerial actions proposed and employed to reduce the waiting time to initiate oncological treatments in the public health system and its application in Latin America.

Method. We searched seven databases in December 2020. Search terms were conceptualized into three groups: waiting time, cancer, and terms related to public sector. The eligibility criteria included theoretical or empirical academic articles written in English, Spanish, or Portuguese, that focused on managerial solutions to face oncological healthcare queues' dilemma.

Results. The search returned 1 255 articles, and 20 were selected and analysed in this review. Results show that most of the proposals are related to the process and people dimensions. The actions related to the process dimension were mainly associated with programming new treatment pathways and integrating cancer systems. People's dimension initiatives referred mostly to task forces and groups of specialists. Some initiatives were related to implementing technological solutions and the technology dimension, mainly concerning radiotherapy devices' acquisition.

Conclusion. Few studies focus on analysing actions to minimize waiting time to initiate oncological treatments. The prevalence of conceptual and illustrative case studies indicates the lack of research maturity on this theme. Future studies should focus on setting the field's theoretical foundations, considering the existing paradigms, or developing new ones. There is a need for empirical studies applying a multidisciplinary approach to face the oncological treatment waiting time challenge and proposing new and innovative initiatives.

Keywords

Waiting lists; cancer; neoplasm; delivery of health care.

Cancer incidence and mortality are rapidly growing worldwide, most markedly in the low- and middle-income countries (LMICs) (1). The latest worldwide estimation, from 2018, points out that 18 million new cases of cancer have occurred in the world (2). The reasons are complex but reflect both aging and growth of the population and changes in the prevalence and distribution of the main risk factors for cancer (3). Managing cancer requires both effective preventive measures – to reduce future burden of disease – and healthcare systems that provide accurate diagnosis and high-quality multimodality treatment. Such multimodality treatment should include radiotherapy, surgery, drugs, and access to palliative and supportive care (4).

Delay in the treatment of cancer can have adverse consequences on outcome. Previous meta-analyses have found evidence supporting a continuous association between delay and mortality or local control (5-8).

A recent publication (9) found that a four-week delay in treatment is associated with an increase in mortality across all forms of cancer treatment, with longer delays being increasingly detrimental.

Advanced stage presentation of patients with cancer is common in LMICs (10). Studies from low-income countries had significantly longer access intervals (median 6,5 months) compared with other income groups (11).

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Much has been written about the need for a comprehensive approach to population-based cancer control and challenges related to allocating scarce resources to treat cancer (12, 13). In summary, there are two groups of potential risks to late-stage cancer treatment: access to healthcare and socioeconomic and demographic characteristics (14). The former emphasizes spatial elements and accounts for the complex interaction between primary healthcare supply and demand locations and the distance and ease to travel between them. On the non-geographic factors, socioeconomic disadvantages and socio-cultural barriers also play a role.

Therefore, the need for an in-depth understanding of the managerial actions to reduce the waiting time to initiate oncological treatments in the public health system is coming rapidly into focus as well as its application in Latin America. More broadly, this review analyses and classifies the actions and recommendations in three dimensions: people, process, technology. These dimensions (PPT model) have been widely recognized as the three elements which underlie process improvement (15). The model is also about how the three elements interact. People do the work and processes make this work more efficient. Technology helps people do their tasks and also helps automate the processes. Thus, organizational efficiency can be achieved by balancing the three and optimizing the relationships between people, processes and technology.

The first dimension – people – looks after the 'human' dimension, including people with the right skills and knowledge for the job and motivation and engagement to achieve higher performances. The process dimension refers to the set of inter-related work activities that transforms inputs into outputs. It is essential to analyze the process, identify waste and eliminate it to deliver what is expected efficiently. The third dimension – technology – addresses the tools and techniques used to communicate and make work efficient. It includes information management systems and their architectures, hardware, and software. Technology is facilitated by people and is supporting the processes to run smoothly. This theoretical model sustains the management functions, and its application can boost the overall system's performance.

We also analyzed the initiatives considering the conceptualization of health service ecosystems (16, 17): micro-, meso-, or macro-level. The micro level comprises the individual actors such as health professionals, patients, or family. Value cocreation factors at this level enable dyadic interactions through which individual actors integrate resources to co-create value with other actors. Individuals engage in collaborative and cooperative interactions (16). The meso level consists of public and private hospitals, primary care units, and health support organizations. At this level, the facilitation of collaboration and cooperation between different health institutions enables delivering better health services. Lastly, the macro level actors include government, the ministry of health, and other organizations responsible for defining national health policies (16). At the macro level, value cocreation factors are related mainly to resource access. In this review, the micro level comprises actions directed to health professional actors. The meso level embraces activities focused on health institutions, like hospitals or clinics. Finally, the macro level contains efforts directed to the government and healthcare authorities.

The purpose of this study is to identify the managerial actions proposed and employed to reduce the waiting time to

initiate oncological treatments in the public health system and its application in Latin America. Our analysis aims to provide a comprehensive overview of existing literature about managing cancer care intervals and identify targets for future interventions to barriers. These findings will ultimately inform future research in cancer early treatment and bring evidence to guide strategies making.

METHODS

A systematic review was performed following the PRISMA protocol, adopting a replicable, scientific, and transparent literature data search, management, and analysis process (18). The search was performed in December 2020, including articles published up to that date, across databases that cover international content in the fields of management and healthcare: EBSCO, SCOPUS, Web of Science, Proquest, PubMed, Emerald, and the Virtual Health Library (VHL). The search strategy included combined terms using the Boolean operators 'AND' and "OR": ("public sector" OR "public administration" OR "public organization*" OR "public organisation*" OR "public agenc*" OR "public institution*" OR "public service*" OR "public health" OR "public policy" OR "public policies" AND ("waiting lists" OR "waiting line*" OR "waiting time") AND ("neoplasm*" OR "cancer" OR "oncolog*"). These terms should be present in the title, abstract or keywords of the analyzed articles. Table 1 presents the corresponding number of articles obtained in each database.

The eligibility criteria limited the nature of texts to academic articles, with full online texts available, written in either English, Spanish or Portuguese. We did not apply filters regarding the type of publication, the research method, the year of publication, or the journal's impact factor.

A standardized Microsoft Excel spreadsheet was used to analyse the studies, considering the following categories: (1) Authors and year of publication; (2) Journal of publication and its impact factor; (3) Country of research; (4) Type of neoplasm investigated; (5) Research objective; (6) Research method: empirical/qualitative (case studies, interview-based studies, and action research), empirical/quantitative (survey-based studies), mathematical modelling, and mixed methods; (7) Classification in one or more of the three dimensions: people, process or technology; and (8) Classification in one or more of the three levels (macro, meso, or micro) of the service ecosystems.

RESULTS

The search resulted in a total of 1 255 articles that were imported into the software Mendeley®, where 59 duplicates were removed. The 1 196 remaining articles were exported into Rayyan.com software. Both authors independently reviewed titles and abstracts to identify articles related to waiting time for oncological treatment in the public sector. We excluded 101 theoretical articles not related to the theme. In the next stage, the two authors independently conducted a full article assessment, following the pre-specified inclusion criteria, and labeling the articles according to an ABC categorization, in terms of its adequacy with the research objectives: (A) inside the scope; (B) doubt, or (C) outside the scope. Disagreements were discussed among the two authors to increase the reliability of the process selection. In the end, there were 1 077 studies categorized as

TABLE 1. Search strategy and return from each database

Database	Search strategy	#
EBSCO	TI (("public sector" OR "public administration" OR "public organization*" OR "public organisation*" OR "public agenc*" OR "public institution*" OR "public service*" OR "public health" OR "public policy" OR "public policies") AND ("Waiting lists" OR "waiting line*" OR "waiting time") AND (Neoplasm* OR Cancer OR oncolog*)) OR AB (("public sector" OR "public administration" OR "public organization*" OR "public organisation*" OR "public agenc*" OR "public institution*" OR "public service*" OR "public health" OR "public policy" OR "public policies") AND ("Waiting lists" OR "waiting line*" OR "waiting time") AND (Neoplasm* OR Cancer OR oncolog*)) OR SU (("public sector" OR "public administration" OR "public organization*" OR "public organisation*" OR "public agenc*" OR "public institution*" OR "public service*" OR "public health" OR "public policy" OR "public policies") AND ("Waiting lists" OR "waiting line*" OR "waiting time") AND (Neoplasm* OR Cancer OR oncolog*))	47
SCOPUS	(TITLE-ABS-KEY (("public sector" OR "public administration" OR "public organization*" OR "public organisation*" OR "public agenc*" OR "public institution*" OR "public service*" OR "public health" OR "public policy" OR "public policies")) AND TITLE-ABS-KEY (("Waiting lists" OR "waiting line*" OR "waiting time")) AND TITLE-ABS-KEY ((neoplasm* OR cancer OR oncolog*)))	102
WEB OF SCIENCE	TÓPICO: (("public sector" OR "public administration" OR "public organization*" OR "public organisation*" OR "public agenc*" OR "public institution*" OR "public service*" OR "public health" OR "public policy" OR "public policies") AND ("Waiting lists" OR "waiting line*" OR "waiting time") AND (Neoplasm* OR Cancer OR oncolog*)) OR TÍTULO: (("public sector" OR "public administration" OR "public organization*" OR "public organisation*" OR "public agenc*" OR "public institution*" OR "public service*" OR "public health" OR "public policy" OR "public policies") AND ("Waiting lists" OR "waiting line*" OR "waiting time") AND (Neoplasm* OR Cancer OR oncolog*))	25
PUBMED	ALLINTITLE: (neoplasm OR cancer OR oncology OR oncological) AND ("waiting lists" OR "waiting line" OR "waiting time")	202
EMERALD	ALLINTITLE: (neoplasm OR cancer OR oncology OR oncological) AND ("waiting lists" OR "waiting line" OR "waiting time")	790
VHL	ALLINTITLE: (neoplasm OR cancer OR oncology OR oncological) AND ("waiting lists" OR "waiting line" OR "waiting time")	83
PROQUEST	ti(("public sector" OR "public administration" OR "public organization*" OR "public organisation*" OR "public agenc*" OR "public institution*" OR "public service*" OR "public health" OR "public policy" OR "public policies") AND ("Waiting lists" OR "waiting line*" OR "waiting time") AND (Neoplasm* OR Cancer OR oncolog*)) OR ab(("public sector" OR "public administration" OR "public organization*" OR "public organisation*" OR "public agenc*" OR "public institution*" OR "public service*" OR "public health" OR "public policy" OR "public policies") AND ("Waiting lists" OR "waiting line*" OR "waiting time") AND (Neoplasm* OR Cancer OR oncolog*)) OR mainsubject(("public sector" OR "public administration" OR "public organization*" OR "public organisation*" OR "public agenc*" OR "public institution*" OR "public service*" OR "public health" OR "public policy" OR "public policies") AND ("Waiting lists" OR "waiting line*" OR "waiting time") AND (Neoplasm* OR Cancer OR oncolog*))	6
TOTAL		1 255

Source: the authors from the study results.

'out of scope' and 18 inside the scope. Next, the authors applied the *snowball* strategy to screen reference lists of selected studies, looking for potentially relevant studies. Through this process, we identified two additional papers, resulting in 20 articles analyzed in this review. Figure 1 presents the PRISMA protocol applied in this research to identify, assess, and select existing studies (18).

Studies characteristics

The 20 selected studies were published between 2006 and 2019 (Table 2). Regarding the research country, the most frequent was the United States (6/20; 30%). However, 30% (6/20) of the studies were from low- and middle-income countries (LMIC). The studies were published in different scholarly journals. Four studies were published in journals with an impact factor (IF) higher than 30, and the median IF was 2,69. Most of the articles (17/20, 85%) were published in healthcare journals, and 15% (3/20) were published in management journals.

Regarding the methodology, there was a predominance of mathematical modelling studies, accounting for 35% of the sample (7/20 studies). There were six qualitative studies (30%), three quantitative studies (15%), and only four studies (20%) adopted a mixed-method approach. Table 2 provides a detailed analysis of the selected publications.

Managerial practices applied to reduce waiting time to initiate cancer treatment

About the categorization in the three dimensions (people, process, and technology), process was a dimension addressed in almost all studies (19/20, 95.0%) (Table 3). People was the second most addressed (18/20, 90.0%), and the dimension 'technology' was present in only 11 studies (55.0%).

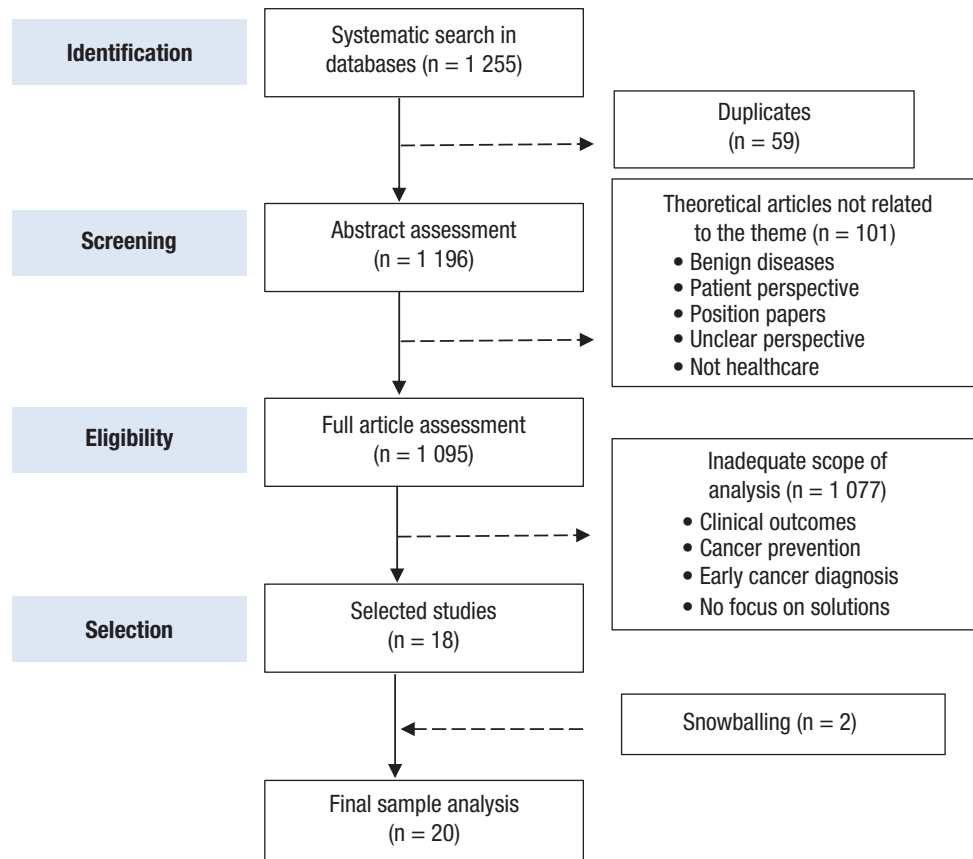
Concerning the initiative level, most studies addressed the macro (government actions) and the meso level (case reports from health services), present in 11 studies each (55%). The micro level (individual actors) was present in only 8 publications (40%).

It was possible to identify the different levels of actions and their aggregation in the PPT dimensions. We combined the occurrences in a 3×3 matrix (Table 4), illustrating how many times each dimension and each level was present simultaneously in a publication.

Most of the proposed actions to reduce the waiting time for initiate cancer treatment have been directed at improving processes (29/72; 40.2%), followed by activities focused on people (27/72; 37.5%). A smaller number of proposed initiatives is related to introducing new technologies (technology dimension), present in only 22.2% of the studies (16/72).

Regarding the level of actors involved in the proposed actions, most studies focus on healthcare organizations (meso

FIGURE 1. Article selection and evaluation



Source: the authors, based on PRISMA flow diagram (Moher et al.).

level), present in 40.3% of the initiatives (29/72). In second place are government actions (national, macro level), present in 31.9% of the initiatives (23/72). Finally, there are actions addressing specialists, patients, and doctors, representing 27.7% of the proposed actions (20/72).

Government actions (macro level) have been aimed at improving processes (10/23; 43.4%), followed by efforts directed at people (8/23; 34.7%), and a smaller number of actions related to the introduction of new technologies (5/23; 21.7%). In turn, the initiatives implemented at the meso level have been directed equally towards processes (11/29; 37.9%) and people (11/29; 37.9%), while there are a smaller number of actions related to technological solutions (7/29; 24.1%). Likewise, micro-level efforts are generally directed towards processes (8/20; 40.0%) or people (8/20; 40.0%), with only four articles mentioning the implementation of technology (4/20; 20.0%).

Few studies have brought the results reached with their proposals (24, 26, 27, 32, 35, 36, 38). Shorter average waiting times from suspicion of cancer to treatment and an improve timeliness in cancer care was achieved in those publications.

DISCUSSION

This systematic review describes the managerial actions proposed and employed to reduce the waiting time to initiate oncological treatments in the public health system. It presents

the largest sample of studies to date, investigating actions to diminish intervals and barriers to cancer care. It presents the published literature by the three dimensions of process improvement (people, process, and technology) and also by the ecosystem level perspective (macro, micro, or meso).

There are previous literature reviews conducted about the theme. Sharma et al. (39) explored the barriers to breast cancer care in developing countries resulting in delayed patient presentation. Unger-Saldaña (40) found that research on specific barriers to access and deficiencies in the quality of care for the early diagnosis and treatment of breast cancer is practically non-existent. Ginsburg et al. (28) explored the global health and public policy landscapes that intersect with women's health and global cancer control, with new approaches to bringing policy to action.

This review demonstrates that delays are a major concern during every step of the cancer care continuum, across different cancer types and country income levels. Treatment delays could be due to patient factors, disease factors or system factors. The main purpose of this discussion is to highlight the need to minimize system level delays.

A major finding in this study is the paucity of high-quality data providing the impact of interventions in treatment initiation in their settings. Furthermore, we found considerable heterogeneity in the metrics used by studies to describe the results obtained, considering the different health care systems where the proposals were made and the years of publication.

TABLE 2. Studies characteristics

Authors, Year (Country) Journal/ IF	Type of neoplasm	Research objective	PPT model	Research method
Kenis, 2006 (19) (Netherlands) JHOM/1,3	All Types	To develop propositions on why public policies towards decreasing waiting lists in health care can be expected to be unsuccessful based on a case study of public policies.	Process	Empirical / qualitative
Potter et al., 2009 (20) (England) BMJ/30,2	Breast	To investigate the long-term impact of the two-week wait rule on referral patterns, cancer diagnoses, and waiting times.	Process	Mathematical modeling
Kawakami et al., 2008 (21) (Canada) CUAJ / 2,2	Urological	To use a real-time surgery booking software program to examine surgical wait times.	Process, People and Technology	Empirical / quantitative
Shea et al., 2008 (22) (USA) JAMA/45,5	All Types	To compare patients' wait times and travel distances for chemotherapy before and after enacting a type of reimbursement.	Process and People	Mathematical modeling
Farmer et al., 2010 (23) (LMIC) Lancet/60,39	All types	To form a global task force on expanded access to cancer care in developing countries.	Process and People	Mixed Methods
Hunnibell et al., 2012 (24) (USA) CJON/0,8	Lung	To engage multiple disciplines to generate process changes.	Process and People	Mixed Methods
Haire et al., 2013 (25) (England) LJPC/0,83	All types	To explore the potential for integrated cancer systems to improve the quality of care and deliver cost efficiencies.	Process, People and Technology	Empirical / qualitative
Alsamarai et al., 2013(26) (USA) CLC /4,2	Lung	To establish a coordinated program in lung cancer.	Process and People	Mathematical modelling
Singh et al., 2014 (27) (USA) NCCN / 7,5	Breast	To use a set of tools of lean methodology in an institution.	Process and People	Empirical / qualitative
Ginsburg et al., 2017 (28) (LMIC) Lancet/60,39	Breast / Cervical cancer	To change global policy to deliver safe, equitable, and affordable care for women's cancers.	Process, People and Technology	Mixed methods
Ju et al., 2017 (29) (USA) JMS/3,0	Lung	To use a computer process modelling approach to evaluate lung cancer care delays and identify potential 'bottlenecks' causing waiting time.	Process, People and Technology	Mathematical modeling
Teran-Hernandez et al., 2017 (30) (Mexico) IG/0,37	Cervical cancer	To design a method of spatial planning in the health sector that can be used daily.	Process	Mathematical modeling
Yap et al., 2017 (31) (LMIC) CO/3,11	All types	To estimate the benefits of providing external beam radiotherapy in Low- and Middle-income Countries.	People and Technology	Mixed Methods
Job et al., 2017 (32) (Australia) JMRS/1,5	All types	To perform a new referral to patients requiring palliative radiotherapy in a single external hospital medical oncology and palliative care departments.	People and Process	Empirical / quantitative
Lefresne et al., 2017 (33) (Canada) LC/4,7	Lung	To provide palliative radiotherapy and holistic care to patients with incurable lung cancer through rapid access in a single institution.	Process and People	Empirical / quantitative
Swanson et al., 2018 (34) (Uganda) GOR/4,62	Cervical cancer	To describe how a small but dedicated group of gynecologists carefully use limited evidence and available resources creatively to provide the best possible care for their patients.	Process, People and Technology	Empirical / qualitative
Moore et al., 2019 (35) (USA) CCC/2,34	All types	To describe the impact of public policy, public health programming, and technical assistance and training on the use of policy, system, and environmental change interventions in cancer control.	Process, People and Technology	Empirical / qualitative
Common et al., 2018 (36) (Canada) CARJ/1,6	Lung	To introduce a multidisciplinary, centralized referral program at a single institution.	Process and People	Mathematical modeling
Jacobson et al., 2018 (37) (Paraguay) GOR/1,3	Cervical Cancer	To describe the interventions implemented at a single institution to improve treatment efficiency, emphasizing radiation quality and access.	Process, People and Technology	Empirical / qualitative
Blackmore et al., 2019 (38) (Canada) CJPH/1,3	Breast	To compare wait times across the treatment pathway among screened women diagnosed with breast cancer through breast assessment centers and usual care.	Process and People	Mathematical modeling

Source: the authors from the study results.

TABLE 3: Managerial practices applied to reduce waiting time to initiate cancer treatment

Authors, Year (Country)	Initiative Level – actors	PPT dimension; Initiative proposed
Kenis, 2006 (19) (Netherlands)	Macro: Government/ Ministry of health	Process: To address the interdependencies of the organizational field to reduce the waiting lists
Potter et al., 2009 (20) (England)	Macro: Government	Process: To review the two-week wait rule for breast cancer.
Kawakami et al., 2008. (21) (Canada)	Meso: Healthcare Services	Process, People and Technology: To implement a real-time cancer surgery booking software program to help resource allocation for priority and no priority surgical programs.
Shea et al., 2008 (22) (USA)	Macro: Government	Process: To monitor the effects of major policy changes on access to care.
Farmer et al., 2010 (23) (LMIC)	Macro: Government / Global health funders	Process, People and Technology: To implement large-scale programs to build new infrastructure and train health professionals; To identify and implement innovative financing mechanisms for cancer treatment.
Hunnibell et al., 2012 (24) (USA)	Meso: Organization/ Healthcare services	Process, People and Technology: To introduce multiple disciplines to generate process changes.
Haire et al., 2013. (25) (England)	Macro: Government	Process, People and Technology: To integrate the cancer care pathway vertically.
Alsamarai et al., 2013 (26) (USA)	Meso: Healthcare services	Process, People and Technology: To introduce a centralized, multidisciplinary cancer care coordinated program.
Singh et al., 2014 (27) (USA)	Meso: Healthcare services. Micro: health professionals	Process and People: To integrate variables - volume, clinical space, physician availability, services offered, and patient types - to improve scheduling predictability.
Ginsburg et al., 2017 (28) (LMIC)	Macro: Government/ Global health funders. Meso: Healthcare services	Process, People and Technology: To increase capacity for surgery, pathology, and radiotherapy through both structural and domestic funding.
Ju et al., 2017 (29) (USA)	Meso: Healthcare services. Micro: Specialists	Process, People and Technology: To focus on the process by applying engineering modeling to identify 'bottlenecks' in waiting time for treatment and explore alternative pathways to reduce the total process time.
Teran-Hernandez et al., 2017 (30) (Mexico)	Macro: Government	Process: To incorporate spatial accessibility analysis to identify disease distribution, health resources, and distant areas and support planning and decision-making.
Yap et al., 2017 (31) (LMIC)	Macro: Government	People and Technology: To increase the supply of radiotherapy services purchasing machines.
Job et al., 2017 (32) (Australia)	Meso: Healthcare services Micro: Specialists	People and Process: To develop a new referral pathway to patients requiring palliative radiotherapy.
Lefresne et al., 2017 (33) (Canada)	Meso: Healthcare services. Micro: Specialists	Process and People: To implement Rapid Access Clinic to provide palliative radiotherapy and holistic care for incurable lung cancer patients.
Swanson et al., 2018 (34) (Uganda)	Macro: Government. Meso: Healthcare services Micro: Physicians	Process, People and Technology: To implement collaborative specialized cancer care and develop treatment protocols that creatively use available resources.
Moore et al., 2019 (35) (USA)	Macro: Government	Process and People: To implement strategies that facilitate changing policy, systems, and environmental (PSE) regarding cancer treatment.
Common et al., 2018 (36) (Canada)	Meso: Healthcare services. Micro: Specialists	Process and People: To implement a collaborative, multidisciplinary centralized intake, and referral program.
Jacobson et al., 2018 (37) (Paraguay)	Meso: Healthcare services. Micro: Specialists	Process, People and Technology: To implement multidisciplinary treatment and modernize radiotherapy treatment with more modern techniques, training the team regarding the newest techniques and devices.
Blackmore et al., 2019 (38) (Canada)	Macro: Government	Process and People: To implement an organized breast assessment to treatment among asymptomatic women.

Source: the authors from the study results.

Although the number of studies is limited, there may be opportunities to learn about successful interventions that decrease diagnostic and treatment intervals. As we assume that those gaps are significantly longer in Latin America, these findings suggest that studies focusing on treatment delays in LMICs are profoundly needed, the targeted programs that address barriers to primary care should be prioritized.

As shown in Table 4, it is interesting to note that despite the great technological advances and digital transformation present in most organizations, few initiatives propose using technology to improve the process and reduce the waiting time for cancer treatment. In this sense, government actions could seek to invest in technology to integrate and enhance cancer treatment

processes. Likewise, healthcare organizations (meso level) could take advantage of new technologies to reduce patients' waiting for treatment.

The large variability in the interventions proposed complicates comparisons across the studies. However, it was possible to divide the initiatives into three main strategic levels: public policies (macro level), institutional planning and coordinating (meso level), and people engagement (micro level). It was also possible to classify the proposed solutions in each PPT dimension: Process dimension – prototyping with creative ways to minimize delays; People dimension – training professionals and foment team working; Technology dimension – investing in technology and new equipment.

TABLE 4. Managerial dimensions in different levels suggested to reduce waiting time to initiate cancer treatment (total of initiatives = 72)

Actions level	Process	People	Technology	TOTAL
Macro (national level)	10	8	5	23 (31.9%)
Meso (organizational, regional and local level)	11	11	7	29 (40.3%)
Micro (individual level)	8	8	4	20 (27.7%)
TOTAL	29 (40.2%)	27 (37.5%)	16 (22.2%)	72

Source: the authors from the study results.

Strategic level of the initiatives

Public policies strategies – Macro level. Results indicate that governments should implement large-scale programs to define and build new services infrastructure, train healthcare professionals and paraprofessionals, and invest in technology, especially in telecommunication, to overcome many on-site limitations in resources and expand access to health services (10, 26). These initiatives are critical in low and middle-income countries.

Governments should also design and implement regional and global pricing and procurement mechanisms to offer individual communities the opportunity to participate in collective negotiation and ensure reduced prices for essential services, drugs, and vaccines (23). Lastly, governments should identify and implement innovative financing mechanisms to expand the financial resources available for cancer treatment and palliative care in developing countries (41).

Public policy efforts are increasingly recognized as critical to eliminate cancer disparities (28). For example, there are racial and ethnic disparities regarding treatment and survival. Rural residents often have higher cancer incidence and mortality than urban residents, and there are documented disparities related to cancer diagnosis and treatment in rural areas. Individuals with disabilities have unique challenges related to access and may face transportation problems to get to the clinics. As a result, people with disabilities have lower cancer screening rates, are diagnosed later, and have a lower survival rate than people without disabilities.

Planning and Coordinating Strategies – Meso level. Integrated care means bringing together all the inputs necessary to deliver the diagnosis, treatment, care, rehabilitation, and health promotion. It is a means of improving access, quality of care, user satisfaction, and efficiency (42). The vertical integration of cancer care services presents an enormous challenge. Still, it offers an exciting opportunity to radically transform the provision of cancer services through creating a holistic model spanning organizational boundaries and placing the patient at the heart of the system (39). Therefore, it is crucial to expand collaboration to build efficient healthcare systems for cancer and primary care, surgery, pathology, chemotherapy, and radiotherapy (34).

According to Unger-Saldaña et al. (40), early integration of palliative and oncology care in patients with newly diagnosed incurable cancers improves the quality of life (QOL), reduces

depression symptoms, and enhances coping with prognosis and communication about individual-care preferences. These findings provide further evidence to support early integrated programs as the standard of care for patients with newly diagnosed cancers.

Engagement Strategy – Micro level. Delays in initiating cancer treatment can occur for two reasons: provider delay (a prolonged interval from patient presentation to first oncologic treatment), or patient delay (a prolonged interval from discovering the disease and searching for a qualified medical provider). Patients' delay can indicate a lack of public awareness regarding the consequences of postponing cancer treatment (30). Also, move away from home, family, or work responsibilities to start cancer treatment or pay for the high cost of diagnosis and treatment constitute particularly burdensome problems possibly hindering the beginning of the treatment, mostly in low and middle-income countries). In addition, interventions should also attempt to raise cancer awareness and reduce the stigma of this disease (35).

PPT Dimensions strategies

Practices related to the Process dimension. According to organizational theory, solving business problems is a matter of coordination (19). In most studies, policymakers intended to reduce process fragmentation, improving integration and vertical control (23).

Farmer et al. (23) states that a diagonal approach – in which resources are distributed in ways that strengthen the entire health system – can be applied to cancer. This approach should help identify synergies, link cancer care and control to many services associated with a broad range of medical disorders, reinforce physical infrastructure in health systems, and avoid creating a parallel structure for service delivery.

The studies indicate that early referral of patients with imaging is associated with reduced wait time and more appropriate specialist consultation in diagnosing and treating neoplasms (36).

Practices related to the People dimension. The leading healthcare professional's objective is to provide high-quality services to those who need them most. However, the long waiting lists prevent them from providing high-quality service to their patients. In this context, they will presumably give high priority to reducing waiting lists (19).

An important goal is to train in cancer medicine specialties. As reported by some authors (33, 37), patients have better outcomes when treated by specialists. The expert team discusses interventions to improve the existing system and make it more efficient without significant spending. They also focus on developing diagnostic and treatment pathways and reinforcing a multidisciplinary approach.

The creation of tumour boards (panel of specialists), which meet frequently and bring together cancer care coordinators with the care providers, improve the communication among the team, promote better cancer care results, and reduce waiting lines for treatment (24, 26).

Practices related to the Technology dimension. Approaches on cancer treatment have been making significant technological improvements, moving from practice consistent with a "basic

TABLE 5. Managerial dimensions and the initiative proposed to reduce waiting time to initiate cancer treatment (total of suggestions = 45)

Authors, Year (Country)	PPT Dimension	Initiative proposed
Kenis, 2006 (19) (Netherlands)	Process	To manage the interdependencies of the organizational field as a matter of coordination between the different components of the oncological system and the different interests.
Potter et al., 2009 (20) (England)	Process	To review the two-week wait rule, which has led to increased waiting times for routine appointments.
Kawakami et al., 2008 (21) (Canada)	Process	To triage patients in urgent versus non-urgent.
	People	To increase the supply of surgeons in the face of an increased demand of services.
	Technology	The use of a surgery-booking software.
Shea et al., 2008 (22) (USA)	Process	To establish that changes in reimbursement do not affect access to chemotherapy.
Farmer et al., 2010 (23) (LMIC)	Process	Implementation of large-scale demonstration programmes in the next few years to define and build new infrastructure.
	People	To train health professionals and paraprofessionals.
	Technology	To harness the opportunities of technology and especially telecommunications to overcome many on-site limitations in resources.
Hunnibell et al., 2012 (24) (USA)	Process	To implement a cancer care coordinator or navigator program.
	People	To involve primary care providers in the process by giving the opportunity to discuss oncological cases.
	Technology	To use an electronic tool to work as a simple, easy-to-use, electronic tumor board referral.
Haire et al., 2013 (25) (England)	Process	To integrate all organisations involved in the cancer care pathway.
	People	To develop clear channels of communication and engagement both within the integrated cancer systems (commissioners and providers) and with external stakeholders.
	Technology	To establish an informatic system which enables sharing patient information across the provider network.
Alsamarai et al., 2013 (26) (USA)	Process	To establish a cancer care coordinated program.
	People	To define a full-time position for a nurse practitioner serving the role of cancer care coordinator, establishing a weekly multidisciplinary pulmonary nodule conference.
	Technology	To use a computerized reminder and cancer tracking system.
Singh et al., 2014 (27) (USA)	Process	To use a set of tools of Lean methodology to address variables contributing to inefficiencies that result in delays; to integrate all the business variables, such as volume, clinical space, physician availability, services offered and patient types, to produce a system or schedule that is more predictable.
	People	To implement a new schedule for physicians, a primary nursing model, new roles and responsibilities.
	Process	To consider women's cancers an integral part of women's health policy both to achieve universal health coverage and the Sustainable Development Goals.
Ginsburg et al., 2017 (28) (LMIC)	People	To take actions against cultural and social attitudes that prevent women from presenting with early disease.
	Technology	To maximize population health with the resources at their disposal such as radiotherapy.
	Process	To focus on processes to reduce the waiting times between the steps of care can lead to more timely care.
Ju et al., 2017 (29) (USA)	People	To refer patients with lung masses directly into a Multidisciplinary Thoracic Clinic for expeditious management.
	Technology	To use a computer process modeling approach to identify potential 'bottlenecks' in waiting time.
	Process	To use a method of spatial planning in the health sector that can be used on a daily basis.
Teran-Hernandez et al., 2017 (30) (Mexico)	Process	To use a method of spatial planning in the health sector that can be used on a daily basis.
Yap et al., 2017. (31) (LMIC)	People	To offer basic pathology, radiology, surgeons, oncologists and other cancer treatment services.
	Technology	To reduce the gap between the supply of, and demand for, radiotherapy in LMICs.
Job et al, 2017 (32) (Australia)	Process	To establish a new referral pathway involving patients that require palliative radiotherapy.
	People	To use a multidisciplinary rapid response palliative clinic to expedite patient's palliative radiotherapy.
	Process	To use a rapid access palliative radiotherapy do add value to the care of patients with incurable lung cancer.
Lefresne et al., 2017 (33) (Canada)	People	To triage referrals by a nurse practitioner and followed by a multidisciplinary team.
	Process	To establish treatment protocols that creatively use available resources according to limited evidence in order to provide the best possible care.
Swanson et al., 2018 (34) (Uganda)	People	To implement interdisciplinary partnerships with multidisciplinary teams in medical oncology, radiation oncology, pathology and palliative care teams to maximize the capacity to care for patients.
	Technology	To use external beam radiation in eradicating locally- and regionally-advanced cervical tumors.
	Process	To implement partnership networks necessary to support the cancer program priorities and activities; and evidence-based interventions to facilitate community clinical linkages, health systems change, and environmental approaches.
Moore et al., 2019 (35) (USA)	People	To write guidance documents, coaching, peer-to-peer learning, emails, web-based support, webinars, or face-to-face learning opportunities.
	Process	To create a triage panel to reduce wait time and improve patient flow through lung cancer diagnosis and treatment.
Common et al., 2018 (36) (Canada)	People	A working group of specialists including radiology, respirology, medical and radiation oncology, thoracic surgery, and pathology meets to review new and ongoing cases, to determine optimal course for diagnosis and treatment, and to coordinate appropriate investigations and referral.

(continued)

TABLE 5. Managerial dimensions and the initiative proposed to reduce waiting time to initiate cancer treatment (total of suggestions = 45) (continued)

Authors, Year (Country)	PPT Dimension	Initiative proposed
Jacobson et al., 2018 (37) (Paraguay)	Process	To triage patients for immediate access to radiation and brachytherapy.
	People	To develop a better communication between specialists, and partnerships with private and international organizations.
	Technology	To improve availability of brachytherapy.
Blackmore et al., 2019 (38) (Canada)	Process	To establish advances in evidence-based treatment protocols in breast cancer in organized breast assessment.
	People	To use multidisciplinary expertise, including surgical support, offered through specialized centers.

Source: the authors based on the study results.

setting" to practice consistent with an "enhanced setting". In this sense, recent technological solutions, including tele-radiotherapy systems, radiological imaging, artificial intelligence, and scheduling models, have been extensively explored (31). New approaches in the surgery setting (robotic surgery) also seem to play a role (21).

The studies indicate that some actions related to introducing new technology – as a faster turnaround of pathology reports and improved availability of brachytherapy – have decreased the time from diagnosis to treatment and increased the availability of standard care treatment. Also, the transition from 2-D to 3-D treatment planning has moved the practice to more precise radiotherapy, which has resulted in improved outcomes with decreased morbidity (22). (Table 5)

The limitations of this study include the risk of overlooking some key literature, as studies not published in peer-reviewed journals or indexed in electronic databases were excluded; this also includes potentially important literature that may have been undiscovered due to the use of different keywords. In addition, this systematic review focused in the public health system. Thus, any relevant study outside these limits was not considered eligible. Secondly, our findings summarize published studies that reported heterogeneous data of different study designs, quality and varying evidence level and including different health care systems. The selected publications comprised distinct research contexts and methods, thus hindering a statistical meta-analysis. Finally, there might be limitations in terms of identifying trends. Scoping the actions for cancer treatment (and not prevention) may not be sufficient for establishing the direction that the natural process will take. Another question that we faced was the few connections and little interaction between authors, who prefer to collaborate in closed networks. Maybe it would be part of geographical barriers, different types of cancer statistics, and different populations.

In conclusion, our literature review confirms the advantages of using a network lens to understand the development of actions concerning queues in oncology treatments. Our approach indicates network actors and flows between those actors that need further research while underlining the lack of other systematic reviews about the theme.

As a contribution to society, this study shows the increasing attention devoted to alliances and collaboration in oncological healthcare, resulting from the high complexity of cancer treatment challenges in practice. Therefore, it is essential to engage patients, family, and caregivers in this network.

We could identify several opportunities for further research: (1) exploring themes in the international community, such as trends with an aging population, new treatment, and expensive drugs; (2) further exploring disparities in developing countries regarding cancer treatment; and (3) collaborating with central authors in the world network.

Author contribution. RGDS conceived the original idea and planned the research, collected and analyzed the articles included in this review and wrote the paper. CASA helped plan the research, analyzed the articles, and organized the article structure. Both authors reviewed and approved the final version.

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Iniciativas para reducir el tiempo de espera para iniciar el tratamiento oncológico: revisión exploratoria

RESUMEN

Objetivo. Identificar las medidas gerenciales propuestas y empleadas para reducir el tiempo de espera para iniciar el tratamiento oncológico y su aplicación en el sistema público de salud en América Latina.

Método. Se realizaron búsquedas en siete bases de datos en diciembre del 2020. Se conceptualizaron los términos de búsqueda en tres grupos: tiempo de espera, cáncer y términos relacionados con el sector público. Entre los criterios de aceptabilidad se incluyeron artículos académicos teóricos o empíricos escritos en inglés, español o portugués acerca de soluciones gerenciales para enfrentar el dilema de los tiempos de espera en la atención médica oncológica.

Resultados. La búsqueda arrojó como resultado 1 255 artículos; para esta revisión se seleccionaron y analizaron 20. Los resultados muestran que la mayoría de las propuestas están relacionadas con dos dimensiones: el proceso y los pacientes. Las medidas relacionadas con el proceso se asociaron principalmente con la planificación de nuevas vías de tratamiento y la integración de los sistemas oncológicos. Las iniciativas relacionadas con los pacientes se referían principalmente a equipos de trabajo y grupos de especialistas. Algunas iniciativas estuvieron relacionadas con la dimensión de tecnología y soluciones tecnológicas, principalmente con la compra de equipos de radioterapia.

Conclusiones. Pocos estudios se centran en analizar medidas que minimicen el tiempo de espera para iniciar los tratamientos oncológicos. La prevalencia de estudios de casos conceptuales e ilustrativos indica la falta de madurez de la investigación sobre este tema. Los estudios futuros deben centrarse en establecer las bases teóricas del campo, considerar los paradigmas existentes o elaborar nuevos paradigmas. Es necesario realizar estudios empíricos que apliquen un enfoque multidisciplinario para afrontar el reto del tiempo de espera para recibir tratamiento oncológico y que propongan iniciativas nuevas e innovadoras.

Palabras clave Listas de espera; cáncer; neoplasias; atención a la salud.

Iniciativas para reduzir o tempo de espera para o início do tratamento oncológico: revisão de escopo da literatura

RESUMO

Objetivo. Identificar ações gerenciais propostas e adotadas para reduzir o tempo de espera para o início do tratamento oncológico no sistema de saúde pública e sua aplicação na América Latina.

Método. Foram feitas buscas em sete bancos de dados em dezembro de 2020. Os termos de busca foram conceituados em três grupos: tempo de espera, câncer e termos relacionados ao setor público. Os critérios de elegibilidade incluíam artigos acadêmicos teóricos ou empíricos escritos em inglês, espanhol ou português, cujo foco fossem soluções gerenciais para enfrentar o dilema das filas para atendimento oncológico.

Resultados. A busca retornou 1255 artigos, dos quais 20 foram selecionados e analisados nesta revisão. Os resultados mostram que a maioria das propostas está relacionada às dimensões de processo e pessoas. As ações relacionadas à dimensão de processo estavam associadas principalmente ao desenvolvimento de novos percursos assistenciais e à integração dos sistemas de atendimento oncológico. Já as iniciativas na dimensão de pessoas se referiam principalmente a forças-tarefa e grupos de especialistas. Algumas iniciativas estavam relacionadas à implementação de soluções tecnológicas e à dimensão tecnológica, sobretudo no que se refere à aquisição de dispositivos de radioterapia.

Conclusão. Poucos estudos se concentram na análise de ações para minimizar o tempo de espera para início do tratamento oncológico. A prevalência de estudos de caso conceituais e ilustrativos indica a falta de maturidade da pesquisa sobre esse tema. Futuros estudos devem se concentrar em definir fundamentos teóricos da área, considerar os paradigmas existentes ou desenvolver novos paradigmas. São necessários estudos empíricos que utilizem uma abordagem multidisciplinar para enfrentar o desafio do tempo de espera para o tratamento oncológico e que proponham iniciativas novas e inovadoras.

Palavras-chave Listas de espera; câncer; neoplasias; atenção à saúde.
