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**Title:** Interventions for preparing patients for chemotherapy and radiotherapy: a systematic review

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## ABSTRACT

**Purpose:** Undergoing chemotherapy and radiotherapy can be physically and psychologically stressful for people with cancer. Providing preparatory information to cancer patients as they face treatment and its aftermath has the potential to improve patient outcomes. This study assessed the methodological quality and effectiveness of interventions providing preparatory information about chemotherapy and/or radiotherapy to cancer patients in improving patient outcomes.

**Methods:** MEDLINE, EMBASE, and Cochrane databases were systematically searched from January 1995 until October 2012. Inclusion criteria: i) met Effective Practice and Organisation of Care (EPOC) criteria for study design; ii) included adults with a current cancer diagnosis; iii) delivered preparatory information via a health care provider or was selfdirected; iv) examined psychological wellbeing; quality of life, physical symptoms, satisfaction, knowledge, or health service utilisation. Studies were assessed for methodological quality using the EPOC criteria.

**Results: Eighteen** studies involving 3,443 cancer patients met inclusion criteria. Interventions included written information, audiotapes, videotapes, and computer programs. Interventions improved patient satisfaction (6/7 studies), information needs and patient knowledge (5/6 studies), physical symptoms (3/4 studies) and cost (1/1 study). More than half of the interventions improved psychological outcomes (10/17 studies).

**Conclusion:** Providing preparatory information can improve patient-reported outcomes in cancer patients undergoing chemotherapy and radiotherapy, especially with respect to satisfaction and knowledge. Some, but not all studies improved psychological outcomes and physical symptoms. There is a need for methodologically rigorous research to determine the most effective timing and method of delivery of preparatory information to improve patient outcomes.

**Keywords:** Neoplasm, chemotherapy, radiotherapy, patient education, preparatory information, systematic review.

#### **INTRODUCTION**

Advances in cancer therapies have improved cancer patients' morbidity and mortality.[1] However, cancer patients still encounter an array of distressing symptoms during and after cancer treatment. Receipt of chemotherapy is associated with nausea and fatigue, emotional distress, and interference with physical functioning.[2] Patients who receive radiotherapy are twice as likely to report unmet patient care and interpersonal communication needs compared with those who have not received radiotherapy.[3] Receipt of radiotherapy is also associated with reduced quality of life across physical, emotional and social domains. For example, patients receiving radiotherapy report poorer physical social and cognitive functioning as well as poorer marital and sexual functioning following treatment.[4] Patients receiving radiotherapy also report greater symptom burden, including pain, sleep disturbance and fatigue.[5] These treatments also reduce patients' ability to work and participate in social activities.[6] Patients' also often experience symptoms in anticipation of their cancer treatment. Between 40-62% of people receiving radiotherapy report anxiety prior to commencing treatment, [7, 8] and patients about to commence chemotherapy report anxiety (45%) and depression (25%), as well as pain, fatigue and sleep problems.[9]

More than 50% of newly diagnosed cancer patients' report that they expect to experience side-effects including fatigue, sleep disturbance, nausea, weight loss, hair loss and pain as a consequence of their cancer treatment.[10] The intensity of side-effects will vary between patients receiving the same cytotoxic agents.[11] The way information about side effects is given to the patients may contribute to patient expectations. Poorly informed patients may overestimate the occurrence or severity of the side-effects they will experience.[12] This is problematic given that negative expectations can then influence the occurrence and severity of side effects.[10, 13] For example, people who indicated that it would be very likely that they would experience severe nausea following chemotherapy were five times more likely to experience severe nausea compared with those who indicated that it would be 'very unlikely'.[14] Providing accurate information and support about the occurrence and severity of side-effects may optimise expectations and prevent side-effects from developing or becoming more severe. The proportion of cancer patients reporting information needs during the treatment phase ranges from 11-97%.[15] Patients report a range of unmet information needs about how treatment works, the goals of treatment, the schedule of treatment, the effectiveness of the treatment for other patients, common sideeffects and coping with side-effects, and how the treatment may affect relationships with their family.[16, 17] However, the quality and accessibility of information provided to patients may vary. Variation may occur as consequence of the knowledge and skills of the clinician providing information or the resources of the treating centre. For example, the National Cancer Patient Survey in the UK found that the proportion of patients being given written information about their cancer that was easy to understand varied according to cancer type and trust.[18] Similar variation has also been reported in other countries. For example, in Australia the Cancer Institute NSW Patient Satisfaction Survey [19] identified four areas for improvement in relation to cancer outpatients, two of which were related to patient education. Inadequate provision of information has also been identified as an issue of concern for rural and remote cancer patients receiving treatment in South Australia.[20] Patients with access to a cancer care coordinator have been reported as more likely to receive tailored information resources and have the information explained in an understandable manner.[21]

Inadequately prepared patients often experience elevated psychological distress which can compromise physical recovery and reduce compliance with treatment.[22] For example, lung cancer patients with elevated anxiety report worse symptoms that reduce chemotherapy adherence.[23] Unresolved treatment-related side effects such as fatigue can also reduce adherence to treatment, which has an adverse impact on patients' physical and psychosocial wellbeing and even survival.[9, 24, 25] Treatment modifications including dosage reductions or delayed cycles may be necessary if psychological distress and treatment-related sideeffects are inadequately managed. Non-adherence and modifications can compromise efficacy of treatment, patient quality of life and survival, as well as health care costs associated with increased hospital admissions, doctor visits and longer hospital stays.[25, 26]

Rather than wait for adverse side effects to develop, interventions might be used to prepare patients for treatment and the expected challenges to quality of life.[27] Providing accurate preparatory information to patients prior to treatment may help address unrealistic expectations about the benefits, risks and potential outcomes of treatment.[11] A 1996 review identified a paucity of methodologically rigorous studies examining the efficacy of information interventions to prepare patients for treatment.[28] Consensus Guidelines were developed in 1996[29] to help educate providers about how to prepare patients for threatening procedures and Clinical Practice Guidelines for the psychosocial care of adults with cancer issued in 2003.[30]

Despite these recommendations, cancer patients frequently report unmet needs for information about the treatment process, efficacy and potential side-effects, which can increase anxiety.[31] Additionally, chemotherapy and radiotherapy are increasingly provided

on an outpatient basis so patients may have less opportunity to receive information. Cancer patients also report unmet information needs related to self-management of treatment effects.[24] This may occur because some patients misinterpret or cannot recall information, or because health care providers are unaware or lack appropriate communication skills to effectively deliver information consistent with preferences.

**Aim:** To assess the methodological quality and effectiveness of interventions providing preparatory information about chemotherapy and/or radiotherapy to cancer patients in improving patient outcomes.

### **METHODS**

#### Search terms

MEDLINE, EMBASE and Cochrane databases were searched. Search terms included: neoplasm, chemotherapy, radiotherapy, anxiety, depression, distress, quality of life, satisfaction, knowledge, health care utilisation, resource use, cost, patient education, preparatory information, teaching materials, audio-visual aids, and multimedia. Searches were limited to English language publications published between January 1995 and October 2013. January 1995 was chosen as the cut-off date to include studies published after the Ream and Richardson (1996) review.[28]

#### Inclusion and exclusion criteria

Studies were included if: 1) they met design criteria outlined in the Effective Practice and Organisation of Care (EPOC) methodological criteria.[32] That is, they were randomized controlled trials (RCTs), controlled clinical trials, controlled before and after studies with adjustment for confounders and interrupted time series designs; 2) included adults with a current cancer diagnosis; 3) examined anxiety, depression, distress, physical symptoms satisfaction with care, patient knowledge, information needs, quality of life; or resource utilisation; and 4) preparatory information was delivered by a health care provider, another individual (e.g. volunteer) or was self-directed. Studies were excluded if they: 1) targeted informed consent or decision making processes only; 2) delivered the intervention after the first cancer treatment had commenced; or 3) if the information was directed at a health care provider, caregiver or family member, with the patient excluded.

## **Data Extraction**

The titles and abstracts of all papers identified in the literature search were assessed for relevance and rejected on initial screening if the reviewer could determine that the study did not meet inclusion criteria. Studies meeting all criteria were retained for full review (See Table 1 and Table 2). Data extracted from each study included: 1) sample characteristics; 3) type of intervention and comparison group; 3) outcomes and measures; and 4) main findings.

#### Assessment of risk of bias

Included studies were classified by two authors (AW, SM) using EPOC criteria[32] (Table 1). All differences were resolved by mutual discussion between coders and with a third-party (JB), where necessary.

#### RESULTS

#### Methodological quality of studies

A total of 1,612 studies were identified through database searches and hand searching of references lists (see Figure 1). Thirty-six intervention studies were identified, of which eighteen [2, 22, 33-48] met inclusion criteria and were assessed against EPOC design criteria. Table 1 presents the assessment of risk of bias for each of the 18 included studies. All studies were assessed as unclear or high risk on at least one of the criteria.

#### **Study characteristics**

Table 2 presents the outcomes of the eighteen included studies which involved a total 3,443 patients. The sample sizes for the studies ranged from 50[45] to 495.[41] Eleven studies targeted people receiving radiotherapy,[33, 34, 37-40, 42, 43, 45, 48, 49] five studies targeted people receiving chemotherapy[2, 22, 36, 44, 46] and two studies[41, 47] targeted people receiving chemotherapy and radiotherapy.

#### Effectiveness

#### Psychological outcomes

Seventeen studies examined the benefits of providing preparatory information about treatments on psychological outcomes. Seven of these studies found benefits of preparatory information for patient anxiety and depression.[34, 35, 38, 41, 45-47] Thomas and colleagues found patients who watched a video reported significantly lower anxiety and depression three weeks later compared to usual care group.[47] In fact, depression was found to increase over time for the usual care group.[47] Similarly, Poroch found that patients who received both

sensory and procedural information in an education session were significantly less anxious than patients who received standard information.[45] Patients who received written information and teaching sheets reported lower anxiety.[35] Chan and colleagues found benefits of a psycho-educational intervention on patterns of change in a symptom cluster of anxiety, breathlessness and fatigue.[34] Halkett and colleagues also found significantly lower anxiety as a result of face-to-face consultations.[38] Ream and colleagues found patients who received supportive intervention reported significantly less anxiety and depression and displayed more adaptive coping.[46] Finally, Jones and colleagues reported that fewer patients who received personalised information via computer were anxious at 3 months compared to patients who received generalised information only.[41]

Benefits for quality of life and psychological distress were reported in two additional studies. Patients who received information via a videotape, written booklets and verbally from their health care provider reported higher quality of life than patients who received either verbal information or written booklets only.[36] However, no differences were found for anxiety.[36] In a sub-group analysis of patients with high baseline distress, patients in the intervention group reported a significant decrease in distress at prior to their first treatment cycle compared to patients in the control group. The authors recommend examining the impact of the intervention in highly distressed patients.[2]

One study directly compared receiving information in a single session to receiving information across multiple sessions. D'haese and colleagues found that patients who received information across multiple sessions were significantly less anxious than patients who received information in a single session.[35] Another study examined whether personal characteristics of patients mediated the impact of information on psychological morbidity. Providing concrete objective information had benefits for mood in less optimistic patients. The remaining studies found no benefits for additional written or audio-visual information on psychological outcomes.[22, 33, 37, 39, 42, 43, 48]

## Satisfaction and acceptability

In addition to the benefits for psychological outcomes, patients who received information across multiple sessions reported higher satisfaction compared to patients given information simultaneously.[35] Two other studies that reported benefits for psychological outcomes also reported improvements in satisfaction[45, 47] Even in studies where no psychological benefits were seen, patients reported higher satisfaction as a result of the additional information provided.[22, 37, 44] Overall, these studies suggest that receiving information is important to patients and does not have a detrimental impact on psychological wellbeing.

No significant differences were reported between two different versions of written information on satisfaction in Zissiadis and colleagues study.[48] However, patients found the information useful and acceptable.[48] More than 90% of patients receiving written information reported that it was useful and helpful for recall of information,[22] and 81% of patients watching a video about treatment thought it was helpful.[47]

## Physical symptoms and side-effects

Four studies assessed the effect of preparatory information on physical symptoms and side effects. Ream and colleagues found less fatigue, lower associated distress and less impact of fatigue on valued pastimes in patients who received a supportive group intervention.[46] Chan and colleagues reported significant effects on changes in breathlessness, fatigue, anxiety and functional ability for the intervention group.[34] Kim and colleagues reported benefits of concrete information for fatigue and sleep, but not the other symptoms.[43] Aranda and colleagues found benefit of the ChemoEd intervention for vomiting, but no other chemotherapy side-effects.[2]

## Patient knowledge and Information needs

Six studies assessed the impact of additional information on patient knowledge and information needs. Aranda and colleagues reported that patients receiving the ChemoEd intervention reported fewer sensory/psychological needs, as well as information and support unmet needs compared to patients receiving usual care.[2] Improvements in subjective understanding about radiotherapy were found for patients receiving information via audio-tapes.[33] Similarly, patients receiving written information felt better informed.[22] Halkett and colleagues reported higher knowledge in patients who received the intervention face-to-face consultations[38] Patients receiving personalised information reported that the booklets were more likely to tell them something new; however there was no significant difference in understanding.[41] Patients reported higher recall than control patients in information about fever, mouth problems, low red cell count and prevention of constipation.[44] *Cost* 

Only one study explored the impact of a computer-based information intervention on economic cost. Jones and colleagues (1999) reported that written booklets were twice as expensive as their computer based approach to information provision.[41]

#### DISCUSSION

In the eighteen studies reviewed, patients consistently reported higher satisfaction when provided with preparatory information and reported that preparatory information was acceptable and useful. More than half of studies found that receiving preparatory information improved psychological outcomes including anxiety, depression, quality of life, distress and mood. Fewer studies examined the benefits of preparatory information on physical symptoms and side-effects; however the findings from the small number of studies were positive.

All studies were assessed as unclear or high risk on at least one of the EPOC criteria. The most common limitation of the included studies was a failure to report whether patients and providers were blind to group allocation, although this can be difficult to achieve if there is no credible placebo available. Other criteria which were poorly reported included concealment of allocation and generation of the allocation sequence. A number of studies were also at high risk of contamination between intervention and control groups, which compromises the strength of the evidence from the trials. All studies were free from selective outcome reporting.

The studies reviewed varied considerably across sample, type of intervention tested and the comparator group, making it difficult to determine the benefits of different content, dose and delivery methods of intervention. In some studies, the information provided to the usual care group was extensive, which may have limited benefit finding for the intervention group. For example, patients in the usual care group already received a one hour education session with nurses about chemotherapy.[44] There was also a difference in content of the information provided to patients.[50] For example Iconomou and colleagues describe the inclusion of only cognitive information as a limitation of their intervention.[22] The inclusion of only emotional information may also limit benefit. Bennenbroek and colleagues found that those who received the emotional tape had a higher negative mood.[33] The combination of both cognitive and emotional information thus may offer greatest benefit.[51] Of the studies reviewed, four reported sample sizes of less than 100 people. Small sample sizes may reduce chance of finding positive outcomes.[52] Studies do not always take into account treatment differences such as dose and fractionation for radiotherapy, and dose and regimen for chemotherapy.[53] The dose and duration of the intervention may impact on benefits. Poroch argued that the positive effect of information on anxiety and satisfaction was maintained as a result of the multiple information sessions provided.[45] Iconomou and colleagues suggested that in their study the 30 minute session and shorter term follow-up period may not have been sufficient to improve outcomes.[22]

The impact of interventions on patient reported outcomes as well as health service utilisation are reported in this review. None of the interventions examined hard endpoints such as survival and recurrence. Preparing patients for treatment may improve psychological outcomes, and compliance with treatment regimens. However, evidence of the predictive value of these psychological outcomes on survival and recurrence is inconclusive. Findings from previous studies of similar interventions, including psycho-educational interventions, are mixed in terms of impact on time to recurrence and survival. Further studies are needed to draw firm conclusions about the effect of this type of intervention on these outcomes.

Programs should be clinically effective; however there are calls to also show evidence of cost-effectiveness given the increasing number of people that will be diagnosed and treated for cancer. None of the studies reviewed here conducted formal cost-effectiveness analyses. Preparing patients for treatment has the potential to improve physical and psychological outcomes. Patients experiencing anxiety and depression may be less likely to comply with treatment, which can compromise cancer outcomes. This also has implications for health care utilisation, with studies showing both increased and decreased use of services.[54] Research examining these economic analyses comparing the costs of information programs and the savings to the health care system are required.

## Amount and content of information

Providing information in a way that enables patients to have control over the type and amount of information they access is beneficial. Patients preferred personalised information that was based on their medical record to generic information.[41] Patients found automatically produced written information more overwhelming than being able to interactively choose information they wanted to view, even though the automatic information was found to be more useful.[42] Optimism may help to identify patients more vulnerable to negative emotional responses; and concrete objective information may be useful as a first step to assisting patients avoid negative responses.[40] Providing self-management strategies may be beneficial for symptoms such as fatigue.[24] The need to consider the variation in patient preferences is consistent with established Consensus Guidelines,[29] and previous literature which reports that some patients will seek out as much information as possible (monitors) while others will avoid threat relevant information (blunters).[55] Too little information may exacerbate anxiety in some patients; while others may feel overwhelmed by too much information, especially if the information is not relevant.

Delivery method

Verbal information provided during consultations is often generic which may not address different patient care needs. Written and audio-visual materials provide standardised information that can augment verbal information and address potential variation across providers. However, there is evidence to suggest that the format in which information is presented should be tailored toward the different learning styles of patients. Patients high in avoidance were less satisfied with receiving additional written and audio-visual information compared to verbal information.[37] Patients who received both sensory and procedural information reported greater benefits to their physical and psychological wellbeing.[51]

While written information materials may assist in patient recall, written materials often require high literacy levels. This places patients with limited health literacy at a disadvantage. Poor health literacy has been linked to poorer health status and treatment adherence; as well as increased hospital admissions and medical errors.[56] Information provided in face-to-face sessions either individually or in a group are beneficial for a range of outcomes including anxiety, breathlessness, fatigue and satisfaction.[22, 34, 37, 45, 46, 57] However, not all patients are willing to attend these sessions, and this approach may be limited by the resources of individual organisations. Audio-visual formats have the potential to address some of these literacy issues, but are expensive to update. Web-based platforms can be updated easily and allow patients to maintain control over the information they access. Underserved populations, including elderly and less affluent minority groups, have been found to benefit from computer based programs.[58] Web-based platforms may also offer an alternative source of information and support for people from geographically isolated areas, who often have less access to some face-to-face health services.[59] However, the potential benefits of using interactive technologies to deliver preparatory information to cancer patients, especially these underserved groups requires further examination.

## Timing of information

Implementing interventions immediately prior to treatment should be weighed against giving patients sufficient time to cope with and reflect on the information.[27] Delivering interventions before the threatening procedure has taken place may be more beneficial.[45] Providing information in a stepwise fashion may be more beneficial than information all at once.[35] The optimal duration and timing of information that is provided to patients about treatments is still unclear.

#### Limitations

We were not able to perform a meta-analysis due to the methodological heterogeneity of studies. While every effort was made to identify eligible publications, resource constraints meant that this search was restricted to English language publications. We also did not consider non-published studies or grey literature. These restrictions may have resulted in some relevant publications being missed.

## Conclusion

There is evidence to support the use of preparatory information and education to improve outcomes in cancer patients undergoing chemotherapy and radiotherapy. Preparatory information may be more beneficial when it is tailored to patient preferences, is presented in multiple formats and provides both procedural and sensory information. Further work is needed to determine the most effective timing and method of delivery of information required to improve patient outcomes. Future research with larger sample sizes and greater standardisation of interventions to facilitate replication is suggested. **Acknowledgements:** This research was supported by a Strategic Research Partnership Grant from Cancer Council NSW to the Newcastle Cancer Control Collaborative (New-3C), and infrastructure funding from the Hunter Medical Research Institute (HMRI). Dr Jamie Bryant is supported by an Australian Research Council Post-Doctoral Industry Fellowship.

## **Conflict of Interest**

Disclosures: None. The authors have declared no conflicts of interest. The authors have full control of all primary data and agree to allow the journal to review their data if requested.

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## **Figure Legends**

Figure 1: Inclusion and exclusion of studies

**Table 1:** Quality of intervention studies meeting EPOC design criteria (Low, High, Unclear)

**Table 2:** Study characteristics of included intervention studies

Study	Allocation	Allocation	Baseline	Baseline	Incomplete	Blinding	Contamination	Selective	Other bias
	sequence	conceament	outcomes	characteristics	outcomes			reporting	
Aranda[2]	L	L	L	L	L	L	Н	L	L
Bennenbroek[33]	U	U	U	L	U	U	L	L	L
Chan[34]	L	Н	L	L	Н	L	U	L	L
D'Haese[35]	U	U	L	U	Н	U	U	L	L
De Lorenzo[36]	U	L	L	L	U	U	U	L	L
Haggmark[37]	U	U	U	L	U	U	Н	L	L
Halkett[38]	L	L	L	L	L	U	L	L	L
Harrison[39]	U	L	U	U	L	U	L	L	L
Iconomou[22]	L	L	L	L	L	L	Н	L	L
Johnson[40]	U	U	L	L	L	L	Н	L	L
Jones[41]	L	L	L	Н	Н	U	Н	L	L
Jones[42]	L	L	Н	L	L	U	Н	L	L
Kim[43]	U	U	U	L	U	U	Н	L	L
Kinnane[44]	L	L	U	L	L	U	Н	L	L
Poroch[45]	L	U	L	L	U	U	Н	L	L
Ream[46]	L	U	L	L	L	L	Н	L	L
Thomas[47]	L	L	L	L	L	L	Н	L	L
Zissiadis[48]	L	L	L	U	U	U	Н	L	L

Table 1. Quality of intervention studies meeting EPOC design criteria (Low, High, Unclear)

Studies with high risk are designated with "H", those with low risk are designated with a "L" and those studies that did not provide sufficient information to assess risk of bias are designated with "U". \* Criteria were assessed in relation to patient characteristics.

Table 2. Study	<b>characteristics</b>	of included	intervention	studies
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Study	Sample	Control	Intervention	Outcomes	Results
Country					
Design					
Aranda[2]	<u>N=</u> 192	Nurse-led	Session 1: DVD; question	<u>Primary:</u>	- No significant difference for
Country: Australia		education session	prompt list; education;	Distress (HADS)	distress or most symptoms.
<u>Country</u> . Australia	Non-metastatic breast,		drug information; self-	<u>Secondary:</u>	- Intervention group improved
Design: 2 arm RCT	gastrointestinal, or		care brochures	Information and support	more in sensory/psychological
	hematologic cancer		Session 2: Telephone	needs (CaTS); Symptoms	and procedural concerns.
			Session 3: Face-to-face	(C-SAS)	
	Chemotherapy				
Bennenbroek[33]	<u>N</u> = 226	Standard care	Procedural tape:	Subjective understanding	- Procedural group increased
			Diagnosis, radiotherapy,	of RT (2 items)	most in understanding of RT;
Country: Netherlands	Breast, cervical, head and		side-effects, follow-up	Recognition of emotions	- No significant difference in
	neck, or prostate cancer		Emotional tape: Positive	(3 items)	validation of emotions
Design: 4 arm RCT			and negative emotional	Self-efficacy (3 items)	- Coping group increased the
	Radiotherapy		reactions Coping tape:	Mood (POMS)	most in self-efficacy;
			How patients coped		- Emotion group reported
					higher negative mood than
					control group
<b>Chan</b> [34]	<u>N=</u> 140	5-7 minute	Psycho-educational	<u>Primary:</u>	- Significant difference on the
		discussion of	nurse-led education on	- Breathlessness (VAS)	pattern of change of anxiety,
Country: Hong Kong	Stage 3 or 4 lung cancer	procedure and side	symptom management	- Fatigue: Piper Fatigue	breathlessness, and fatigue.
		effects.	and PMR	Scale	- Significant effects on changes
Design: 2 arm RCT	Radiotherapy			- Anxiety: STAI	in breathlessness, fatigue,
				<u>Secondary:</u>	anxiety, and functional ability.
				Functional Ability: SF-36	
D'Haese[35]	<u>N</u> =68	Information	Information booklet	- Anxiety (STAI)	- At T1, stepwise group less
		booklet and	provided at first	- Satisfaction	anxious.
Country: Belgium	<u>Any cancer</u>	teaching sheets	appointment. Teaching		
		provided during	sheets provided on 3 <sup>rd</sup> -		- Stepwise group had increase
Design: 2 arm RCT	Radiotherapy	first appointment	4 <sup>th</sup> day of treatment		in satisfaction over time and
					more satisfaction at T3

Study	Sample	Control	Intervention	Outcomes	Results
Country					
Design					
De Lorenzo[36]	<u>N</u> =300	Verbal information	Verbal information and	Primary:	- Small differences in PDI and
Country: Italy	Any cancer		two bookiets (OI+B)	- Distress (PDI)	favour of OLER and OLER+VT
<u>Country</u> . Italy	Any cancer		OI+B and videotane	- Quality of oral	- Greater percentage of
Design: 3 arm RCT	Chemotherapy		(OI+B+VT)	information	OI+B+VT patients reported
			· · ·	- Quality life (VAS)	improved QoL compared to OI
				- Perceived severity and	and OI+B combined.
				curability (VAS)	- No differences between the
				- Anxiety (VAS)	groups in perceived curability
					or anxiety
Haggmark[37]	N=210	Standard	Standard information	- Satisfaction with	- SIGI arm reported significantly
		information (SI) in	plus brochure (SIB)	information (VAS)	higher satisfaction with
Country: Sweden	Breast, bladder or prostate	conference with		- Anxiety and depression	information - No difference
		physician	Standard information	(HADS)	between groups on other
Design: 3 arm RCT	Radiotherapy		plus group and individual	- Subjective distress (IES)	outcomes
U-ll-++[20]	N 122		information (SIGI)	- Quality of life (CIPS)	
Halkett[38]	<u>N</u> = 122	information from	Usual care plus 2 face-	- HADS	- Anxiety and concerns about
Country: Australia	Breast cancer	clinician	with a radiation	Radiotherapy Scale	in the intervention group
<u>country r</u> astrana			therapist	- Knowledge of	- No difference between groups
Design: 2 arm RCT	Radiotherapy			Radiotherapy Scale	for depression.
					- Knowledge higher after first
					consultation for intervention
					group
Harrison[39]	<u>N</u> =274	Written	Written information and	- Worry about	- No significant difference
Country United	the day of the data and	information only	videotape	radiotherapy	between groups on pre-
<u>Country:</u> United	Head, Neck, bladder or			- Anxiety (HADS)	change in worry or anxiety or
	prostate cancer				time.
Design: 2 arm RCT	Radiotherapy				

Study	Sample	Control	Intervention	Outcomes	Results
Country					
Design					
Iconomou[22]	<u>N</u> =145	Routine verbal	Presentation session	<u>Primary:</u>	- Intervention group
		information by	delivered by an oncology	Satisfaction Secondary:	significantly more satisfied with
<u>Country:</u> Greece	Solid malignancy	medical oncologist	nurse plus booklet to	- Quality of life (EORTC	information and care; greater
			take home.	QLQ-C30)	quantity and quality of
<u>Design:</u> 2 arm RCT	Chemotherapy			- Psychological distress	information; greater emotional
				(HADS)	functioning on EORTC QLQC30
				- Information quantity	- No differences in other QoL
				and quality	scales, anxiety or depression
Johnson[40]	<u>N</u> =62	Written summary	Written summary and 3	- Optimism (LOT)	- Concrete objective
		and 3 audiotapes:	audiotapes: Coping	- Emotional status	information had benefits for
Country: United	Prostate cancer	1) Detailed	group:	(POMS)	mood in less optimistic patients
States of America		description of RT	1) Coping/self-care	- Disruption usual	- Self-care instruction had no
(USA)	Radiotherapy	2) Organisation of	2) Management and	activities (SIP)	effects on mood or usual
		the Cancer Centre	review of side-effects		activities
<u>Design:</u> 3 arm RCT		3) Design of Cancer	Concrete objective		- Concrete objective group had
		Centre	group:		less disruption in last week and
			1) Description		2 weeks after RT
			treatment, Experience		
			6-7 weeks of RT;		
			Changes in side-effects		
Jones[41]	<u>N</u> =525	Group 1:	Group 2:	- Anxiety and depression	- Personalised group more
		Written/booklet	General information	(HADS)	likely to use computer than
Country: United	Breast, cervical, prostate	information	with a printout provided	- Mental adjustment to	general group; lower anxiety at
Kingdom (UK)	or laryngeal cancer		Group 3:	cancer	3 months
			Personalised information	- Information	- No sig. change in depression
Design: 3 arm RCT	Radiotherapy		with a printout provided	preterences	or mental adjustment
				- Costs	-Computer system cost 40% of
					the cost of the booklets

Country DesignN=400General information information and either: information and either: interactively chosen or automatic by patients with or without anxiety mgmt Computer and booklet use - Anxiety and depression (HADS) - Social support (HSSQ)- No differences betwee groups in anxiety, depre social support or cancer understandingEventor Design: 2x2x2 RCT (8 groups)RadiotherapyGeneral information (CancerBACUP) and either: interactively chosen or automatic by patients with or without anxiety mgmt Severity of side-effects - Negative affect (POMS)- Intervention reduced 1 and sleeping problems (marginally sig.) - No reduction in negati affect, diarrhea, skin pro- urinary problemsKim[43]N=1524 min tape- recorded message in clinicUsual care + 8 min tape- recorded message sensory messages about pre, during and post treatment phases- Severity of side-effects - Negative affect (POMS)- Intervention reduced 1 and sleeping problems (marginally sig.) - No reduction in negati affect, diarrhea, skin pro- urinary problemsKinnane[44]N=60Standard education session by nursing staff plus written informationUsual care plus video demonstrating self-help concepts- Information recall (15 items) - Number of calls to centreNo significant difference between groups. - Higher number of gene calls to clinic from contro group	Study	udy Sample	Control	Intervention	Outcomes	Results
DesignM=400General informationPersonalised information and either: interactively chosen or automatic by patients with or without anxiety mgmt Computer and booklet use - Anxiety and depression (HADS) - Social support (HSSQ)- No differences betwee groups in anxiety, depr social support or cancer understandingDesign: 2x2x2 RCT (8 groups)RadiotherapyRadiotherapyGeneral (ConcerBACUP) and either: interactively chosen or automatic by patients with or without anxiety mgmt Social support (HSSQ)- No differences betwee groups in anxiety, depr social support or cancer understandingKim[43] Design: 2 arm RCTN=1524 min tape- recorded message in clinicUsual care + 8 min tape- recorded message in clinic- Severity of side-effects - Negative affect (POMS)- Intervention reduced f and sleeping problemsKinnane[44] Design: 2 arm RCTN=60Standard education session by nursing staff plus written informationUsual care plus video demonstrating self-help concepts- Information recall (15 items)No significant difference between groups.Design: 2 arm RCTNewly diagnosed breast or colorectalStandard education session by nursing staff plus written informationUsual care plus video demonstrating self-help concepts- Information recall (15 items)No significant difference between groups.Lower between groups.Newly diagnosed breast or calls to clinic from contr groupNo significant difference between groups Higher number of gene calls to clinic from contr group	Country	untry				
Jones[42]N=400General information (CancerBACUP) and either: interactively chosen or automatic by patients with or without anxiety mgmt.Personalised information and either: interactively chosen or automatic by patients with or without anxiety mgmt Computer and booklet use- No differences betwee groups in anxiety, depri social support or cancer understandingDesign: 2x2x2 RCT (8 groups)RadiotherapyRadiotherapyA min tape- recorded message in clinicVisual care + 8 min tape- sensory messages about pre, during and post treatment phases- Severity of side-effects - Negative affect (POMS)- Intervention reduced f and sleeping problems (marginally sig.)Kinnane[44]N=60Standard education session by nursing staff plus written informationUsual care plus video demonstrating self-help concepts- Information recall (15 items)No significant difference between groups.Design: 2 arm RCTNewly diagnosed breast or colorectalStandard education session by nursing staff plus written informationUsual care plus video demonstrating self-help concepts- Information recall (15 items)No significant difference between groups.	Design	sign				
Country: United Kingdom (UK)Breast, prostate cervical or laryngeal cancer(CancerBACUP) and either: interactively chosen or automatic by patients with or without anxiety mgmt.interactively chosen or automatic by patients with or without anxiety mgmt Anxiety and depression (HADS) - Social support (HSSQ)social support or cancer understandingKim[43]N=1524 min tape- recorded message in clinicUsual care + 8 min tape- sensory messages about pre, during and post treatment phases- Severity of side-effects - Negative affect (POMS)- Intervention reduced f and sleeping problems (marginally sig.) - No reduction in negati affect, diarrhea, skin pro- urinary problemsKinnane[44]N=60Standard education session by nursing staff plus written informationUsual care plus video demonstrating self-help concepts- Information recall (15 items)No significant difference between groups. - Higher number of genu calls to clinic from contr group	Jones[42]	<u>N</u> =400	General information	Personalised information and either:	- Computer and booklet use	- No differences between the groups in anxiety, depression,
Kim[43]N=1524 min tape- recorded message in clinicUsual care + 8 min tape- sensory messages about 	<u>Country:</u> United Kingdom (UK) <u>Design:</u> 2x2x2 RCT (8 groups)	InitedBreast, prostate cervical or laryngeal cancer2x2 RCT (8Radiotherapy	(CancerBACUP) and either: interactively chosen or automatic by patients with or without anxiety	interactively chosen or automatic by patients with or without anxiety mgmt.	- Anxiety and depression (HADS) - Social support (HSSQ)	social support or cancer understanding
Kim[43]N=1524 min tape- recorded message in clinicUsual care + 8 min tape- sensory messages about pre, during and post treatment phases- Severity of side-effects - Negative affect (POMS)- Intervention reduced and sleeping problems (marginally sig.) - No reduction in negati affect, diarrhea, skin pro- urinary problemsDesign: 2 arm RCTN=60Standard education session by nursing staff plus written informationUsual care plus video demostrating self-help concepts- Information recall (15 items)No significant difference between groups. - Higher number of gene calls to clinic from contr group			mgmt.			
Country: USA Design: 2 arm RCTProstate cancer adiotherapyin clinic in clinicpre, during and post treatment phases(marginally sig.) - No reduction in negati affect, diarrhea, skin pri urinary problemsKinnane[44] Country: Australia Design: 2 arm RCTN=60 session by nursing staff plus written informationStandard education session by nursing staff plus written informationUsual care plus video demonstrating self-help concepts- Information recall (15 items)No significant difference between groups.Country: Australia Design: 2 arm RCTNewly diagnosed breast or colorectalstaff plus written information- oncepts- Number of calls to centre- Higher number of gene calls to clinic from contr group	<b>Kim</b> [43]	N=152	4 min tape- recorded message	Usual care + 8 min tape- sensory messages about	<ul> <li>Severity of side-effects</li> <li>Negative affect (POMS)</li> </ul>	- Intervention reduced fatigue and sleeping problems
Design: 2 arm RCTRadiotherapyaffect, diarrhea, skin pr urinary problemsKinnane[44]N=60Standard education session by nursing staff plus written informationUsual care plus video demonstrating self-help concepts- Information recall (15 items)No significant difference between groups.Country: AustraliaNewly diagnosed breast or colorectalStandard education 	<u>Country:</u> USA	SA Prostate cancer	in clinic	pre, during and post treatment phases		(marginally sig.) - No reduction in negative
Kinnane[44]N=60Standard education session by nursing staff plus written informationUsual care plus video 	<u>Design:</u> 2 arm RCT	ırm RCT Radiotherapy				affect, diarrhea, skin problems, urinary problems
Country: Australia       Newly diagnosed breast or colorectal       staff plus written information       concepts       - Number of calls to centre       - Higher number of gen calls to clinic from contrigroup         Design: 2 arm RCT       2 arm RCT       - Muse of calls to clinic from contrigroup       - Number of calls to clinic from contrigroup	Kinnane[44]	4] N=60	Standard education session by nursing	Usual care plus video demonstrating self-help	- Information recall (15 items)	No significant difference between groups.
Design: 2 arm RCT group	<u>Country:</u> Australia	ustralia Newly diagnosed breast or colorectal	staff plus written information	concepts	- Number of calls to centre	- Higher number of general calls to clinic from control
Chemotherapy	<u>Design:</u> 2 arm RCT	Irm RCT				group
Chemotherapy		Chemotherapy				
Poroch[45]         N=50         Standard procedures for RT         2 preparatory patient education (PPE) sessions         - Anxiety (STAI)         - Intervention group significantly less anxiou	Poroch[45]	] <u>N</u> =50	Standard procedures for RT	2 preparatory patient education (PPE) sessions	- Anxiety (STAI) - Satisfaction (PPSQ)	<ul> <li>Intervention group</li> <li>significantly less anxious;</li> </ul>
Country: AustraliaAny cancerpreparation plus time withand individualgreater satisfaction withLime withinformationinformationinformation and nursing	<u>Country:</u> Australia	ustralia <u>Any cancer</u>	preparation plus time with	and individual information		greater satisfaction with information and nursing care
Design:     Quasi-     Radiotherapy     researcher about       experimental time     cancer experience       series     so far	<u>Design:</u> Quasi- experimental time	iasi- <u>Radiotherapy</u> Ital time	researcher about cancer experience			

Study	Sample	Control	Intervention	Outcomes	Results
Country					
Design					
<b>Ream</b> [46]	<u>N</u> =103	Ad hoc education	Monitoring of fatigue;	<u>Primary:</u>	- Significantly less fatigue,
		and assessment	information pack;	- fatigue (VAS).	anxiety, depression, distress,
<u>Country:</u> UK	Non-Hodgkin's lymphoma,	only.	coaching in self-care;	<u>Secondary:</u>	more adaptive coping and less
	gastrointestinal, lung,		and provision of	- Emotional wellbeing	impact of fatigue in
Design: 2 arm RCT	colorectal, breast or		emotional support	(HADS)	intervention group.
	unknown primary cancer			- General health status	
				(SF-36)	
	Chemotherapy			- Coping (VAS and COPE)	
Thomas[47]	<u>N=</u> 220	BACUP booklet and	Usual care plus video	- Anxiety and depression	- Intervention group
		verbal information		(HADS)	significantly more satisfied and
<u>Country:</u> UK	Any cancer			- Satisfaction with	lower anxiety and depression
				information (ad hoc	reported
Design: 2 arm RCT	Chemotherapy or			investigator developed	- Anxiety decreased over time
	radiotherapy			measure)	for intervention;
					-Depression increased in
					control over time.
Zissiadis[48]	<u>N</u> =194	CCWA radiotherapy	Booklet and a telephone	- Anxiety (STAI)	- No significant difference in
		booklet	call	Information	anxiety or satisfaction over
Country: Australia	Any cancer			- Satisfaction (ISQ)	time or between groups.
Design: 2 arm RCT	Radiotherapy				

CaTS= Cancer Treatment Scale; CCWA=Cancer Council WA; CIPS=Cancer Inventory Problems Scale; C-SAS=Chemotherapy Symptom Assessment Scale; EORTC=European Organisation for Research and Treatment for Cancer; HADS=Hospital and Anxiety Depression Scale; HSSQ=Helgeson's Social Support Questionnaire; IES=Impact of Events Scale; ISQ= Information Satisfaction Questionnaire; LOT= Life Orientation Test; PDI= Psychological Distress Inventory; POMS=Profile of Mood States; PPSQ=Pienschke Patient Satisfaction Questionnaire; RA=Research Assistant; RCT= Randomised Controlled Trial; RT=Radiotherapy; SF-36= SF-36 Health Survey; STAI=State Trait Anxiety Inventory.