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Review Article

Impact of patient information format on the experience of cancer patients treated with radiotherapy

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ABSTRACT

Introduction: Radiotherapy (RT) stands as one of the main cancer treatments. The impact of RT and cancer treatment can have a physical and psychological impact on patients and their carers. To gain patient's trust, and ensure they feel valued, information should be provided before, during, and after RT. Patient and public involvement (PPI) has been lacking, and increased engagement with PPI groups could improve this. This rapid review aims to analyse the literature, and describe and report patient perception, experience, and satisfaction regarding the information received concerning their course of RT.

Methods: To allow the synthesis of results, a pragmatic decision was made to use a rapid review approach to analyse the literature, providing more timely information to inform future work. This rapid review utilised systematic review methods and was conducted according to a pre-defined protocol including clear inclusion criteria (PROSPERO registration: CRD42023415916).

Electronic databases CINAHL, AMED, Pubmed/MEDLINE, EMBASE, and PsycINFO were searched using a comprehensive search for published studies from January 2012 to November 2023. Two independent reviewers applied the eligibility criteria. Evidence from literature was extracted and transcribed into qualitative data and Braun and Clarke's six-step thematic analysis (TA) was employed to determine themes by one reviewer and checked by a second [26]. Due to the heterogeneity of the included literature, the analysis of this review is presented primarily through narrative synthesis.

Results: Sixty eight articles met the inclusion criteria for this review. Emerging themes included; a desire for information based on patient characteristics, information format, patient preparedness, timing e.g. timing of information and changing priorities over time, health care professional (HCP) involvement, barriers to information, and motivators for better information delivery.

Conclusions: Several factors can influence a patient's desire for information, from whom and when they receive it, to what format they would prefer to receive it. There is benefit to be gained in employing PPI and patient advocacy to inform future studies that aim to further understand the themes that emerged from this review. Such studies can therefore inform HCPs in providing patient-specific information and support by utilising multiple teaching strategies available to them.

Introduction

Cancer is the second leading cause of mortality in developed countries [1]. Radiotherapy (RT), either alone, or in combination with chemotherapy and/or surgery, is an established effective treatment for a range of malignancies. Approximately half of all patients diagnosed with cancer will undergo RT as part of their care [2]. RT is a targeted treatment that delivers ionising radiation with accuracy and precision. The aim is to eradicate cancerous tissue while minimising normal tissue

damage [3].

In recent years there has been consistent development in the complexity of the RT process, increasing the accuracy and precision of RT planning, verification, and delivery [3,4]. This has seen an increased need for the RT workforce to prepare patients in advance for what they will experience before, during, and after RT [5,6]. For patients, the complexity of the RT process can be physically and psychologically demanding [7]. This has been demonstrated with bladder and bowel preparation protocols for prostate patients and their compliance with

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such [8], or when there has been inadequate information and communication, where misinterpretation of information has led to some patients declining treatment that might otherwise have improved their chance of survival [6].

Historically, RT treatment education has been delivered in a face-to-face environment and reinforced through information leaflets. While printed handouts have their advantages e.g. low-cost production, and accessibility, they do rely on the receivers reading abilities to comprehend the information provided [9]. Additionally, a patient's learning capacity may be hindered by other factors, with approximately 50% of patients experiencing heightened anxiety and distress before RT [6]; and, cognitive burdens from concurrent cancer treatment as well as low health literacy [10,11]. These concerns are often accompanied by a fear of the potentially damaging effects of RT, resulting in a difficult reconciliation between radiation as a therapeutic solution and radiation as a danger [12,13].

The impact of unmet information needs for RT patients can be extensive, and potentially lead to a patient's misinterpretation of the RT process and the treatment side effects (SE), influencing the patient's treatment decisions [13,14]; and quality of life (QoL) [9]. Dating back to the 1980s, several studies found patients to be dissatisfied with the information they receive about their cancer diagnosis [15], leading to efforts to improve cancer patients' rights to be fully informed [16]. With the innovative advances in RT practice, traditional delivery techniques e.g. face-to-face, and written information make it difficult for patients to understand the complexity of RT [7]. Consequently, the evolution of technology shifted towards audio-visual materials and emerging multimedia tools, aiming to enhance patient RT education and help them better prepare for anticipated experiences [7,17].

Research indicates that cancer patients want as much information as possible [14,18–20]. However, some patients prefer to receive less information, or want their family to be involved in managing their medical condition to decrease their anxiety [21,22]. Either way, the information needs of cancer patients vary based on patient characteristics, including gender, age, cultural background, educational level, and cancer type [22]. Understanding factors associated with information provision and patient characteristics may assist healthcare providers in delivering personalised patient-centred information, ensuring those who need it receive it at the right time. This could inform the design of support strategies [11,18,19]. Specifically, improved knowledge is associated with a sense of empowerment, as well as reducing anxiety [10].

While several studies have investigated patient experience and satisfaction regarding information received for RT, few involve patients with lived experience in developing information materials; or, being involved in the evaluation process of the current standard of care (SOC). It is essential that health care professionals (HCPs) do not make assumptions on a patient's behalf, which may be the reason a gap remains between the information provided to patients, and the actual information patients wish to receive [23]. This review aims to identify and analyse patient satisfaction with the information received and information materials provided about their RT treatment, based on patient opinion, and identify if there are unmet information needs. The results from this study will then be employed to inform future research studies that will be designed and developed with our local patient and public involvement (PPI) group.

Methodology

Based on the guidance of the Cochrane Rapid Reviews Methods Groups, the narrative synthesis of this rapid review was based on the Population, Intervention, Comparison, and Outcomes (PICO) question framework elements with findings grouped by key question(s), interventions, then by comparisons, followed by outcomes [24], as shown

Table 1
PICO framework used to structure the review question.

Population	RT patients
Intervention	Information provision, formats, and attributes
Comparator	To the standard of care
Outcome	Patient perception, experience, and satisfaction

in Table 1.

This rapid review was carried out with a systematic approach, searching the following databases CINAHL, AMED, Pubmed/MEDLINE, EMBASE, and PsycINFO. Searches were restricted from January 2012 to November 2023, ensuring information was relevant to modern RT techniques. Only English language publications were included. All identified references were recorded.

The searches were carried out using both medical subject headings (MeSH) terms and free text words. To cover different terminologies and works, appropriate Boolean operators were included in the search strategy. Search terms included radiation therapy, patient information/information sources, communication/communication techniques, patient perception/patient satisfaction/patient experience/patient priority.

Review of studies

To minimise bias, two independent reviewers screened the titles and abstracts of the studies adhering to the inclusion and exclusion criteria found in Appendix A. The number of included and excluded studies and the reasoning were recorded. Any discrepancies were discussed and agreed upon using a consensus.

Data extraction

The articles meeting the inclusion criteria were reviewed in full, with data extraction completed by one reviewer; and the integrity of the data checked by a second reviewer. A standardised data extraction form was developed and employed to assist with extracting the data can be found in Appendix B

To address common or disputed concepts arising from the literature regarding the impact of information format on patient experience, quantitative and qualitative evidence through data transformation coding was integrated. Through the convergent integrated approach, Joanna Briggs Institute's (JBI) mixed methods systematic review methodology framework was employed [25]. JBI recommends that quantitative data be coded into qualitative data, as codifying quantitative data is less error-prone than attributing numerical values to qualitative data.

Once all data was transcribed into qualitative data, thematic analysis (TA) was carried out. This was done under the guidance of the six-phase TA of Braun and Clarke [26].

- 1 Data extraction was completed as outlined previously using Appendix B.
- 2 A review of the entire dataset was carried out systematically and items addressing the research question were identified, and these were the initial codes.
- 3 Codes were then analysed and how they shared meanings for themes or sub-themes.
- 4 The themes generated were reviewed to ensure they had captured the most important elements addressing the research question.
- 5 Themes were defined with an analytic narrative.

Table 2

Summary of results for articles meeting inclusion criteria. Where p values (P) are listed in statistical significance (SS) column, these will be in order of results reported in the outcome for each study. Abbreviations: CG – control group, CT – computed tomography scan, EORTC QLQ-C30 – European Organisation for Research and Treatment of Cancer Quality of Life Questionnaire – Core 30, FCR – fear of cancer recurrence, H&N – head and neck, HRQoL – health related quality of life, IBRT – intra-cavity brachytherapy, IG – intervention group, ORP – outpatient rehabilitation programme, Gyn – gynaecological, PC-PEP – prostate cancer patient empowerment programme, PX – personalised patient experience focused, QI – qualitative improvement, QIQ – quality improvement questionnaire, RCT – randomised controlled trial RTT – therapeutic radiographer/radiation therapist SDF – sexual dysfunction, TA – thematic analysis, VR – virtual reality.

Reference number	First author and year of publication	Study type	Disease site evaluated	Sample size (N) with detail of group	Outcome and statistical significance (SS)	P value (SS ≤ 0.05)
5	Alexander, S.E., et al. 2020	QIQ	Prostate	251	Urology specialist RTT led pathway had a high level of patient satisfaction	N/A
6	Halkett, G., et al. 2018	RCT	Breast	IG = 190 CG = 218	SS for satisfaction on 5 items for IG; 1. Lower psychological distress starting RT, 2. Lower concerns about RT, 3. Higher knowledge, 4. Higher preparedness, and 5. Higher preparedness for RT planning	P = 0.01, P < 0.01, P < 0.001, P < 0.001, & P < 0.001 (respectively for items 1–5, as numbered in outcomes)
7	Wang, L.J., et al. 2020	QIQ	Not specified	43	VR gave a better understanding of RT & decreased anxiety	N/A
8	Stewart-Lord, A., et al. 2016	QIQ	Prostate	38	VR positive impact on patients understanding of change in internal anatomy	N/A
9	Behboudifar, A., et al. 2018	RCT	H&N	IG = 33 CG = 33	Developed written education SS reduced RT-associated anxiety compared to multimedia	P = 0.009
10	Jimenez, Y.A., et al. 2018	Quasi-experimental	Breast	IG = 19 CG = 18	SS increase in knowledge for IG vs CG	P < 0.05
11	Feldman-Stewart, D, et al. 2018	QIQ	Prostate	1366	VR increased RT knowledge and decreased anxiety	N/A
12	Jimenez, Y.A., et al. 2018	QIQ	Breast	19	Majority wanted more information and used the internet to find out more	N/A
13	Halkett, G.K.B., et al. 2012	QIQ	Breast	123	VR had a positive impact on the perception and understanding of RT	N/A
14	Forshaw, K., et al. 2017	QIQ	Prostate	26	Information needs were highest before CT scan and treatment 1, anxiety levels matched this	N/A
16	Douma, K.F.L., et al. 2012	QI interview	Not specified	104	Overall patients were satisfied, but wanted more information on SE and RT procedure	N/A
17	Williams, K., et al. 2017	QIQ	Not specified	61	SS decrease in psychosocial issues was shown with more active involvement from the oncologist	P = 0.002
18	Kim, C, et al. 2021	2 phase QI	H&N	Phase 1 = 50 Phase 2 = 50	Majority of patients reported educational video met one or more learning objectives	N/A
19	Nicolaije, K.A.H., et al. 2012	QIQ	Endometrial	742	Increased satisfaction (SS) in phase 2 patients for information and preparedness	P = 0.046
20	Pembroke, M., et al. 2020	QIQ	Breast	17	SS shown for patients receiving insufficient information about the disease, physical and psychosexual SE, and support	P < 0.05 for all
21	Mulcare, H., et al. 2013	QIQ	Lung	59	4 top themes emerged; 1. Adapting to body image changes 2. Fear of recurrence, 3. Unexpected impact of dermatitis, 4. Preparation for RT	N/A
22	Li, W., et al. 2022	QIQ	Not specified	130	Information seeking varied as a function of adjustment to diagnosis	N/A
23	Sulé-Suso, J., et al. 2015	QIQ	Not specified	150	Age, gender & education level showed SS influence on patient preference for information	All categories P < 0.001
27	Akeflo, L., et al. 2023	QI interview	Gyn	12	VR was an important information tool for patients and relatives, and helped reduce fears about RT	N/A
28	Arden, J.D., et al. 2021	QIQ	Not specified	PX contact = 197	Feeling of unpreparedness for vaginal dilator therapy. Earlier, clearer, realistic information about vaginal changes should be integrated into their cancer treatment and follow-up	N/A
29	Attai, D.J., et al. 2015	QIQ	Breast	206	SS higher satisfaction for patients who had contact with PX therapist	P = 0.01
30	Bergenmar, M., et al. 2014	QIQ	Breast	88	Perceived knowledge increased and anxiety SS decreased by participation in a Twitter social media support group	P < 0.001
					SS higher satisfaction with information received for older women, and patients undergoing combined treatment were less satisfied	P = 0.01 & P = 0.014

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Table 2 (continued)

Reference number	First author and year of publication	Study type	Disease site evaluated	Sample size (N) with detail of group	Outcome and statistical significance (SS)	P value (SS ≤ 0.05)
31	Behboudifar, A., et al. 2018	RCT	H&N	IG = 33 CG = 33	SS for decrease in mean anxiety for CG SS for higher self-care for IG at week 1, 3 & 5 of RT	P = 0.009 P = 0.003, P = 0.01 & P < 0.001
32	Chapman, K., et al. 2016	QIQ	Breast	103	Majority of patients were happy to receive information in a group setting	N/A
33	Chauhan, M., et. al. 2018	QIQ & interview	Prostate	60	Overall satisfaction was high with 15% of patients needing extra information before start of RT	N/A
34	Dawdy, K., et al. 2018	RCT	Prostate	IG1 = 29, IG2 = 29 Retrospective CG = 55	No SS in rescan rates between IG1, IG2, and CG SS increase in preparedness for IG1/2 vs. CG	P < 0.01
35	Dong, B., et al. 2023	QIQ	Colorectal	403	The majority had a high level of supportive care needs. Healthcare staff treatment of patients and information should be prioritised	N/A
36	Douma, K.F.L., et al. 2012	QIQ	Not specified	159	Tailored information on RT procedures showed SS with reduction in anxiety and increased global health	P = 0.02 for both
37	Fallowfield, L., et al. 2023	QIQ	Breast	143	25% had felt medic considered lifestyle and/or culture. More information was requested on holistic, lifestyle, SE, and psychological support to optimise QoL	N/A
38	Gao, J., et al. 2022	RCT	Tumours in chest	IG = 30 CG = 30	SS improvement found in post-intervention for RT comprehension for IG	P < 0.05
39	Gilbert, S.M., et al. 2014	QIQ	Prostate	1204	SS was shown independently for; older age, written materials, and physician description of helpfulness of information received	P = 0.005, P = 0.03 & P < 0.001
40	Gjerset, G.M., et al. 2023	QIQ	Breast	270	1. Physical function, 2. Role function 3. Cognitive function 4. Fatigue symptoms 5–7. Total/mental/physical fatigue were SS at 6 months in HRQoL, as a function of HRQoL, EORTC QLQ-C30 questionnaire. Study included women aged 30–65 years who participated in an ORP for one day per week for seven weeks.	P = 0.009*all except emotional & social function, Global health/QoL status, and pain, P < 0.001, P = 0.003, P = 0.015, P < 0.001, P < 0.001, P = 0.020 (respectively, for items 1–7, as numbered in outcomes column)
41	Goldsworthy, S., et al. 2023	QI interviews	Not specified	25 patients 25 RTT	Through TA, 3 main themes emerged for both patients and RTT for RT comfort and how it can be best managed for both	N/A
42	Greenwood-Wilson, S., et al. 2023	QIQ	Prostate	56	Patients had not received adequate information relating to SDF, SE and the psychological and emotional effects of SDF	N/A
43	Grynne, A., et al. 2023	QI semi-structured interviews	Breast	15	Tailored digital information can complement interpersonal communication for access to reliable health information before, during, and after RT	N/A
44	Guleser, G.N., et al. 2012	QIQ & interview	Not specified	345	SS number of patients required more information specifically about their treatment and SE	P < 0.05
45	Halkett, G.K.B., et al. 2013	RCT	Breast	IG = 64 CG = 58	SS lower level of anxiety and concerns shown for IG Demonstrated SS higher knowledge after the first consultation in IG, SS higher level of understanding and preparedness for RT in IG	P = 0.048 & P = 0.001P < 0.001P < 0.001 for both
46	Ilie, G., et al. 2023	RCT	Prostate	128	Early intervention of a prostate cancer PC-PEP showed SS reduction in the burden of psychological distress for patients	P = 0.031
47	Jennings, A., et al. 2023	QI semi-structured interviews	Gyn	7	Difficulty in communicating psychosexual issues for patients discussing with their partners, and with HCP was demonstrated. Misconceptions and lack of knowledge were evident	N/A
48	Jimenez-Jimenez, E., et al. 2018	QIQ	Not specified	100	~50% of patients received sufficient information Older & lower literacy patients felt less satisfied with information	N/A
49	Julius, A., et al. 2023	QIQ	Gyn	20 patients 53 HCP	Patients rated preventing vaginal stenosis as the most important for self-management, and barriers to post-IBRT education included language and culture	N/A

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Table 2 (continued)

Reference number	First author and year of publication	Study type	Disease site evaluated	Sample size (N) with detail of group	Outcome and statistical significance (SS)	P value (SS ≤ 0.05)
50	Koth, J., et al. 2021	RCT	H&N	IG = 39 CG = 39	SS improvement in sense of worry for IG, SS improvement in anxiety scores for IG, for those patients with > 44 days from diagnosis to RT consultation	P = 0.038 P = 0.008
51	Kotha, N.V., et al. 2023	RCT	Gyn	IG = 28 CG = 29	No SS difference in distress and satisfaction between IG and CG No PPI included in the development of intervention video	P = 0.67/P = 0.29
52	Kumar, K.A., et al. 2020	RCT	Breast	IG = 58 CG = 49	SS improvement in knowledge of RT process and SE for IG	P = 0.009
53	Larsen, C., et al. 2023	QIQ	Breast	917	Long-term education was related to less FCR, and self-efficacy was mediated for only a small part of the association	N/A
54	Laszewski, P., et al. 2016	QIQ	H&N	58	Verbal and video information was favoured over written information, not to SS level	P = 0.13
55	Li, T., et al. 2022	RCT	H&N	IG = 69 CG = 68	SS improvement in 7 items for IG; 1. Information needs, 2. Health & psychological problems, 3. Healthcare staff, 4. Physical symptoms, 5. Health facilities and services, 6. Religious/spiritual support and 7. Psychological pain.	P = 0.004, P = 0.003, P < 0.001, P = 0.001, P = 0.006, P = 0.009 & P = 0.041 (respectively, for items 1–7 in outcome column)
56	Li, X., et al. 2023	RCT	H&N	IG = 50 CG = 50	SS improvement in self-care ability, patient satisfaction, and treatment interruption for the IG compared to CG	P = 0.0038, P = 0.000 & P = 0.0218
57	Long, D., et al. 2016	QI semi-structured interviews	Cervical	28	Patient information including, language, treatment options, SE and psychosexual SE, emerged as the main themes	N/A
58	Lubotzky, F.P, et al. 2019	RCT	Gyn & anorectal	IG = 44 CG = 38	SS improvement in adherence to vaginal dilator use for IG SS improvement in knowledge on psychosexual adjustment and rehab for IG	P < 0.01 P = 0.04
59	Majumder, K., et al. 2014	QIQ	Prostate	607	SS shown for all except 2 EORTC-QLQ-INFO25 variables, favoured RT alone vs prostatectomy & salvage RT SS was associated between all HRQoL variables & satisfaction with information	P = 0.01 P < 0.001
60	Marquess, M., et al. 2017	QIQ	Prostate	22	VR was successful in improving comprehension of RT, and reducing items of anxiety assessed	P < 0.001 & P < 0.05
61	McDuffie, A.L. 2023	QI	H&N	Pre-intervention = 11 Post-intervention = 19	Nurse-led telephone care for pain management post-RT decreased hospital admissions, prompted by unmanaged pain	N/A
62	Morgan, O., et al. 2023	QI semi-structured interviews	Gyn	20	4 Primary themes 1. Blindsided by symptoms, 2. Psychological impact, 3. Seek support online, 4. Consider patient priorities on sexual health	N/A
63	Murchison, S., et al. 2019	QIQ	Breast	118	SS showed that more knowledge was associated with an increase in worry.	P = 0.036
64	Nicolaisen, M., et al. 2014	QIQ	Prostate	143	Often patients turned to alternative sources about SE SS higher satisfaction with information for patients who had surgery alone vs RT alone or salvage RT.	P = 0.017
65	O'Neill, A.G.M., et al. 2023	QIQ	Not specified	347	Time with RTT correlated to SS positive impact on patients' overall experience	P < 0.001 (10–20 mins) P < 0.01 (>20 mins)
66	Powlesland, C., et al. 2023	QI semi-structured interviews	Gyn	5	Patients felt a sense of abandonment post-RT due to the burden of ongoing SE and no more daily contact with HCP	N/A

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Table 2 (continued)

Reference number	First author and year of publication	Study type	Disease site evaluated	Sample size (N) with detail of group	Outcome and statistical significance (SS)	P value (SS ≤ 0.05)
67	Punnett, G., et al. 2023	QI semi-structured interviews	Lung	15	3 top themes emerged; 1. Physical, 2. Psychological, 3. Practical support. Information needs at time points before during and after treatment were important too	N/A
68	Rash, D., et al. 2016	RCT	Cervical	IG = 6 CG = 8	No SS between groups for the satisfaction of information	P = 0.26
69	Savage, K., et al. 2017	QIQ	Prostate	21	SS shown by patients in disagreeing with group sessions	P = 0.0003
70	Schuller, B.W., et al. 2022	QI	Breast	24	SS preference for visual & kinaesthetic learning	P < 0.0001
71	Siekkinen, M., et al. 2015	RCT	Prostate	9/26 17/26	SS increased understanding of CT scan, and the RT process, and reduced anxiety with the 'flipped classroom' approach	P = 0.031, P = 0.0078 & P = 0.031
72	Sutherland, J., et al. 2013	QIQ	Breast	IG = 63 CG = 63	The intervention was effective in decreasing anxiety, & improving QoL over a longer period to a SS level	P < 0.0001 for both
73	Taylor, C., 2014	QIQ	Pelvic (not specified)	Group 1 = 132 Group 2 = 218	No SS with timing of information between groups but when given a choice, most patients wanted information on the day of CT over other time points	N/A
74	Wolpin, S.E., et al. 2016	QIQ	Prostate	58	The majority wanted more information especially specific SE options & SE	N/A
75	Yang, H.F., et al. 2023	RCT	Breast	IG = 55 CG = 55	4 top items emerged: Prognosis, stage of disease, treatment options & SE SS improvement shown for accuracy of patient self-care, professionalism and overall satisfaction on health education for IG	P < 0.001 for all
76	Zaheer, S, et al. 2020	Quasi-experimental	Breast	IG = 31 CG = 30	SS improvement in anxiety and fear for IG pre- and post-intervention, and no SS for CG	P = 0.000

6 A report of results were produced through the themes that had emerged.

Statistical analysis

We present the results of the current rapid review through narrative synthesis. Table 2 summarises differences in studies such as the methodology quality, study design, and highlights heterogeneity [24].

Results

Literature search

The search returned 190 results after duplicates were removed. A total of 68 articles met the inclusion criteria, as defined in Appendix A. The stages of the screening process following the inclusion and exclusion criteria are shown in Appendix C. Table 2 provides a summary of the results from the articles that have been included, and the p value has been stated for studies where significance has been referred throughout results also.

Themes

The themes that emerged from the data extraction of the included studies are summarised below in Table 3.

Patient characteristics

A total of 59 articles focused on the impact of information on a disease-specific cohort and are outlined in Table 4.

Patient characteristics such as age, gender, education level, and cancer diagnosis, were identified as influencing preferences regarding RT information [22]. However, there were contradictory results reported throughout the included publications. Studies have demonstrated that older patients and those with lower literacy levels reported less satisfaction with the information provided; with lower health literacy also being significantly associated with a decreased need for information [16,48]. Another study that focused on breast cancer patients, found that younger patients were significantly less satisfied with information [30], emphasising age as a factor, although providing different results that were not generalisable. Furthermore, an investigation considering preferences according to age highlighted younger patients desired a higher quantity of information, and that female patients desired more information on preparing for RT compared to males [22].

Gender played a role in preference for delivery modes, with one study showing that males preferred visual aids and videos [69]. Site-specific considerations indicated that breast and prostate cancers received the majority of attention in the literature, as shown in Table 4. However, studies focusing on less studied sites, such as gynaecological patients, demonstrated unmet information needs, particularly regarding physical and psychosexual issues [19]; and reported patients feeling abandoned after completing RT [66]. In gynaecological patients, communication difficulties between healthcare providers and patients, as well as with patients' partners, led to misconceptions about the impact of RT on sexual dysfunction (SDF) [47]. Similar findings emerged in another study of such patients, where emerging themes included feeling blindsided by symptoms, the psychological impact of RT, and the consideration of patient priorities on sexual health [62].

Considering the impact of pelvic RT, including gynaecological sites, patients showed significant improvement in managing SE and post-treatment rehabilitation when they received a specific psychosexual rehabilitation booklet compared to the stand information booklet on pelvic RT [58]. Prioritisation of patient information needs were also identified in a large colorectal study [35].

For head and neck (H&N) cancer patients, an increased quantity of information, whether delivered in written form [31] or through multimedia [50], resulted in a positive correlation with reduced anxiety, fear, and depression. These patients also demonstrated a more favourable overall experience and improvement in self-care management when

Table 3
Summary of emerging themes of included articles.

Themes	Description
Patient Characteristics	Measures of socio-demographic and clinical characteristics. (e.g., date of birth, gender, cancer site, education level, etc.)
Information format	The delivery method of information to RT patients. (e.g., written, verbal, multimedia, virtual reality (VR), face-to-face, etc.)
Preparedness	Identify factors perceived to assist with preparation for RT. This includes being prepared for what physical, and psychological changes can come from undergoing RT, and support facilities in place. Also, what to expect at each step in the RT process and what is expected of them.
Question of timing	Addressing the impact of time concerning information delivered at different time points during the RT process, adaption, and change in priorities and or information needs over time, as well as the time allocation of appointments.
HCP involvement	Identifying the actions of HCP involvement in RT patient care, where progress is being made, and where more needs to be done to improve patient satisfaction with information provided to RT patients throughout the RT process.
Motivators for patients	Identifying factors and actions for RT patients in providing personalised care that gives patients empowerment before, during and after RT.
Barriers for patients	Identifying barriers that RT patients encounter through the RT process. (e.g., unmet information needs and emotional needs)

Table 4
Summary of articles with disease-specific cohort.

Site	No. of articles	Articles
Breast	19	6, 10, 12, 13, 20, 29, 30, 32, 37, 40, 43, 45, 52, 53, 63, 71, 72, 75, 76
Prostate	13	5, 8, 11, 14, 33, 34, 39, 42, 46, 59, 60, 64, 74
Breast & Prostate	2	69, 70
H&N	8	9, 18, 31, 50, 54, 55, 56, 61
Chest/ Lung	3	21, 38, 67
Pelvis (including gynaecological, and colorectal)	12	19, 27, 35, 47, 49, 51, 57, 60, 62, 66, 68, 73

provided with specialised support, tailored to their needs [56,61].
Investigations focusing on lung cancer patients emphasised the changing information needs, influenced by their adjustment to their diagnosis; whilst evolving over the course of their treatment [22,67].

Information format

Based on the included literature a total of 28 focused on information format, as outlined in Table 5.
In the rapidly advancing world of virtual reality (VR), RT information continues to be an area of exploration, where several studies have investigated its use in the education of RT for patients [7,8,10,17,23,32,38,43,54,60]. Implementing such software for patient information and education prior to RT can offer both patients and their families an immersive experience of the equipment, and treatment room environment. Beyond this, it can also play an important role in the patient’s understanding of the rationale for specific immobilisation, and compliance. This comprehension is critical to ensure the positioning of internal anatomy is accurate, and thus minimise the impact this can have on inducing RT-related SE [23].

As hospitals become increasingly busier, RT techniques advance, and we move towards personalised information for RT patients, there is an increased demand for specialist roles in supportive care before, during, and after RT [28,77]. Studies have highlighted that prostate cancer patients have shown a high level of satisfaction with face-to-face and

online interactions with specialist HCPs [5,46]. Similarly, breast cancer patients indicated that intervention from a nurse specialist significantly reduced anxiety and depression when compared to patients who received written information alone [76]. This result was mirrored when consultants and specialist RTTs provided individualised information to breast cancer patients. [6,45].
While VR and specialist roles show promising advances in information and support, traditional written and video formats still play a role. One study took a unique patient education approach, known as a ‘flipped classroom’ approach [70]. This study provided patients with material to review independently, before being brought back for an opportunity to ask questions in a collaborative approach to informing the patient. Customised written information has been proven to significantly improve patient-reported satisfaction for H&N patients, compared to multimedia [31] and for cervical cancer patients undergoing intra-cavity brachytherapy (IBRT) [68], although not to a statistically significant level.
Studies examining the benefit of additional multimedia formats to patient information demonstrated it to improve the sense of worry for H&N patients, although not significantly [50]. In contrast, a study demonstrated that for breast cancer patients the addition of multimedia, including a ‘breast cancer specific video’ before their consultation, significantly increased confidence in knowledge of radiation SE compared to those who received no video. While there was no improvement in pre-consultation anxiety and fear in the video group, they reported a decrease in anxiety afterward, and felt more comfortable for future consultations [52].

Preparedness

Numerous studies have investigated strategies to address the anxiety, fear, and depression of RT patients. Enhancing patient knowledge and understanding may have a synergistic effect on patient preparedness for both external beam RT (EBRT) and IBRT [7,12,38,52,57,70,76].
Direct improvements in preparedness have been demonstrated in studies where specialist staff have been involved in the care and support of patients undergoing RT. On completion of RT, one study showed a significant improvement in preparing H&N patients for their pain

Table 5
Summary of articles and information format studied.

Information Format	No. of articles	Reference
VR	6	[7,8,12,23,43,59]
VR combined	2	[17,32]
VR vs. other formats	3	[10,38,54]
Multimedia/video	5	[31,50-52,75]
Written	3	[31,68,70]
Specialised role support	7	[5,6,28,45,46,61,76]
Group based	2	[32,40,69]

Table 6
Summary of articles where time was a topic of interest within the study.

Circumstances surrounding timing	No. of articles	Reference
Changes in information-seeking behaviour over time	6	[13,16,21,53,67,74]
Waiting times between/during appointments	2	[33,34]
The efficiency of timing it right (TIR) with information	7	[38,46,55,61,65,70,76]
Pre-planning information	8	[5,6,9,16,28,31,50,52]
Preference of when to receive information	4	[34,44,57,72]

management. Results of this study established the positive impact of self-care pain management for these patients, leading to a decrease in hospital admission prompted by unmanaged pain [61]. Additionally, two consecutive studies involving breast cancer patients showed a higher level of preparedness for those who attended a therapeutic radiographers/radiation therapist (RTT)-led education intervention [45]. Subsequent research conducted several years later showed a higher level of preparedness for sensory and psychological concerns of computed tomography (CT) scan, and readiness of attendees for procedures on their initial treatment [6].

Peer support emerged as a valuable tool in preparing patients for RT through lived experiences [32]. Studies have reported that where lived experiences have influenced the content of H&N patient information, there was a significant impact on improving preparedness [18]. In a growing world of social media, another study showed that these platforms offered an alternative format for breast cancer patients to discuss concerns with those who have shared similar events. The findings indicated that the perceived knowledge from interaction in such groups increased knowledge, decreased anxiety, and resulted in a sense of being prepared regarding what to expect [29].

However, possibly through a lack of knowledge and unmet information needs, research indicates patient dissatisfaction and distress when information has been withheld or toned down. This has left them uninformed and insufficiently prepared for the SE of RT, particularly among gynaecological patients [27,62]. While several studies have focused on refining the RT pathway for prostate cancer patients [34,46,60,64], evidence suggested a lack of awareness regarding the psychological and emotional impact of SDF resulting from RT [42].

Question of timing

Several factors relating to time and patient satisfaction were determined, as reported in the 27 articles listed in Table 6.

As supported by several studies, it is evident that patient preference for information and their information-seeking styles change significantly over time. Examples of this were using a timing it right (TIR) approach, where nursing interventions and individualised continuous support were tested [55,76], and, patient preferences of when RT information was received e.g. at CT appointment or first RT appointment [72]. Changes in information-seeking behaviour over time have been demonstrated for different disease sites [14,20,21,29]. For example, in a study of prostate cancer patients, they wanted more information about support for their family and prognosis, and less emphasis on SE and treatment options [39]. For lung cancer patients, their information-seeking behaviour changed over time with adjustment to their cancer diagnosis [21,67]. Breast cancer patients exhibited the greatest need for information before CT and starting RT. Although these needs decreased over time, they remained high [13,36].

While several studies have reported that patients have a greater desire for information before commencing RT [11,33,37,39,72,73], there may be merit to reinforcing information provisions at various stages to strengthen the patient’s comprehension [43].

One study highlighted that the absence of continuous support negatively impacted patient satisfaction and self-care for H&N cancer patients [54]. Another study adopted an interactive approach, informing patients continuously by sending relevant information at precisely timed intervals, prior to appointments. This resulted in significant improvements in the patient’s comprehension of the CT scan, the RT process and a decrease in anxiety levels [70].

Regarding waiting times between and during appointments, a study showed that prostate cancer patients felt less prepared with longer wait times from RT consent to their planning CT scan [34]. During RT, secondary outcomes from another study indicated that prostate cancer patients felt less prepared and unable to maintain treatment preparations due to insufficient communication regarding machine delays [33].

Trust and communication levels between HCP and patients are greatly influenced by the time spent together, with patients’ perception of RTT increasing with the extended interaction [65]. In instances where the time was insufficient, the HCP and patient relationship can be negatively impacted, with patients citing time constraints as the most frequent hurdle for obtaining information [11].

HCP involvement

The diagnosis and treatment of cancer can prove to be one of the most overwhelming and vulnerable times in a patient’s life [51]. HCP play a crucial role in this critical period, necessitating they establish trust and create a positive rapport with patients. This approach empowers them to make informed decisions about their treatment and support [77]. Despite this, there are reports that clinicians have underestimated the patient’s desire for information [16,22]. Additionally, due to an escalating demand on the healthcare system [5], and a reduction in appointment time duration [70], patients have found themselves in need of more information and support [14,19,30,37,44,73].

Innovative solutions have proven to be effective in addressing the ever-growing demands on the RT sector, e.g. through development of specialist roles. One study highlighted a positive impact on preparedness and satisfaction among prostate cancer patients when a urology specialist RTT was incorporated into their care [5]. Likewise, Halkett, G., et al, determined that implementation of RTT-led education sessions for breast patients prior to their planning CT and initial treatment positively impacted patient knowledge, and preparedness, while concurrently reducing psychological distress [6,13]. These finding were echoed by other evidence which found that introducing a personalised patient experience focused (PX) teaching session at the time of planning CT significantly enhanced patient satisfaction [28].

Regarding post-treatment care, initiation of a nurse-led telephone care pathway for pain management in H&N patient’s post-RT resulted in fewer hospital admissions, suggesting the intervention had improved pain management [61]. Additionally, continuous HCP intervention post RT treatment has helped mitigate, and prevent adverse effects which has been demonstrated in a study for breast cancer patients who participated in an outpatient rehabilitation programme [40]. This included two individual consultations with a social worker or oncology nurse, a consultation with a medical doctor, and seven group-based sessions, with patients experiencing significant improvements in health-related quality of life (HRQoL), fatigue and level of physical activity.

Motivators for patients

Motivators were evident throughout all publications and are summarised in the following text.

The greater the emphasis on addressing the patient's individual needs, the greater their engagement and sense of empowerment regarding their treatment and self-care management [31,75]. Providing patients with sufficient and patient-tailored information forms the foundation for patients to take active participation in their decision-making for their cancer care [56].

For women undergoing pelvic RT, psychosexual health holds considerable significance [57]. Addressing the specific individual needs of psychosexual adjustment and rehabilitation significantly increases adherence to vaginal dilator usage over time, with this group of patients rating vaginal stenosis prevention as the most important aspect of their self-care management [49,58].

Various platforms provide opportunities for patients to address their individual information needs, particularly when time constraints are prevalent in the hospital setting. Tailoring information has proven beneficial in the QoL of patients. Specifically, when addressing the fear of cancer recurrence (FCR), the implementation of long-term follow-up through either nurse-led or patient-initiated education has demonstrated a reduction in fear for breast cancer patients [53]. As previously mentioned, social media has also emerged as an effective tool for education and support for breast cancer patients [29]. A finding of this study was that patients who participated expressed an increased inclination towards advocacy efforts, due to their participation in this social media support group.

A recent study highlighted how a digital health information tool provided tailored digital information to complement interpersonal communication, serving as a motivator for breast cancer patients [42]. Beyond providing patients information to enhance their knowledge, offering feedback on the knowledge they have acquired about RT can also be a motivating factor [71]. This study also demonstrated a significant improvement in reducing anxiety over time. From providing feedback on patient's acquired RT knowledge this ensures their shared lived experience and their motivation enhances the care for prospective patients. Such advocacy became evident in a study that investigated the comfort levels regarding the physical and emotional aspects of treatment for patients and HCP. Through collaborative work and a shared voice, both patients and RTTs determined optimal strategies for managing comfort for prospective patients [41].

Barriers for patients

Barriers were evident throughout all publications and are summarised in the following text.

A substantial number of studies have shown the impact of information format and delivery methods on addressing depression, fear, and anxiety [6-10,31,33,45,52,54,58,69,71,76]. However, despite this, there remain gaps, and opportunities for improvement in this area.

It has been demonstrated that language remains a persistent barrier for patients accessing adequate information and optimal care, particularly for gynaecological cancer patients [49,57,68]. One study highlighted a patient's frustration, expressed during an interview when she received an explanation of brachytherapy in Afrikaans and English.

'But I told them I would like to get the explanation in Setswane or Sesotho as well' [57].

A second patient expressed the following:

'They spoke in their own language, but I can understand Afrikaans a bit, but I do get lost here and there. She explained the whole process to me. I

asked if they were going to perform an operation on me or not? I did not really understand anything about this treatment ... I was clueless' [57].

There continues to be unmet information needs regarding the SE of treatment [14,19,37,44,63], leaving patients dissatisfied with a lack of knowledge, fostering misconceptions about RT and inducing a sense of being blind-sided by these challenges [20,47]. Post-RT, a feeling of abandonment due to the burden of ongoing SE further exacerbates this dissatisfaction [66]. Failure to address a patient's needs and consider their lifestyle contributes to a substandard QoL, lower than they had expected [37].

Whether it is the negative impact of longer wait times e.g. from consent to planning, affecting a prostate cancer patients' preparedness [60], or the adverse effect it has on a patient's confidence to ask relevant questions in consultations without a fear of wasting the doctor's time [11,68], time in various contexts remains a barrier to RT patient satisfaction with treatment.

Discussion

This rapid review included 68 selected studies which met the defined inclusion criteria. The aim of this review was to understand patient satisfaction related to information they received regarding RT and identify any unmet needs. Findings highlighted there to be multi-faceted challenges affecting this crucial aspect of patient care. Themes emerging from this review included patient characteristics, information format, preparedness, timing, HCP involvement, motivation for patients and barriers for patients. This demonstrates that the information needs of RT patients cannot be addressed with a single standard provision, or at a single time point.

Improving patient education regarding the RT process is essential in providing patients with knowledge. This plays an important role in informed RT consent, and eliminating misconceptions by delivering information and support that meets the physical, psychological, and emotional needs of RT patients and their carers [12]. Several factors can influence a patients' learning capacity, such as anxiety and fear, cognitive affliction from other cancer treatments, individual learning styles and health literacy [10]. Acknowledging these factors are extremely important and empowers HCP to provide patient specific information and support in the correct format, to those who need it, at the right time [21].

Given the complexity and diversity of RT treatment and the patient population, it is paramount to give patients the information they need to prepare them for the physical and psychological impact RT can have. This was demonstrated throughout the identified themes, where diverse needs were highlighted across disease specific groups in conjunction with other factors, with the added complexity of needs evolving over time. Determining how, what, where and when patients should receive their information is challenging, and many considerations are required to optimise patient information. It is vital that those HCP involved in RT patient care, value and establish a trust with the patients by attending to their information needs before, during and after RT.

Indeed, patients' information needs and expectations vary between patient demographics such as gender, age, and education level. Li., et al [22] determined how these personal factors can affect information quantity, format, and the timing of when information is given or wanted. We need to look at how patients want to be communicated to or with; and explore systems to facilitate communications with patients.

Specific patient preparation is becoming more important in the RT process, during CT scanning and for reproducibility of the patient setup for each RT treatment. It is important that patients understand treatment instructions and thus these are communicated in a way the patient can comprehend and remember.

Numerous studies discussed the clinical challenges associated with time by highlighting the changing needs of patients and families, evaluated over the course of RT. Providing the desired information at the right time points were not always addressed in studies, where many patients received information at fixed time-points. This did not consider the complexity of timing itself, where timing of appointments, not wanting to waste their oncologist or other HCPs time, and acknowledgement of how their information needs change over time. These temporal aspects alone, raised many outstanding needs. Time becomes a worry for HCPs too, because of the patient influx and demand on resources including themselves, highlighting the importance to find a balance of addressing increasing use of technology and patient needs, alongside other resource limitations [78].

RTTs hold a skill set that ensures they are well equipped to support and help with the ever-growing workload placed upon oncologists. Expanding the role of RTTs has demonstrated a positive impact on patient preparation and experience in RT. Examples include the implementation of a urology specialist RTT (US-RTT) for prostate cancer patients [5], and the introduction of RTT led PX teaching sessions [28]. Furthermore, to address staff resources and patient workload effectively within time constraints, group-based education sessions may be employed. Indeed, a number of studies showed patient preference for information before their planning scan [6,9,16,28,44,56].

However, when such specialist roles place too much of a demand on resources, alternatives to information delivery may be through combined information formats. Utilising multiple teaching strategies including the traditional formats of verbal, and written information as well as novel techniques such as VR, multimedia and group-based education could improve effectiveness of RT patient education [69]. Employing multimedia as a means of patient education can provide a holistic way of incorporating the essential information of the RT process and help cater to all learning styles [55]. Not only has multimedia been shown to improve knowledge of RT process and SE for patients [52], but has also reduced anxiety in patients [52,58].

Virtual reality radiotherapy (VRRT) offers as an innovative education opportunity for RT patients especially in helping patients visualise their treatment and the importance of their position and physiological position of internal anatomy. Additionally, adopting VR as a method of information delivery in group-based education sessions could potentially reduce the number of individual information sessions required thereby reducing the workload [74].

It could be assumed that patients are overloaded with information, at a time of heightened anxiety, fear, or depression, yet studies have shown that most patients want to have more information than they receive [11,14,37,42,57]. However if giving patients all the information we think they need, it is also essential to consider how this is best delivered to ensure they can comprehend it without being detrimental to understanding their care. Therefore moving forward with the ethos that not one size fits all, several information tools can be employed, providing combined information formats to address RT patient needs. This is supported by the evidence from the RCT reported by Behboudifar, A, et al. [31] where written and multimedia information had a positive impact on patient experience separately. Furthermore, there is a growing body of literature to indicate the effectiveness of customised information [48,69], which fits with the narrative of personalising care.

It is important to note that patients were motivated and feel listened to, valued, and empowered when they were included in the enhancement of RT information. This was confirmed by Kim, C, et al. [18], who utilised previous patient reported experience and guidance from phase 1 of their study to help inform the design of a new pamphlet for H&N cancer patients. This was also shown to benefit prostate cancer patients being informed about their treatment and preparation [5]. These studies

should be considered good examples of patient empowerment, with opportunities for those patients who have received RT to employ a patient advocacy role in helping prospective patients.

The importance of PPI in research has been shown to be essential in providing insights of lived experiences, helping to inform study design and input for educational platform development [21,52,73]; or developing and evaluating the content of questionnaires for use in studies [5,19]. That being said, there was still a lack of PPI intervention in the studies included in this review. Studies that did include PPI did demonstrate the value of this, e.g. Kumar et al. [52] involved past patients along with HCP to develop RT educational videos. Additionally, the value of including past patients was demonstrated when piloting site specific information for H&N patients, and women undergoing pelvic RT respectively [21,58]. In the second phase of a H&N study, patients strongly agreed that the wording and information provided on treatment options were adequate and easy to understand [18]. Where distressing sexual experiences were identified in an initial study, Lubotzky et al. [58] reported that a revised booklet evaluated in a subsequent randomised controlled trial (RCT) effectively informed patients on the psychosexual side-effects and rehabilitation options in a comfortable manner. This demonstrates the importance of identifying and understanding such shortfalls in research, so that valuable lessons can be learned. A prospective approach to using the patient voice in the development of research and the accompanying information has since been illustrated in the work up to novel proton trials in the UK [79,80].

The value and empowerment of patients is becoming an essential requirement for high quality research projects [80] and should be addressed in future studies. Working in a collaborative manner with patients who have a lived experience is vital in providing a higher standard of patient information and support, in a timely manner. This can help give back control and empowerment to RT patients, and hopefully initiate involvement for under-represented disease sites that would benefit including CNS, gastro-intestinal (GI) particularly upper GI tract, hepatobiliary tract, and many more.

Strengths and limitations

This review undertook extensive work, in adopting a rigorous systematic approach in its methodology. An extensive search of literature was undertaken with explicit inclusion and exclusion criteria for literature, as well as two independent reviewers of literature to remove bias. An extremely important strength of this review was the valuable contributions of PPI representatives, and PPI co-author throughout the full process, from design to dissemination. Future work will use the data captured from this review to inform empirical research design, ensuring research is designed in collaboration with PPI representatives.

A limitation of this review is that a meta-analysis was not carried out to determine statistical comparisons between the included studies, focussing on a narrative review that highlighted common themes. Due to the heterogeneity between studies and the presence of confounding factors, providing generalisable results proved challenging. However, this review has emphasised how important discussed factors were, and reinforces the importance of engaging PPI in different populations. The quality of studies have not been addressed in detail, with important considerations being highlighted through all themes, supported by Table 2.

Conclusion

It should not be assumed that one size fits all for information about RT for patients. Many factors can influence a patients' learning capacity, such as anxiety and fear, cognitive affliction from other cancer

treatments; learning styles and a patient’s knowledge of health literacy; as well as the factors highlighted in this review. Understanding these factors reinforces the importance of HCP delivering patient-specific information and support, tailored to the individual. While tailoring information to an individual’s specific needs can improve patient experience, ample evidence suggests commonality does exist among patients for the want for more information, and at the time before commencing treatment. Developing advanced roles for HCP led initiative has potential to positively impact on patient care. By exploring the efficacy of multiple teaching strategies, HCP can inform patients appropriately through the traditional formats of verbal and written information, as well as novel techniques such as VR, multimedia, and group-based education. It is also paramount that we understand the importance of PPI in the development of information and support in RT, with the increasing complexity of RT and associated clinical trials. Although there has been an increase in employing PPI in the design and conduct of research, some hesitation for PPI inclusion in health research still exists.

Appendix A

Inclusion	Exclusion
1. Studies from January 2012 to November 2023.	Abstracts, posters, and letter summaries.
2. English language only.	Non-English language.
3. Full text available.	Systematic and literature reviews.
4. Studies focusing on patient satisfaction when receiving radiotherapy (EBRT and IGRT). This is including patients receiving either radiotherapy alone or as part of a multimodality treatment approach.	Studies that do not assess either patient satisfaction or patient experience when radiotherapy is NOT part of their cancer care treatment.
5. Studies that measure the impact of an information intervention alone or compared to standard of care by reporting on patient’s and or carers’ satisfaction, perception, preference, or experience. ¹	Studies that are carried out to evaluate the quality of information or information format such as the level of readability of materials.
6. Studies involved in evaluating the timing of information delivery and the impact of such for those patients and or carers receiving it.	Studies that are carried out to evaluate the health literacy level of radiotherapy patients.
7. Studies that evaluate and determine patient preference for information and learning styles.	Studies that include reporting on the experience of non-radiotherapy patients/carers e.g. experience of HCP.
8. Studies that address patient satisfaction with information in relation to the care and management of side effects or radiotherapy.	Studies that involve private patients, where the finance of health insurance can influence patient experience.
9. All study methods, quantitative, qualitative and mixed methods.	Studies that assess the impact of information provisions on treatment decision-making.
10.	Studies that involve patients and or carers with previous knowledge/ experience of radiotherapy.
11.	Studies that are carried out to determine the feasibility of a new information format.
12.	Studies that are carried out to measure the effectiveness of an intervention that impacts the physical, precision, and accuracy of radiotherapy delivery.
13.	Studies that evaluate non-information-related measures of patient satisfaction in relation to their course of radiotherapy (e.g. wait times).
14.	Studies that determine the satisfaction of radiotherapy patients’ experience under analysis due to the Covid-19 pandemic.

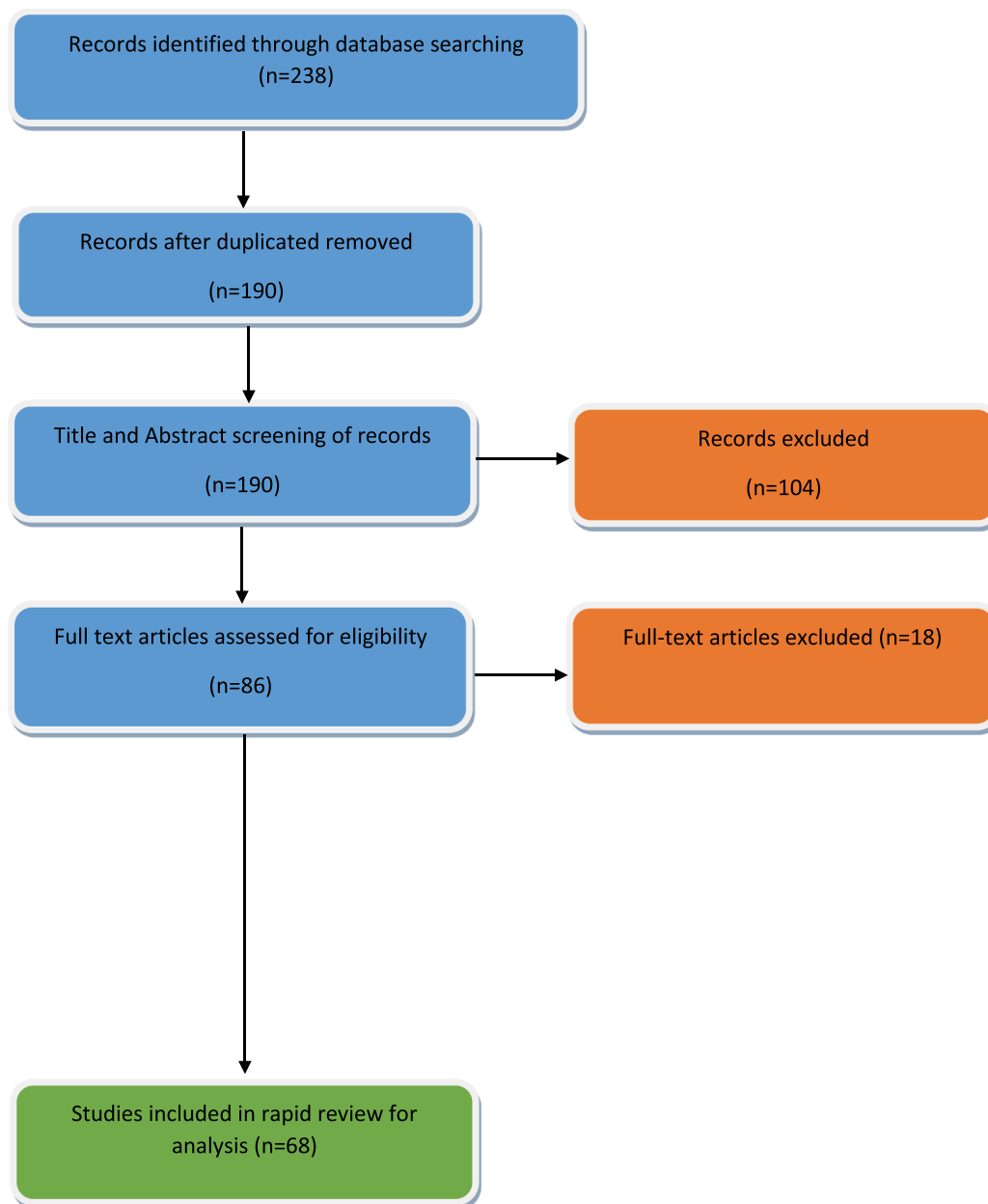
¹Experience can include emotions, thoughts and behaviours such as anxiety, fear or depression.

Appendix B

Author & Year	Study Objectives	Study design	Participants ¹	Intervention & outcome measures ²	Process of evaluation ³	Results	Key conclusion	Challenges & barriers identified	Limitations
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¹Patient demographics and ca site if specified.
²what is being measure how is it being measured (e.g. tool), specific outcome measure (pre vs post intervention), timing of outcome (before, during or after intervention).
³Qualitative, quantitative, or mixed methods, method of aggregation (mean, standard deviation (SD), %).

Appendix C



Appendix D. . – List of acronyms

CG – control group.
 CT – computed tomography.
 EBRT – external beam radiotherapy.
 FCR – fear of cancer recurrence.
 GI – gastro-intestinal.
 Gyn – gynaecological.
 HCP – health care professionals.
 H&N – head and neck.
 HRQoL – health-related quality of life.
 IBRT – intra-cavity brachytherapy.
 IG – intervention group.
 JBI – Joanna Briggs Institute's.
 ORP – outpatient rehabilitation program.
 MeSH – medical subject headings.

P – p value.
 PC-PEP – prostate cancer patient empowerment program.
 PPI – Patient and public involvement.
 PX – Personalised patient experience focused.
 PICO – Population, Intervention, Comparison, and Outcomes.
 QoL – quality of life.
 QI – qualitative improvement.
 QIQ – quality improvement questionnaire.
 RT – radiotherapy.
 RCT – randomised control trial.
 RTT – therapeutic radiographer/radiation therapist.
 SD – Standard deviation
 SDF – sexual dysfunction
 SE – side effects.
 SOC – standard of care.
 SS – Statistical significance.
 TA – thematic analysis.
 TIR – timing it right.
 US-RTT – urology specialist therapeutic radiographer.
 VR – virtual reality.
 VRRT – Virtual Reality RT.

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