



Acceptability of telephone support as perceived by patients with cancer: a systematic review

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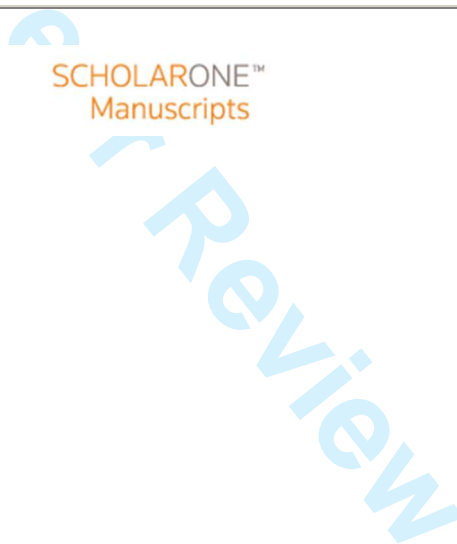
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Acceptability of telephone support as perceived by patients with cancer: a systematic review

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1
2
3 Dear Dr Weller and Professor Mackenzie

4
5 Please find attached the revised manuscript entitled, 'Acceptability of telephone support as
6 perceived by patients with cancer: a systematic review', for consideration for publication in the
7 European Journal of Cancer Care.
8

9
10 We have taken on board the comments of the reviewers and amended the paper accordingly,
11 making reference where the corresponding modifications have been made.
12

13 This manuscript describes original work and is not under consideration by any other journal. All
14 authors approved the manuscript and this submission.
15

16 Thank you for receiving our manuscript and considering it for review. We appreciate your time and
17 look forward to your response.
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19 Kind regards
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23 Sarah Liptrott
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Abstract:

Telephone-based interventions can increase accessibility to healthcare and are increasingly used as a convenient method of providing support. We conducted a systematic review of published literature reporting adult patients' perceptions of the acceptability of, and satisfaction with, telephone-based interventions during or post-treatment for cancer. Systematic searches identified 4855 articles. Forty-eight papers describing 50 studies were included in the review. Three intervention categories were identified post-hoc: a) telephone follow-up in lieu of routine hospital follow-up, b) telephone interventions for treatment side-effect monitoring and toxicity management supplementary to usual care, and c) supplementary psycho-educational telephone interventions. Across studies, some consistent findings emerged. Positive perceptions emphasised the convenience of telephone interventions and increased accessibility to care. Conflicting perceptions of the quality of the support received, the impact of telecare on the patient-healthcare professional relationship and the need for such interventions emerged.

In conclusion, the evidence base relating to patients' perceptions of telephone-based interventions is increasing. Interpretation of findings is currently limited by methodological limitations in the primary research. The instruments chosen to assess patient satisfaction quantitatively do not always reflect the patient-centred priorities that emerge from qualitative data. Subsequent research would benefit from well-designed qualitative studies and patient-centred outcome measures to ensure that the individuality of participants' positive and negative experiences are captured.

Keywords: cancer, telephone, acceptability, satisfaction, support, systematic review

Background

Approximately 14.1 million people worldwide are diagnosed with cancer per year (Cancer Research UK, 2014) and with ongoing treatment development, long-term prognosis is improving. Treatment for cancer is increasingly outpatient-based and patients are often discharged early to reduce hospital stays (Van Tiel *et al.* 2005). Potential or on-going side effects are managed at home. Inadequate management of symptoms such as fatigue and pain can impact on patient mood and psychological wellbeing with subsequent implications for functional status (Dodd *et al.* 2001). The need for optimal monitoring of side-effect evolution, and management and support for patients continuing complex therapies in the community is clear.

Support for patients dealing with cancer and its treatments is available and largely evidence-based, with systematic reviews evaluating a variety of psychological (Parahoo *et al.* 2013; Mustafa *et al.* 2013) and symptom management (Rueda *et al.* 2011; Cramp *et al.* 2012) interventions. Such services however must be provided within the context of increasing patient numbers, and finite healthcare resources. Efforts to maximise service efficiency are therefore high on research and practice agendas.

Economic evaluations of telemedicine for the delivery of healthcare interventions suggest that remote interventions can increase cost-effectiveness (Davlos *et al.* 2009), prevent re-hospitalization (Krumholz *et al.* 2002), facilitate time-savings (Pare *et al.* 2007), and enhance service quality and accessibility (Car & Sheik, 2003). Telephone delivered support, in particular is an expanding field, used across a variety of clinical settings and patient populations (Miastiaen & Poot, 2006), including surgery, mental health, cardiac and diabetes care. It is increasingly being used in cancer care (Macartney *et al.* 2012; Stacey *et al.* 2012) and in the delivery of symptom management interventions (Barsevick *et al.* 2004; Badger *et al.* 2005). However, patient and professional preferences for face-to-face support (Kimman *et al.* 2010a) and resistance to adopt remote

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3 communication technologies (i.e. e-mail, mobile phone text message, computer-generated calls)
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5 (Kleiboer *et al.* 2010) highlight potential conflict regarding the best method of providing support for
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7 patients.
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11 Under the philosophy of patient-centred care, a focus on patients' needs, perspectives and
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13 experiences (Epstein *et al.* 2005) is crucial. Patient satisfaction with care and services is central to
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15 evaluating service quality (Martin *et al.* 2007). Demonstrating satisfaction, however, is not
16
17 straightforward. Systematic reviews of interventions for cancer patients tend to focus wholly or
18
19 predominantly on intervention efficacy (Scott *et al.* 2013; Rueda *et al.* 2011). A recent systematic
20
21 review (Dickinson *et al.* 2014) examining patient satisfaction with technology use for cancer
22
23 follow-up, reports only quantitative data. In depth qualitative syntheses of patient perspectives are
24
25 lacking. Where patient perspectives on acceptability have been considered, the term has often inter-
26
27 mixed with concepts of 'utility' (Clark *et al.* 2007), 'benefit' or 'feasibility' (Campbell *et al.* 2007)
28
29 and 'value' (Castro *et al.* 2007). Working definitions of these different constructs are rarely stated,
30
31 highlighting a blurring of the terms used to elicit patient experiences, and variability in their
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33 application as both concepts and outcomes to be measured.
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39 The literature lacks a comprehensive synthesis of patient's perceptions of telephone as a method of
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41 providing support for cancer patients both during and after treatment, and of the different research
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43 strategies that have been used to measure this concept.
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46 **Aims**

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49 The aim of this review was to systematically identify and synthesise published literature reporting
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51 on patient satisfaction and acceptability of support delivered by telephone for cancer during or post-
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53 therapy.
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3 The objectives for the study were to a) identify the size and nature of the international evidence
4 base b) assess its methodological quality, and c) synthesise the available to generate a preliminary
5 framework of patients perceptions of satisfaction and acceptability with telephone-based
6 interventions.
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11 **Methods**

12 Inclusion criteria

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14 Studies were included in the review if they described:

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16 (a) data relating to cancer patients perceptions of the acceptability of, or satisfaction with, a
17 healthcare professional initiated telephone intervention. Acceptability and satisfaction were defined
18 as opinions, beliefs, views, attitudes, impressions, experience or perceptions. It is recognised that
19 these are individual but related concepts and all papers with such terms were screened for inclusion
20 in the review in order to capture pertinent literature.
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23 (b) $\geq 75\%$ of patients were over 18 years of age,

24 (c) receiving the intervention during or after treatment for cancer, and

25 (c) the study was published in English language
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41 As the overall aim of the systematic review was to look at acceptability of telephone support as
42 perceived by patients, traditional hierarchies of evidence for intervention effectiveness did not
43 apply. As such a wide variety of sources were included in the search. This included including
44 randomised controlled trials (RCT's), controlled and uncontrolled studies, qualitative studies and
45 theses. Due to concerns regarding study generalizability, individual case studies and conference
46 proceedings were excluded. Study inclusion and exclusion criteria are summarised in Table 1.
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Search Strategy

A systematic search of 13 electronic databases was performed (Table 2), in March 2013 and updated on 17th September 2014. The search strategy used key words (Table 3a), identified from a prior scoping exercise and via discussion within the clinical academic and research team. A condensed list of generic search terms (Table 3b) were used for searches performed in the UKCRN Clinical Trials Portfolio and NIH Clinical Trials Databases. Reference lists of articles were also checked for potentially eligible studies.

Selection of studies

Following the search, a title and abstract screening was performed. All papers were screened for inclusion by one reviewer (SL). An attempt to contact study authors was made where it was unclear whether the study met the inclusion criteria. Reasons for study exclusion are summarised in Table 4. Articles identified as eligible for inclusion by one reviewer were independently reviewed by all other researchers to verify eligibility. The study selection process is shown in Figure 1.

Data extraction

A study-specific *a priori* data extraction template was created in order to extrapolate key data of interest. This pro-forma covered (a) study type, (b) data source, (c) study quality indicators, (d) study population (recruitment context, methods, study inclusion and exclusion criteria, number receiving the intervention, number asked about acceptability and providing data), (e) participant characteristics (diagnosis, sex, age, cancer treatment received), (f) intervention description, (g) quantitative acceptability outcome measures, and (h) qualitative acceptability data. Qualitative data were extracted at the level of themes identified and reported within the text of the primary paper. All studies were subject to double blind extraction to ensure accuracy; discrepancies were resolved via team discussion and return to the original paper when required.

Quality assessment

Acceptability and satisfaction are two related constructs that can be both quantitatively and qualitatively explored. In this review, the gold standard for research was set as a qualitative investigation or an open-ended question schedule that allowed for patient opinions to be expressed in depth and without limitation, either as a stand-alone study or nested within another study design. Studies using closed-question or a priori designed questionnaires were deemed to be of lower quality due to the potential lack of opportunity for patient-centred perceptions to spontaneously emerge. Each study was initially assessed on the basis of whether a) qualitative data / open-ended questions were used, and b) sufficient data was provided to support the findings. Items were scored 'yes' or 'no' on each criteria and studies were provisionally considered as high quality if they fulfilled both these criteria. Within the higher quality category (i.e. traditional qualitative studies), critical appraisal of individual study quality was then performed (Table 5).

Randomised Controlled Trials (RCT's) reporting patient satisfaction outcomes in both intervention and comparison arms were assessed against the Cochrane Collaboration Risk Bias of Assessment Tool for RCT's (Higgins & Green, 2011). Non-RCTs, single group designs, were assessed against the relevant Cochrane guidance (Higgins & Green, 2011). RCT's or nRCTs providing intervention group only data were treated as single group designs and appraised accordingly. Qualitative studies were assessed using the Critical Appraisal Skills Programme (CASP) tool (CASP, 2013).

Methods of data synthesis

The papers included in the review were synthesised according to the nature of the acceptability data they provided. Themes identified and reported within the text of qualitative studies were summarised, following the principles of thematic synthesis. Heterogeneity in the populations and measurements used to elicit quantitative data, meant that it was not possible to perform a meta-analysis. A narrative synthesis of quantitative data was performed. Some studies provided

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3 both forms of data and contributed to both types of synthesis. The data in each section were
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5 different and not double counted.
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8 9 **Results**

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11 A total of 4855 records were identified after duplicate removal (total hits n=10,423, duplicates
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13 n=5568). Based on title and abstract screening, 4611 were rejected. Seventy-eight papers were
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15 identified following hand search and reference review. A total of 267 full text articles were
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17 reviewed with a further 219 rejected and 48 papers eligible for inclusion (Figure 1). One paper
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19 described three studies of different patient populations (Heidrich *et al.* 2009) and for the purpose of
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21 this review; the three studies reported are treated separately. Two papers reported on the same
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23 intervention with an overlapping time frame of recruitment, and authors confirmed that some
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25 patients had been included in both studies. The two papers (Zheng *et al.* 2013; Zhang *et al.* 2013)
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27 provided different and complementary forms of data (qualitative and quantitative) and thus, both
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29 were included in the review.
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36 Study characteristics

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38 The main characteristics of the 50 studies (from 48 articles) are described in Table 6. All studies
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40 were conducted in developed countries, predominantly the US & Canada, the UK and Australia.
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42 Thirty-nine studies reported quantitative data (n=39). Twenty-four studies provided qualitative data.
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47 Quantitative data were most frequently reported as part of a randomised controlled trial (n=17), or
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49 single group designs (n=16). Qualitative data were collected mainly from stand alone, single group
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51 designs (n=11) and nested process evaluations (n=4).
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Quality appraisal

The review included both qualitative and quantitative data with qualitative data being seen as superior quality.

Qualitative data

Of the 24 studies providing qualitative data, six were judged to be of high methodological quality (Campbell *et al.* 2007; Zheng *et al.* 2013; Archer *et al.* 2014; Beaver *et al.* 2010; Donnelly *et al.* 2013; Wilmoth *et al.* 2011), with data collected via well-conducted interviews, open-ended questions, or focus groups (Table 5). Three additional studies reported interview but insufficient details regarding study methods or data completeness were provided; these studies were judged lower, or at best unclear, quality (Kilbourn *et al.* 2013, Livingston *et al.* 2010; Young *et al.* 2013).

The remaining studies providing qualitative data (n=15) including the use of open-ended questions that focused on only one pre-defined aspect of the intervention (Badger *et al.* 2013), and/or data collection methods relying on written questionnaires, feedback or comments where there was insufficient evidence to confirm completeness of data reporting. These studies were also judged to be of lower quality data (Alter *et al.* 1996; Badger *et al.* 2013; Booker *et al.* 2004; Cimprich *et al.* 2005; Cox *et al.* 2008; Dixon 2010; Hafiji *et al.* 2012; Hagopian & Rubenstein, 1990; Inman *et al.* 2011; Kelly 1999; Smithies *et al.* 2009; Steginga *et al.* 2008; Young *et al.* 2010).

Quantitative data

Quantitative data was provided in 39 studies of which, only two studies used validated measures - the Ware's Patient Satisfaction Questionnaire III (Kimman *et al.* 2010b), and the Satisfaction and Experience of Care Questionnaire (Cox *et al.* 2008). All other quantitative studies (n=37) used adapted scales or (Salonen *et al.* 2009; Beaver *et al.* 2012; Leahy *et al.* 2013; Cox *et al.* 2005;), or unvalidated tools specifically designed for the study (n=34, 87%). Likert scales were used in 21/39

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3 studies (54%), with patients responding to set statements on ordinal scales of agreement or
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5 disagreement. The number of items used to assess satisfaction was reported in 24/39 studies (62%),
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7 with a median of four items per outcome measure (range 1-42). The majority of studies provided
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9 details of the questions asked (11/39, 28%) or some information about which topics were covered
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11 (24/39, 62%); these were determined a priori by research teams with no-evidence of bottom-up,
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13 patient-led development. A summary of acceptability and satisfaction data quality is provided in
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15 Table 7.
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18 19 20 Sample sizes

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23 The RE_AIM framework (Glasgow et al. 1999) identifies the reach of health behaviour
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25 interventions as an important factor influencing the implementation of research findings into
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27 practice. Reach is defined as the number, proportion, and representativeness of individuals who are
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29 willing to participate in any given intervention. As such it represents a partial assessment of
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31 intervention acceptability, and an indicator of potential selection bias in study samples.
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36 Study participation rates and sample representativeness were inconsistently reported. Sample size
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38 was variously defined and it was often unclear whether participant numbers referred to the number
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40 of patients who were approached to participate or the number who consented received the
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42 intervention, or provided acceptability data.
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46 Twenty-six of the 50 studies provided acceptability data for all participants receiving a telephone
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48 intervention. Ten studies (20%) provided acceptability data for less than 75% of their sample. Two
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50 were notable for providing data for under half of their participants (49% (Sardell et al. 2000) and
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52 41% (Archer et al. 2014) respectively. Many participants in the latter study expressing a wish not to
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54 take part in an acceptability evaluation.
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3 In studies providing quantitative satisfaction data (n=39), the number of participants receiving
4 interventions and thus potentially providing satisfaction ratings ranged from 9-387 (median 38
5 participants). In studies providing qualitative acceptability data (n=24), sample sizes ranged from 8-
6 187, median 30.5 participants). The highest sample size in this category (n=187) was achieved in a
7 study reporting feedback and qualitative comments (Hafiji et al., 2012) however it is unclear from
8 how many participants these were collected.
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18 Patient characteristics

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20 Most studies (n=43) tended to be focused on a single cancer type, specifically breast cancer (n=16)
21 colorectal cancer (n=11), or prostate cancer (n=7). Seven studies recruited mixed samples that
22 included patients with different cancer diagnoses. Study participants had received or were still
23 receiving a variety of treatments for their cancer, including surgery, CT, targeted agents, RT or
24 hormone therapy. In a large proportion of studies (48%), gender and age demographics were only
25 described in terms of the total sample size, and not specific for those who provided data relating to
26 acceptability of the intervention. Mean age across the 41 studies providing data was 60.2 years (SD
27 6.98). Potential for gender bias was observed; in studies targeting cancers that were not gender-
28 specific, 60% of participants were male.
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43 Characteristics of the interventions

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45 Intervention content and objectives varied greatly, as well as the timing, duration and format of
46 their delivery. Three main categories of intervention emerged:
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52 *Telephone follow-up interventions*

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54 Telephone follow-up (TFU) interventions involved general and cancer symptom monitoring as well
55 as provision of information and support post diagnosis and treatment (n=6). Intervention content
56 and timing typically mirrored that of standard hospital follow-up; the only difference being a
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3 change in the mode of service delivery. Six studies described structured interventions of this type in
4 patients with breast (Beaver *et al.* 2010; Beaver *et al.* 2009), colorectal (Beaver *et al.* 2012), and
5 prostate cancer (Booker *et al.* 2004; Leahy *et al.* 2013; Anderson 2010). All of these interventions
6 were nurse-led.
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10 11 12 13 14 *Treatment side effect / toxicity monitoring*

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16 The second (and largest) category described telephone interventions, which were delivered during
17 and after cancer treatment and focused wholly or predominantly on side effect and toxicity
18 monitoring (n=23). Some also included side effect management and coping strategies and/or
19 education and information provision. Interventions were often nurse-led and delivered to a variety
20 of cancer patients receiving a variety of treatments. Intervention timing varied according to the
21 specific treatment being received. The vast majority were presented as supplementary to standard
22 care (Heidrich *et al.* 2009; Zheng *et al.* 2013; Zhang *et al.* 2013; Sardell *et al.* 2000; Jefford *et al.*
23 2011; Young *et al.* 2013; Cox *et al.* 2008; Dixon 2010; Hagopian & Rubenstein, 1990; Inman *et al.*
24 2011; Smithies *et al.* 2009; Young *et al.* 2010; Cirillo *et al.* 2014; Delaney *et al.* 2009; Jensen *et al.*
25 2011; Mordenti *et al.* 2013; Munro *et al.* 1994), although four were described as standard care
26 interventions (Archer *et al.* 2014; Hafiji *et al.* 2012; Kelly 1999; Craven *et al.* 2013).
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43 *Psycho-educational interventions*

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45 The third category (n=21) described a wide variety of psycho-educational telephone-based
46 interventions. Almost half were nurse led, although psychologists, physiotherapists, social workers,
47 counsellors and health educators also provided interventions. Thirteen studies reported
48 psychological interventions involving an element of counselling (Alter *et al.* 1996; Badger *et al.*
49 2013; Barsevick *et al.* 2002; Kim *et al.* 2011; Marcus *et al.* 1993, Marcus *et al.* 2010), coping
50 strategies & skills training (Campbell *et al.* 2007; Kilbourn *et al.* 2013), problem solving (Steginga
51 *et al.* 2008; Hegel *et al.* 2011), self-management (Cimprich *et al.* 2005), cognitive behavioural skills
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3 training (Sandgren *et al.* 2000) or intimacy enhancement programs (Reese *et al.* 2012; Reese *et al.*
4 2014). Seven studies described educational and supportive interventions, varying widely in timing
5 and duration (Donnelly *et al.* 2013; Wilmoth *et al.* 2006; Livingston *et al.* 2010; Salonen *et al.*
6 2009; Kimman *et al.* 2010b; Cox *et al.* 2005; Garrett *et al.* 2013).
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10 11 12 13 Acceptability outcome data

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16 A summary of outcome data is provided in Table 8. This table is intended to demonstrate the
17 breadth of factors potentially impacting on intervention acceptability, according to data type and
18 quality. Scales and quantitative data tended to provide more generalised information focusing on
19 positive aspects of interventions such as convenience, accessibility and relationship with the
20 healthcare professional, perceived support and overall satisfaction. Qualitative data presented
21 further insight into opinions of intervention specific components and perceived negative aspects of
22 the interventions. Consistency of findings across studies is indicated.
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34 *Findings across all intervention categories*

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36 High quality evidence frequently endorsed that cancer patients valued telephone-based
37 interventions for their convenience. Convenience was reported across intervention categories, in
38 terms of facilitating personal organisation (Beaver *et al.* 2010), time & travel savings (Campbell *et*
39 *al.* 2007; Jefford *et al.* 2011), and overcoming participation restrictions (Campbell *et al.* 2007).
40 Similar findings were also reflected in a further seven studies providing lower quality data (Sardell
41 *et al.* 2000; Alter *et al.* 1996; Booker *et al.* 2004; Cox *et al.* 2008; Hafiji *et al.* 2012; Anderson
42 2010; Hegel *et al.* 2011).
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54 Positive personal experiences of the intervention process were evident across the three different
55 intervention categories and supported by both higher and lower quality evidence (Beaver *et al.*
56 2010; Jefford *et al.* 2011; Zheng *et al.* 2013; Donnelly *et al.* 2013). This included some evidence of
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3 patient acceptance (Zheng *et al.* 2013) and appreciation of calls (Donnelly *et al.* 2013). Nineteen
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5 studies providing lower quality evidence echoed these findings, reporting perceptions of
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7 intervention helpfulness or usefulness (Heidrich *et al.* 2009; Livingston *et al.* 2010; Salonen *et al.*
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9 2009; Barsevick *et al.* 2002; Hagopian & Rubenstein, 1990; Inman *et al.* 2011; Kelly 1999;
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11 Steginga *et al.* 2008; Munro *et al.* 1994; Marcus *et al.* 2010; Reese *et al.* 2012; Reese *et al.* 2014;
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13 Kim *et al.* 2011), Barsevick *et al.* 2002; Cimprich *et al.* 2005; Hafiji *et al.* 2012; Delaney *et al.*
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15 2009; Mordenti *et al.* 2013; Garrett *et al.* 2013), ease of participation (Reese *et al.* 2012; Reese *et al.*
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17 2014) and patient appreciation of the calls (Dixon 2010)
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22 High overall satisfaction was revealed from low quality evidence across the three intervention
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24 categories (Heidrich *et al.* 2009; Zhang *et al.* 2013; Sardell *et al.* 2000; Kilbourn *et al.* 2013; Alter
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26 *et al.* 1996; Badger *et al.* 2013; Booker *et al.* 2004; Hafiji *et al.* 2012; Hagopian & Rubenstein
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28 1990; Steginga *et al.* 2008; Kimman *et al.* 2010b; Leahy *et al.* 2013; Cox *et al.* 2005; Beaver *et al.*
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30 2009; Anderson 2010; Jensen *et al.* 2011; Craven *et al.* 2013; Garrett *et al.* 2013; Hegel *et al.* 2011).
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32 In three studies providing comparative control group analysis, statistically significant greater
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34 satisfaction with telephone-based intervention was reported compared with standard hospital care
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36 (Zhang *et al.* 2013; Beaver *et al.* 2009; Jensen *et al.* 2011).
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43 *Telephone follow-up interventions*

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45 With regards to telephone follow-up in lieu of routine hospital follow-up, high quality evidence
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47 suggested that it was important to have access to healthcare professionals, in order to deal with
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49 concerns in a timely manner (Beaver *et al.* 2010). The ‘normality’ of talking by telephone made this
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51 easier (Beaver *et al.* 2010), and a structured intervention helped to organise thoughts and revisit
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53 topics (Beaver *et al.* 2010). However some participants missed contact with other patients and the
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55 reassurance of a physical examination, describing consultations as rushed and impersonal.
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Treatment side effect / toxicity monitoring

In side effect and post treatment monitoring interventions, high quality findings described the telephone-based approach as more comfortable (Jefford *et al.* 2011), providing prompt access to health care professionals who could address concerns (Jefford *et al.* 2011), In particular, high quality evidence from post-surgical monitoring interventions described continuity of care – facilitating the transition from hospital to home (Archer *et al.* 2014) and, during the return to a ‘normal life’ (Zheng *et al.* 2013), Whilst a single study described high quality evidence of psychological support (Zheng *et al.* 2013), lower quality evidence captured concepts with more emotive terminology. This included the benefits of having someone to talk to (Smithies *et al.* 2009), feeling listened to (Dixon 2010), cared for (Hafiji *et al.* 2012; Hagopian & Rubenstein, 1990), showing concern (Inman *et al.* 2011) and reducing isolation (Kelly 1999), especially in interventions delivered over longer periods of time. The support that was provided was not always deemed necessary however, especially where existing support systems were in place (Young *et al.* 2013).

Conflicting perceptions of the impact on the patient-HCP relationship were described. High quality evidence highlighted difficulties in dealing with emotions by telephone (Jefford *et al.* 2011), and matched by opinions from low quality evidence, which suggested a lack of emotional support (Young *et al.* 2013), a lack of ‘enhanced care giving’ (Mordenti *et al.* 2013) and generally poorer knowledge of a patient’s case (Young *et al.* 2013). In direct contrast, other lower quality evidence described positive opinions of the patient–healthcare professional relationship (Sardell *et al.* 2000; Young *et al.* 2013; Cox *et al.* 2008; Dixon 2010; Cirillo *et al.* 2014).

Low quality evidence alluded to potentially critical aspects of intervention structure, including the need to ensure appropriate call timing (Sardell *et al.* 2000; Young *et al.* 2010), and frequency of calls (Hafiji *et al.* 2012; Kelly 1999), patient choice in receiving calls (Hafiji *et al.* 2012) and

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3 consideration of and potential solutions for overcoming language difficulties in calls (Young *et al.*
4
5 2010).

6 7 8 9 *Psycho-educational interventions*

10 High quality evidence from psycho educational interventions described a telephone based approach
11 as useful especially when dealing with sensitive subjects (Campbell *et al.* 2007), facilitating a sense
12 of control (Wilmoth *et al.* 2006). Low quality data findings positively described support (Cimprich
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being a barrier to discussions.

Intervention structure was a theme, with high quality data eliciting the utility of a structured
intervention as a memory aid (Wilmoth *et al.* 2006), promoting accountability and motivation in an
exercise and diet program (Donnelly *et al.* 2013). Lower quality evidence revealed call timing was
appropriate for many (Donnelly *et al.* 2013; Kilbourn *et al.* 2013; Salonen *et al.* 2009; Cimprich *et al.*
2005; Sandgren *et al.* 2000; Kim *et al.* 2011), although a lack of control over call timing was
described (Sandgren *et al.* 2000), as well as the influence of treatment side effects interfering with
counselling calls (Kilbourn *et al.* 2013).

Lower quality evidence questioned the suitability of a telephone intervention for all patients on the
basis that needs differed between individuals and over time (Zheng *et al.* 2013), Alternative
methods such as group sessions (Cimprich *et al.* 2005), or face-to-face contact (Sandgren *et al.*
2000) were preferred by some participants. and in some cases, the intervention had not been useful,
as patients already had support (Kilbourn *et al.* 2013). Despite this, positive perceptions of the
patient–healthcare professional relationship were cited in relation to good rapport (Reese *et al.*

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3 2014). There was high satisfaction with technical competence (Kimman *et al.* 2010b; Reese *et al.*
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5 2014), with high levels of preference for telephone based interventions (Kilbourn *et al.* 2013; Reese
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7 *et al.* 2012; Reese *et al.* 2014), although interestingly, two studies described this in terms of
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9 negatively worded indicators - with participants “not at all” worried about calls (Livingston *et al.*
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11 2010), and 0% of patients “complained about the interview to the interviewer” (Marcus *et al.* 1993).
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16 **Discussion**

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18 We conducted a narrative systematic review of the acceptability of telephone-based interventions
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20 for adult cancer patients. The review identified 48 papers reporting on 50 studies. The overall
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22 quality of the existing evidence base was not high, as determined by appropriate and validated
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24 quality appraisal tools used.
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29 The review included primary research with significant variation in sample size. Smaller samples
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31 were evident in ‘pilot’ or ‘feasibility’ studies, and larger samples in service evaluations. Participants
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33 were often self-selected, raising the possibility of selection bias. In the majority of studies,
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35 difficulty in understanding actual numbers of patients approached to participate in studies and the
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37 proportion of those accepting to participate remains unclear. A clear understanding of participant
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39 characteristics was blurred by a lack of data relating to those participating in the evaluation and
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41 whether these were representative of a total group.
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47 Methods to evaluate acceptability and satisfaction were predominantly short quantitative
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49 questionnaires, which were not standardised or validated, providing at best generalised, preliminary
50
51 findings. Although it is recognised that quantitative outcome assessment can be patient-centred,
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53 especially when developed from rigorous qualitative insight, findings demonstrated that scales used
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55 did not always map directly and wholly on to patient identified concerns identified with more open-
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3 ended designs. This was especially in relation to issues that were intervention specific and negative
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5 opinions.

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7 New, quantitative tools should be developed that enable respondents to be critical, as well as
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9 positive about their experience, with items that explore patient perceptions of intervention utility,
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11 timing, convenience, accessibility and communication preferences. Reliance on quantitative data in
12
13 isolation may led to unintentional bias in findings, as patients are known to tend towards positive
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15 responses on such instruments (Bradley *et al.* 2007). There is also potential for a ceiling effect,
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17 making differentiation of clustered upper end results challenging, (Dell-Kuster *et al.* 2014).
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19 Employing a mixed methods or qualitative approach may thus be more appropriate.
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25 Qualitative research offers an opportunity to explore patient perceptions in depth, with acceptability
26
27 defined according to patient priorities and concerns. Qualitative studies however can be conducted
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29 for different reasons. Whilst stand-alone studies may explore intervention acceptability from a
30
31 neutral standpoint, nested process evaluations are often driven by the desire to understand positive
32
33 or negative intervention effects. The specific objectives of a study may thus determine to some
34
35 extent whether strengths or limitations of telephone interventions are reported. Rigorous
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37 development of evidence-based interventions demands that all potential viewpoints are considered.
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39 We thus included all eligible qualitative studies in our review, irrespective of their design or
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41 primary objective.
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47 Despite heterogeneity in the intervention categories and the data collection methods, this review,
48
49 revealed some consistent and potentially important findings. The convenience of telephone
50
51 delivered interventions was evident across all interventions and data types (Campbell *et al.* 2007;
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53 Beaver *et al.* 2010; Jefford *et al.* 2011; Alter *et al.* 1996; Barsevick *et al.* 2002; Booker *et al.* 2004;
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55 Cox *et al.* 2008; Hafiji *et al.* 2012; Anderson 2010; Hegel *et al.* 2011). Positive personal
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57 experiences were also reported across the different intervention types, although more so in side
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3 effect/post-treatment monitoring and psycho-educational interventions, where the enhanced
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5 communication was viewed as additional component to usual care, (Campbell *et al.* 2007; Sandgren
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7 *et al.* 2000). Telephone follow-up in lieu of routine hospital follow-up, received more negative
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9 feedback and left some patients feeling as though they lacked assurance (Beaver *et al.* 2010). These
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11 potential differences suggest that the nature and setting of the intervention is influential on
12
13 perceptions of acceptability and satisfaction.
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18 Accessibility to care was a recurrent theme in side effect and post treatment monitoring
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20 interventions. Telephone based interventions were often a source of prompt reassurance, continuity
21
22 of care and information provision to deal with practical issues. The provision of information is
23
24 recognised as one of the most important factors of supportive cancer care across the trajectory
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26 (Husson *et al.* 2013). Some patients however, reported difficulty receiving emotional support in
27
28 these interventions (Jefford *et al.* 2011; Mordenti *et al.* 2013), that was perhaps reflective of a lack
29
30 of discussion around psychosocial well-being issues (Taylor *et al.* 2011). More holistic and
31
32 complex interventions with a psychosocial component may be required to address this practice gap.
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39 The need for patient choice is noted throughout the review, in terms of satisfaction with the
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41 intervention content (Jefford *et al.* 2011), but more so in recurrent findings relating to a lack of
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43 choice over intervention delivery mode (Hafiji *et al.* 2012), and call timing (Jefford *et al.* 2011;
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45 Kilbourn *et al.* 2013; Hafiji *et al.* 2012; Kelly 1999; Sandgren *et al.* 2000). Both higher and lower
46
47 quality data suggests that the utility of telephone-delivered interventions may be enhanced when
48
49 they are shaped by and respond to individual patient need (Zheng *et al.* 2013; Kilbourn *et al.* 2013;
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51 Young *et al.* 2013; Hafiji *et al.* 2012) rather than a global guideline. Patient participation and
52
53 involvement in care planning is seen as a core element of patient-centred care (Kitson *et al.* 2010),
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55 without which, services may be delivered and resources employed wastefully. Clearer identification
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3 of patients' needs at specific time points during the cancer journey, and choice of access to services
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5 may aid in providing truly patient-centred care.
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10 Whilst the majority of studies indicated the potential positive effect of telephone delivered
11 interventions on patient-provider relationships and health care communication, a small number
12 alluded to a negative impact (Beaver *et al.* 2010; Young *et al.* 2013; Delaney *et al.* 2009; Mordenti
13 *et al.* 2013), and patient preferences for alternative methods of contact (Cimprich *et al.* 2005;
14 Sandgren *et al.* 2000). These findings are evident in lower quality quantitative data and reflected in
15 a few studies providing higher quality qualitative data. Nevertheless, the depth of understanding in
16 relation to motivators for such responses is lacking. The impact of telephone delivery on
17 professional-patient relationships is one area that may benefit from further qualitative investigation
18 into different stakeholder perspectives.
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32 High levels of overall satisfaction (Heidrich *et al.* 2009; Zhang *et al.* 2013; Sardell *et al.* 2000;
33 Kilbourn *et al.* 2013; Alter *et al.* 1996; Badger *et al.* 2013; Booker *et al.* 2004; Hafiji *et al.* 2012;
34 Hagopian & Rubenstein 1990; Steginga *et al.* 2008; Kimman *et al.* 2010b; Leahy *et al.* 2013; Cox
35 *et al.* 2005; Beaver *et al.* 2009; Anderson 2010; Jensen *et al.* 2011; Craven *et al.* 2013; Garrett *et al.*
36 2013; Hegel *et al.* 2011) were reported, however interpretation of these results should take into
37 account the context of this assessment. Findings from low quality data and in some cases feedback
38 were provided during the delivery of a telephone intervention (Booker *et al.* 2004; Kelly 1999;
39 Anderson 2010; Craven *et al.* 2013), with potential for respondent and social desirability biases.
40 Despite being a 'comforting' indicator, overall satisfaction as a measure does not provide sufficient
41 detail to enable key features of intervention design to be identified and maximised.
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56 To our knowledge, this is the first systematic review of patients acceptability and satisfaction of
57 telephone-delivered for cancer patients both during and after treatment. It incorporates data from a
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3 variety of research strategies. The methodological approach undertaken was comprehensive and
4
5 transparent, with a search strategy that the authors believe enabled identification of the majority of
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7 papers meeting the inclusion criteria. The approach to include both qualitative (nested and non-
8
9 nested) and quantitative designs, maximises the likelihood that the full breadth of responses to
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11 telephone based care is included in our synthesis. Similarities between the data reported by stand
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13 alone and nested process evaluations lends weight to the likely components determining
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15 acceptability in practice.
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19 Several limitations to the review are to be acknowledged. Although the review included a variety of
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21 methodological approaches, only those with interventions delivered by HCP's were included in
22
23 order to have a more homogenous level of educational training. This systematic review dealt only
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25 with data presented within the original research paper itself, and it is appreciated that word limits
26
27 and space restrictions for publication may influence selective rather than complete reporting of
28
29 findings. The review excluded studies that were not published in English, and although a detailed
30
31 protocol was developed for the review, it is recognised that relevant studies may have been
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33 unintentionally missed.
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39 **Conclusions**

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41 This systematic review reveals an insight into current published research pertaining to the
42
43 acceptability and satisfaction of support delivered by telephone for cancer patients during or after
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45 therapy. Telephone based interventions are a potential resource that can make healthcare initiatives
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47 accessible to a variety of patients, and as such merit further investigation. The growth in telephone
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49 delivered interventions, especially in the form of smaller 'pilot' or 'feasibility' studies is evident but
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51 more often participants perspectives are not featured within the study aims and therefore are often
52
53 not part of a rigorous study design, leading to several reports of low quality qualitative data derived
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55 through post hoc comments or informal feedback. Subsequent research in this field should reflect
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3 the need to incorporate a high quality qualitative component, in order to ensure that the
4
5 individuality of participants and their experiences are represented.
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9 The disease specific nature of the majority of studies and differing nature of the interventions,
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11 presents difficulty in generalising findings, however the consistency data emerging from these
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13 studies allows a useful understanding of patients perceptions. Current evidence relating to the
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15 acceptability and satisfaction of support delivered by telephone for cancer patients during or after
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17 therapy suggests it is convenient, provides positive personal experiences, enhances accessibility to
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19 healthcare professionals, and provides a familiar environment in which to facilitate potentially
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21 sensitive health care discussions. Data synthesis suggests a need for services (and individual,
22
23 facilitating professionals) to have a clearer understanding of the needs of patients in order to
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25 develop truly patient centred interventions that reflect individual's needs and choices.
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Figure 1. Study selection process

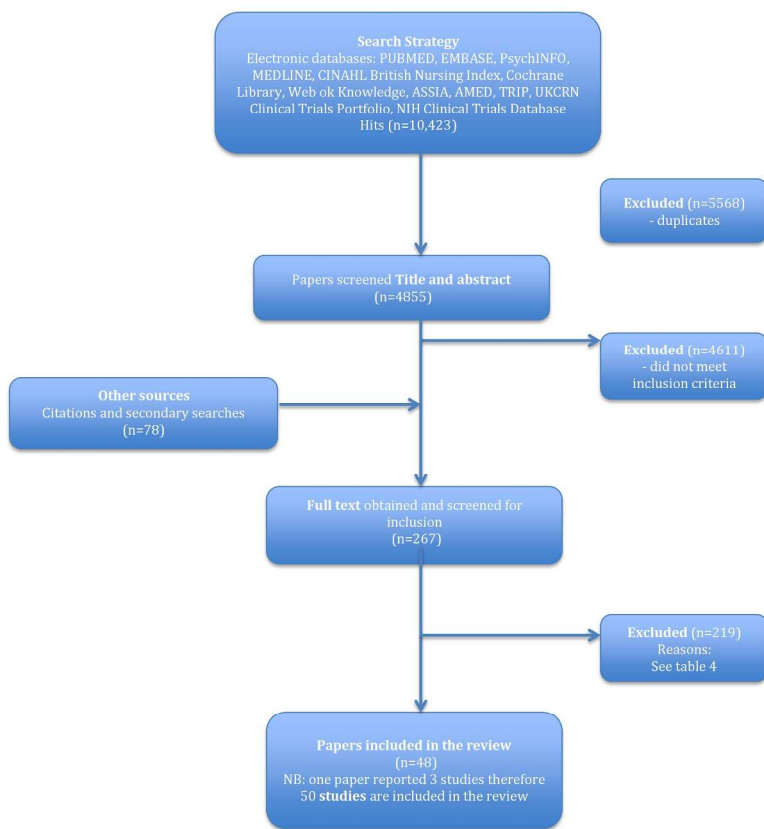


Figure 1 Study Selection Process

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Table 1 – Study Inclusion / Exclusion criteria

Inclusion Criteria	Exclusion criteria
Participant related	Support not instigated by the service provider i.e. where participants call in to a helpline.
Treatment related	Telephone intervention not related to cancer treatment (i.e. smoking cessation). Use of automated voice response systems (not personal interactions)
Intervention related	Studies not in English language (due to time and resource constraints) Proxy reports of patient satisfaction (i.e. healthcare professionals or carers reporting satisfaction)
Type of study	Published studies providing data relating to any of the outcome concepts will be included (including RCT's, controlled and uncontrolled studies, qualitative studies, theses, conference proceedings, but not individual case studies)
Type of outcomes	Perceptions of patients as service users Reporting acceptability of telephone as a means of support / intervention delivery in any part of the document. For the purpose of this review, acceptability is defined as acceptance, acceptability, satisfaction with, opinions, beliefs, views, attitudes, impressions, experience or perceptions of patients having participated in a telephone intervention.

Table 2 – Databases searched

Database
PUBMED
EMBASE (1974 to present)
PsychINFO (1989 to present)
MEDLINE (1948 to present)
CINAHL (1981 to present)
British Nursing Index (1985 to present)
Cochrane Library
Web of Knowledge
ASSIA (Applied Social Sciences Index and Abstracts)
AMED (Allied and Complementary Medicine Database – includes palliative care)
TRIP (Turning Research into Practice) Database
UKCRN clinical trials portfolio
NIH Clinical trials database

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For Peer Review

Table 3a Search Terms for the Systematic Review

Search words	Search Term	Terms covered
DIAGNOSTIC TERMS		
Cancer	cancer* neoplasm* carcinoma* tumour* adenocarcinoma* tumor* malignan* oncolog*	Cancer/ cancerous/ cancers Neoplasm/ neoplasms Carcinoma/ carcinomas Tumour/ tumours Adenocarcinoma/ adenocarcinomas Tumor/ tumors Malignant/ malignancy Oncology/ oncological
TREATMENT TERMS		
Treatment	surg* *ectomy chemotherap* radiotherap* immunotherap* biological AND therap* hormon* AND therap* radioimmuno* AND therap* stem AND cell AND transplant* bone AND marrow AND transplant* hematopoietic AND stem AND cell AND transplant photodynamic AND therap* radiofrequency AND ablation treatment	Surgery/ surgical Lumpectomy/prostatectomy.... Chemotherapy/ chemotherapies/ chemotherapeutic Radiotherapy/ radiotherapies Immunotherapy/ immunotherapies biological therapy/ therapies hormone/ hormonal AND therapy/therapies radioimmunotherapy radioimmunotherapies stem cell transplant/ stem cell transplantation bone marrow transplant/ bone marrow transplantation hematopoietic stem cell transplant/ haematopoetic stem cell transplantation photodynamic therapy/ therapies radiofrequency ablation treatment
INTERVENTION TERMS		
Intervention	phone / telephone / mobile phone / mobile telephone remote / non face-to-face / distance	
SUPPORT TERMS		
Support	monitor* follow-up follow AND up information* AND support social AND support psych* AND support emotion* AND support	Monitor/ monitored/ monitoring Information Psychological/ psychosocial Emotion/ emotions/ emotional
ACCEPTIBILITY TERMS		
Acceptability / satisfaction	accepta* adequa* satisf* opinion* belief* view* attitude* impression* experience* perception* uptake barrier* valu*	Acceptable/ acceptability/ acceptance Adequate/ adequacy/ adequateness satisfaction / satisfy/ satisfied/ satisfactory opinion/ opinions belief/ beliefs view/ views attitude/ attitudes impression/ impressions experience/ experiences perception/perceptions uptake barrier/ barriers value/ values

Table 3b Search Terms used for specific databases

Database	Search words
TRIP terms	phone OR telephone OR mobile OR remote OR distance AND Cancer
UKCRN clinical trials portfolio	Type – Cancer Any of the following - phone OR telephone OR mobile OR remote OR non face-to-face OR distance
NIH Clinical trials database	Cancer AND Phone OR telephone OR mobile AND Adult or senior

For Peer Review

Table 4 – Summary of excluded papers

Reason for rejection	Number of papers from 1 st search	Number of papers from 2 nd search
Lack of information to confirm inclusion e.g. conference proceedings, no further information/ data available from authors	12	2
Failed to meet participant criteria e.g. <75% receiving treatment, no cancer diagnosis, participants not patients	14	8
Failed to meet intervention criteria e.g. patient initiated calls, not HCP delivered, no telephone intervention, videophone, telemedicine, telephone for data collection not intervention	44	19
Failed to meet outcome criteria e.g. not patient perceptions, not satisfaction data, no results	54	27
Other e.g. not primary research studies, data in another paper	34	5
Total number of papers rejected	158	61

HCP – Healthcare Professional

Table 5 Overall Study Quality

Tabulated data from study quality assessment of bias in RCT's and non-RCT's providing quantitative acceptability / satisfaction data from all cohorts (based on Cochrane Collaboration Risk Bias of Assessment Tool for RCT's and for nRCT's (Higgins & Green, 2011))

First Author / Date	Sequence generation	Random allocation	Selection bias (nRCT's)	Performance bias (intervention)	Attrition reporting	Outcome reporting	Completeness of data reporting	Overall study quality
RCT's								
Badger et al, 2013	H	H	N/A	L	H	H	H	L
Beaver et al, 2009	L	L	N/A	L	L	L	L	H
Beaver et al, 2012	L	L	N/A	H	L	H	L	M
Hegel et al, 2011	H	H	N/A	L	L	H	H	M
Heidrich et al, 2009 Pilot Study 1	H	H	N/A	L	L	H	U	M
Heidrich et al, 2009 Pilot Study 2	H	H	N/A	L	L	H	U	M
Kimman et al, 2010	L	L	N/A	L	H	L	L	H
Munro et al, 1994	U	U	N/A	L	L	L	L	M
Non-RCT's								
Hafiji et al, 2012	N/A	N/A	H	L	U	U	U	L
Leahy et al, 2013	N/A	N/A	U	L	H	L	H	M

N/A – Not applicable, H – High, L – Low, M – Medium, U - Unclear

Tabulated data from study quality assessment of bias in RCT's, non-RCT's and single group studies providing quantitative acceptability / satisfaction data from the intervention group only (based on Cochrane Collaboration Risk Bias of Assessment Tool for nRCT's (Higgins & Green, 2011))

First Author / Date	Selection bias	Performance bias (intervention)	Attrition reporting	Outcome reporting	Completeness of Data	Overall study quality
Anderson, 2010	H	L	L	H	H	M
Barsevick et al, 2002	H	L	U	H	H	L
Booker et al, 2004	H	U	L	U	U	L
Cimprich et al, 2005	L	L	L	U	U	M
Cirillo et al, 2014	U	U	U	H	H	L
Cox et al, 2005	H	L	U	H	H	L
Cox et al, 2008	H	L	U	L	L	M
Craven et al, 2013	H	L	L	U	U	L
Delaney et al, 2009	H	L	L	H	L	M
Garrett et al, 2013	H	U	H	U	U	L
Hagopian & Rubenstein, 1990	H	L	U	H	H	L
Heidrich et al, 2009 Pilot Study 3	H	L	U	H	H	L
Inman et al, 2011	U	L	L	U	L	M
Jensen et al, 2011	U	U	L	L	L	M
Kelly, 1999	H	L	H	H	H	L
Kilbourn et al, 2013	H	L	U	L	L	M
Kim et al, 2011	L	L	L	H	L	M
Livingston et al, 2010	H	L	L	L	U	M
Marcus et al, 1993	H	H	L	U	U	L
Marcus et al, 2010	H	L	U	L	L	M
Mordenti et al, 2013	H	H	U	L	L	L
Reese et al, 2012	H	L	L	L	L	M
Reese et al, 2014	U	L	L	H	H	M
Salonen et al, 2009	H	H	L	U	L	M
Sandgren et al, 2000	U	L	U	L	L	M
Sardell et al, 2000	H	L	L	U	H	M
Smithies et al, 2007	H	L	L	U	H	M
Steginga et al, 2007	H	L	L	H	H	M
Young et al, 2010	H	L	L	H	H	M
Young et al, 2013	L	L	L	U	U	L
Zhang et al, 2013	L	L	U	L	L	H

H – High, L – Low, M – Medium, U – Unclear

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Tabulated data from study quality bias assessment of studies providing high quality qualitative data (Critical Appraisal Skills Programme (CASP) tool (Critical Appraisal Skills Programme, 2013))

Author / Date	Appropriate methodology	Appropriate design	Data collection methods	Data saturation	Researcher role in question formulation	Researcher role in data collection	Analysis	Rigor	Sufficient data	Clear findings	Findings discussed in relation to the original research question	Overall study quality
Archer et al, 2014	L	L	L	H	H	L	L	H	L	L	L	M
Beaver et al, 2010	L	L	L	U	U	U	L	L	L	L	L	H
Campbell et al, 2007	L	H	L	H	H	H	L	L	L	L	L	H
Donnelly et al, 2013	L	L	L	H	L	L	L	L	L	L	L	H
Wilmoth et al, 2006	L	L	L	H	L	H	L	L	L	L	L	H
Zheng et al, 2013	L	L	L	L	H	H	L	L	L	L	L	H

H – High, L – Low, M – Medium, U - Unclear

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Table 6: Patient and Study Characteristics

First author/ Date/ Country/ Study Quality	Study population N/ age / %male Recruitment	Study design Intervention intensity/ duration/ other components / structure Delivery Agent Comparison Group (s)	Outcome type Method / instrument	Timing of assessment Acceptability Data (AD): N providing data (% of total receiving intervention)	Outcome data type (Quality)
Alter et al, 1996 USA <i>Medium</i>	Colorectal cancer pts receiving CT N=8 Range 59-79yrs (TSS only) 63% male Recruited via oncologist NOS	Quasi-experimental - Single group Interpersonal counselling 4 sessions bi-weekly over 8 weeks Semi-structured technique Nurse-led	Feasibility Discussion of intervention - NOS	6 weeks after end of study AD: N=7 (88%)	Qual (low)
Anderson 2010 UK <i>Medium</i>	Prostate cancer pts receiving various treatments N=67 Range 67-97yrs (TSS only) 100% male Recruited via OP oncology clinic	Non-experimental - Single group Telephone FU for symptom and PSA monitoring 3, 6 or 12 monthly Intervention followed specific guideline Nurse-led	Satisfaction Likert scale – 12 q's (provided) Not validated	Pts still receiving intervention AD: N=43 (64%)	Quant (low)
Archer et al, 2014 UK <i>Medium</i>	Gynaecological cancer pts post-surgery N=34 Mean 66yrs (range 53-80) 0% male Recruited via regional cancer centre	Non-experimental - Single group Enhanced Recovery Team telephone call post discharge - NOS Structure NR Enhanced Recovery Team – NOS	Experience Semi-structured interviews - NOS	Post intervention NOS AD: N=14 (41%)	Qual (high)
Badger et al, 2013 USA <i>Low</i>	Breast cancer pts receiving treatment - NOS N=51 (TSS only) Mean a) 52 yrs – SD14, b) 58yrs – SD11, c) 47 yrs – SD12 (TSS only) 0% male Recruited via local cancer centre, oncologists offices, support groups, self-referral	RCT – 3 groups (patient & dyad) a) Telephone Health Education (n=18) b) Telephone Interpersonal Counselling (n=20) c) Video Interpersonal Counselling (n=13) 8 weekly sessions for patients (4 bi-weekly sessions for dyads) Protocol for counselling stated to be the same a) Information specialist, b) & c) Social Worker	Satisfaction Open ended questions (topic provided) - NOS	End of intervention period AD: a) THE N=9 (50%) b) TIC N=18 (90%) c) VIC N=13 (100%)	Qual (low)
Barsevick et al, 2002 USA <i>Low</i>	Breast, lung, colon, prostate cancer pts receiving CT or RT a) Intervention N=80, b) Ctrl N=182 Age NR/ Gender NR Recruitment NR	nRCT – 2 groups a) Energy conservation and activity management for pts developing fatigue 3 sessions weekly (over 3 weeks in CT group and 5 weeks in RT group) Semi-structured technique Nurse-led b) Standard care	Acceptability / Helpfulness Interview with 10 closed q's (topics provided) Not validated	End of study (NOS) AD: Intervention group only N=64 (80%)	Quant (low)
Beaver et al, 2009 UK <i>High</i>	Breast cancer pts post-surgery/ receiving RT / CT a) Intervention N=191, b) Ctrl N=183 Mean 63yrs – SD10.1 (TSS only)/ 0% male Recruited via DGH or Breast Cancer Unit	RCT – 2 groups a) Telephone FU – general and symptom monitoring, support, long-term issues Timing in line with standard FU Structured intervention Nurse b) Standard hospital FU	Satisfaction Questionnaire designed & piloted - NOS Not validated	Start, mid and end of study AD: a) Intervention mid trial N=138 (72%) end trial N=154 (81%) b) Ctrl mid trial N=121 (66%) end trial N=145 (79%)	Quant (low)
Beaver et al, 2010 UK <i>High</i>	Breast cancer pts receiving surgery, RT or CT N=28 Mean 61yrs (range 48-80) (TSS only)/ 0% male Computer selected random sample of patients receiving a telephone intervention [64]	Nested - Single group Telephone FU – general and symptom monitoring, support, long-term issues Timing in line with standard FU Structured intervention Nurse-led	Explore and describe views Semi-structured interviews (topics provided)	Timing of assessment not reported AD: N=28 (100%)	Qual (high)
Beaver et al, 2012 UK <i>Medium</i>	Colorectal cancer pts receiving RT, CT or surgery a) Intervention N=31, b) Ctrl N =31 Mean a) Intervention 73.6yrs – SD7.6, b) Ctrl 72.4 yrs – SD8.2 a) Intervention 64% male b) Ctrl 52% male	RCT – 2 groups a) Telephone FU - general and symptom monitoring, support, long-term issues Timing in line with standard FU Structured intervention Nurse-led	Satisfaction Adapted Likert scale – (topics provided)	Baseline and one additional time point (chosen to maximize number of sessions received) AD:	Quant (low)

	Recruited via hospital OP department	b) Standard hospital FU	Not validated Likert scale - overall satisfaction Not validated	a) Intervention N=25 (80%) b) Ctrl N=25 (80%)	
Booker et al, 2004 UK <i>Low</i>	Prostate cancer pts post RT N=36 Age NR 100% male Recruited via tertiary referral centre (convenience sample)	Non-experimental - Single group Telephone FU – symptom monitoring, addressing concerns, information provision Timing / duration NR Structured interview & proforma Nurse-led	Acceptability Closed q's (topics provided) Not validated Comments (qual data)	After telephone FU call AD: N=36 (100%)	Quant (low) Qual (low)
Campbell et al, 2007 USA <i>High</i>	Prostate cancer pts (and partner) post prostatectomy or receiving HT or WW a) Intervention N=15, b) Ctrl N=18 Mean 59.8 yrs – SD8 100% male Recruited via urology clinic or self-referral from community	RCT – 2 groups a) Coping skills training - education, training, information, problem solving, motivation & coping skills 6 sessions weekly (over 6 weeks) Structured intervention with outline for each session Psychologist-led b) Standard care	Experience 1 open-ended question (provided)	After final session Intervention only AD: Intervention group only N=15 (100%)	Qual (high)
Cimprich et al, 2005 USA <i>Medium</i>	Breast cancer pts receiving surgery, RT or CT combinations a) Intervention N=25, b) Ctrl N=24 Mean 48 yrs – SD8 0% male Recruited via cancer centre or oncology clinic	RCT – 2 groups a) Self- management and survivorship programme teaching skills, addressing concerns, providing information 4 sessions bi-weekly over 8 weeks (2 group sessions, 2 telephone sessions) Structured intervention with manual Nurse + health educator led b) Standard care	Usefulness Likert scale 1q (topic provided) Not validated 2 open-ended q's (topic provided) & comments	At end of 4 th (final) session AD: Intervention group only N=22 (88%)	Quant (low) Qual (low)
Girillo et al, 2014 Italy <i>Low</i>	Variety cancer pts receiving CT or targeted agents N=81 Mean 68yrs (range 33-91) (TSS only) 46% male (TSS only) Recruited via medical oncology department	Quasi-experimental - Single group Patient monitoring service – information and support for side effect management Phone calls at days 7 & 14 after 1 st treatment, then at day 14 of 2 nd treatment (additional 2 face to face clinic visits) Patient self reported questionnaire as basis Nurse-led	Usefulness Rating scale – NOS Not validated	Timing of assessment NR AD: N=63 (78%)	Quant (low)
Cox et al, 2005 UK <i>Low</i>	Variety cancer pts having received anticancer therapy - NOS a) Intervention N=47, b) Ctrl N=58 Mean 59.8yrs –SD11.6 (TSS only) 53% male Recruited via 2 cancer centres	RCT – 2 groups a) Trial exit intervention – information provision & emotional support 2 sessions, 2 weeks apart (one session face-to-face) Structured intervention following trial feedback sheet Research Nurse-led b) Standard care	Satisfaction Adapted MISS (26 items) Not validated	7-10 days post trial AD: Intervention group only N=44 (n=93%)	Quant (low)
Cox et al, 2008 UK <i>Medium</i>	Ovarian cancer pts having completed initial cancer treatment - NOS N=52 Mean 62yrs – SD10.89 0% male Recruitment NR	Quasi-experimental - Single group Telephone FU post treatment – monitoring, information provision, support, practical advice, coping strategies 3 sessions, once every 3 months over 10 months Structured intervention with checklist Nurse-led	Satisfaction Likert scale (4 domains provided) Validated in other studies Open section on general views of care experienced - NOS	End of 10mth period AD: N=46 (100%)	Quant (low) Qual (low)
Craven et al, 2013 UK <i>Low</i>	Colorectal cancer pts receiving targeted agents N=30 (random sample of 298 receiving intervention) Mean 67.3yrs – SD11.3 (TSS only) 54% male (TSS only) Recruited via large cancer centre	Non-experimental audit - Single group Telephone FU – monitoring, toxicity management, evaluation, support Phone calls at days 3 & 10 after 1 st treatment, then at day 10 of 2 nd treatment Protocol to be followed Colorectal cancer nurse specialist led	Satisfaction / Use / Helpfulness Questionnaire (topics provided) Not validated	Nurse led FU on-going AD: N=30 (n=298 already receiving intervention)	Quant (low)
Delaney et al, 2009 Canada <i>Medium</i>	Neurological cancer pts post RT / CT N=13 Median 66yrs (range 45-67) (TSS only) 77% male (TSS only) Recruited via neuro-oncology OP clinic	Quasi-experimental - Single group Education and support in CT administration, side effect management, supportive therapy, medication interactions & questions 3 sessions – 1 hospital visit and calls at 1 and 5 days later (one session face-to-face) Standardised counselling Pharmacist-led	Feasibility / Usefulness Likert scale 2 q's (provided) Not validated	End of study - NOS AD: N=11 (85%)	Quant (low)

1 2 3 4 5 6 7	Dixon 2010 Canada <i>Low</i>	Variety cancer pts post RT N=53 Mean 69yrs (TSS only) 63% male (TSS only) Recruitment NR	Quasi-experimental audit - Single group Telephone FU post RT – monitoring of side effects / information provision 2 sessions 1 and 4 weeks post RT Structured intervention (ESAS) Radiation therapist-led	Feedback/ satisfaction Comments during telephone calls	During intervention - NOS AD: N=38 (72%)	Qual (low)
8 9 10 11 12	Donnelly et al, 2013 UK <i>High</i>	Gynaecological cancer pts having completed or receiving treatment - NOS (Patients having participated in RCT) N=31 Mean 55yrs (range 38-78) 0% male Recruited following invitation to all patients involved in RCT	Nested – sample from 2 groups a) Telephone contact - symptom checklist b) Telephone contact + physical activity program - levels of activity, barriers, goals, symptom checklist Weekly telephone calls –NOS – over 12 weeks NR - Telephone component Physiotherapist – Activity Program	Experiences Focus groups – open ended questions (topics provided)	Timing of assessment NR AD: N=16 (52%)	Qual (high)
13 14 15 16 17	Garrett et al, 2013 USA <i>Low</i>	Variety cancer pts receiving surgery, CT or RT N=66 Range 20-69yrs 48% male Recruited via oncology clinics and rural community cancer centre	Quasi-experimental - Single group Cancer Survivor Telephone Education and Personal Support Program (C-STEPS) - Choice to participate in either / both modules: Uncertainty & Stress Management / Healthy Diet & Physical Exercise 6 weekly sessions Semi-structured intervention following worksheet Occupational Therapist led	Satisfaction / Helpfulness Likert scale questionnaire (topics provided) Not validated	After completion of program – NOS AD: N=46 (70%)	Quant (low)
18 19 20 21 22	Hafiji et al, 2012 New Zealand (NZ) & UK <i>Low</i>	Non melanoma skin cancer pts post-surgery a) Intervention N=187, b) Ctrl N=54 Mean a) Intervention 64.5yrs (range 21-91) NZ, mean 64.8yrs (range 20-90) UK, b) Ctrl mean 64.5yrs (range 34-87) a) Intervention 57% male, b) Ctrl 56% male Recruited via 2 regional MMS centres	nRCT – 2 groups a) Telephone call – monitoring, information provision 1 call – the evening post surgery Semi-structured – specific and open Q's Surgeon-led b) Standard care	Satisfaction / Perception Likert scale – NOS Not validated Comments / feedback from patients	5-7 days after phone call AD: Intervention N= 187 (% unclear) Ctrl N=54 (% unclear)	Quant (low) Qual (low)
23 24 25 26 27	Hagopian & Rubenstein 1990 USA <i>Low</i>	Variety cancer pts receiving RT a) Intervention N=27, b) Ctrl N=28 Mean 58yrs (range 22-84) (TSS only) 33% male (TSS only) Recruited via hospital RT Department	RCT – 2 groups a) Telephone FU during RT – side effect monitoring, information, anticipatory guidance, coping strategies, address concerns Weekly, continuing 4-6 weeks post RT Semi-structured, standardised set of topics Nurse-led b) Standard care	Satisfaction / Helpfulness Questionnaire – NOS Not validated Comments from patients	Timing assessment NR AD: Intervention group only N=18 (55%)	Quant (low) Qual (low)
28 29 30 31	Hegel et al, 2011 USA <i>Medium</i>	Breast cancer pts receiving CT a) Intervention N=14, b) Ctrl N=15 Mean 52.6yrs – SD9.4 0% male Recruited via cancer centre OP clinic	RCT – 2 groups a) Problem solving- information provision, motivating, goal setting, support & problem solving 6 weekly sessions Semi structured intervention following work sheet Occupational Therapist-led b) Standard care	Acceptability / Satisfaction Likert scale 2 q's (topics provided) Not validated	6 weeks after the end of the intervention AD: Intervention N=9 (64%) Ctrl N=15 (100%)	Quant (low)
32 33 34 35 36 37 38	Heidrich et al, 2009 USA <i>Medium</i>	Breast cancer pts receiving surgery, CT, RT, HT combinations a) Intervention N=20, b) Ctrl N=21 Mean 72.5 yrs (range 68-86) 0% male Recruited via cancer centre OP clinic + community advertising	Pilot Study 1: RCT – 2 groups a) Individualized Representational Intervention to Improve Symptom Management – support, symptom monitoring, management plan and strategies, information provision 5 sessions (baseline, 2, 4, 6 and 8 weeks later) (Baseline session face to face) Protocol driven intervention Nurse-led b) Standard care	Acceptability / Satisfaction 8 q's (topics provided) Not validated	At 6 and 10 weeks post intervention AD: Intervention N=20 (100%) Ctrl N=21 (100%)	Quant (low)
39 40 41 42		Breast cancer pts receiving surgery, CT, RT, HT combinations a) Intervention N=9, b) Ctrl N=11 Mean 69.7yrs (range 65-82) 0% male Recruited via cancer centre OP clinic + community advertising	Pilot Study 2: RCT – 2 groups a) Individualized Representational Intervention to Improve Symptom Management – support, symptom monitoring, management plan and strategies, information provision 5 sessions (baseline, 2, 4, 6 and 8 weeks later) (Baseline session face to face)	Acceptability / Satisfaction 8 q's (topics provided) Not validated	At 2, 4, 6, 8 and 16 weeks AD: Intervention N=9 (100%) Ctrl N=11 (100%)	Quant (low)

<i>Medium</i>		Protocol driven intervention Nurse-led			
	Breast cancer pts receiving surgery, CT, RT, HT combinations N=20 Mean 67.9yrs (range 65-73) 0% male	b) Standard care Pilot Study 3: Single group Individualized Representational Intervention to Improve Symptom Management – support, symptom monitoring, management plan and strategies, information provision 5 sessions (baseline, 2, 4, 6 and 8 weeks later) (Baseline session face to face) Protocol driven intervention Nurse-led	Acceptability / Satisfaction 8 q's (topics provided) Not validated	At 2, 4, 6, 8 and 16 weeks AD: N=20 (100%)	Quant (low)
<i>Low</i>	Recruited via cancer centre OP clinic + community advertising				
Inman et al, 2011 USA <i>Medium</i>	Prostate cancer pts post-surgery a) Intervention N=30, b) Ctrl N=30 Mean 60.2yrs- SD6.99 100% male Recruited via academic centre	RCT – 2 groups a) Educational Intervention – monitoring, education, information provision 1 session, 3-5 days post discharge Intervention algorithm for educational reinforcement Nurse-led b) Standard care	Satisfaction / Helpfulness 1 closed q (provided) Not validated Comments from patients during calls	30 days after discharge AD: Intervention group only N=30 (100%)	Quant (low) Qual (low)
Jefford et al, 2011 Australia <i>Medium</i>	Colorectal cancer pts receiving surgery, CT, RT, combinations N=10 Mean 55yrs (range 35-71) (TSS only) 50% male (TSS only) Recruited via cancer centre	Quasi-experimental - Single group Post treatment support package – education, information provision, monitoring, support, coaching, health promotion 4 sessions (1 st at end of treatment, then 1, 3 and 7 weeks later) (one session face-to-face - package included DVD and written information) Semi-structured intervention – manual for 1 st session Nurse	Satisfaction Interview - NOS	After 3 rd phone call (NOS) AD: N=8 (80%)	Qual (low)
Jensen et al, 2011 Denmark <i>Medium</i>	Prostate cancer pts following prostatectomy a) Intervention N=46, b) Ctrl N=49 Mean a) Intervention 64.1yrs (95%CI 62.5-65.8), b) Ctrl 62.5yrs (95%CI 60.9-64.2) 100% male Recruited via urology centre	RCT – 2 groups a) Telephone FU – NOS 1 session 3 days after discharge Semi structured intervention – manual for interview Nurse-led b) Standard care	Satisfaction Likert questionnaire (topic provided) – NOS Not validated	2 weeks post-op AD: Intervention only N=46 (100%)	Quant (low)
Kelly et al, 1999 Canada <i>Low</i>	Ovarian cancer pts receiving CT N=50 Age NR 0% male Recruited via OP CT clinic	Non-experimental - Single group Telephone FU – symptom monitoring, information provision, support Calls 5-7 days post CT and once every 3-4 weeks during CT – NOS Semi-structured intervention – assessment tool to follow Nurse-led	Benefit / Acceptability / Helpfulness 4 closed q's (topics provided) Not validated 2 open q's (topics provided) Not validated	Evaluation time point NR AD: N=31 (62%)	Quant (low) Qual (low)
Kilbourn et al, 2013 USA <i>Low</i>	Head & neck cancer pts receiving RT N=16 Mean 59.66yrs – SD9.78 (TSS only) 76.2% male (TSS only) Recruited via radiation oncology clinic (convenience sample)	Quasi-experimental - Single group Easing + Alleviating Symptoms during treatment – stress management, coping skills training, psycho-education to increase understanding of treatment related side effects 2-10 sessions (50% received 4-6 sessions) Structure NR Psychologist led	Satisfaction Likert scale 2 q's (topics provided) Not validated Exit interviews - NOS	Evaluation timepoint NR AD: Process evaluation N=11 (69%) Qualitative interviews N=8 (50%)	Quant (low) Qual (low)
Kim et al, 2011 South Korea <i>Medium</i>	Breast cancer pts receiving surgery, RT, CT or HT a) Intervention N=23, b) Ctrl N=22 Mean a) Intervention 44.6yrs (range 26-69), b) Ctrl NR (TSS only) 0% male Recruited via cancer centre	RCT – 2 groups a) Individualised diet and exercise counselling – monitoring, motivation, support, information provision 12 weekly sessions Semi-structured – use of telephone counselling protocol Nurse-led b) Standard care	Feasibility / Helpfulness Likert scale (topics provided) Not validated	Baseline and 12 weeks after intervention AD: Intervention group only N=14 (61%)	Quant (low)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49	Kimman et al, 2010 Netherlands <i>High</i>	Breast cancer pts receiving surgery, RT, CT or HT Study compared hospital FU groups (Ctrl a) + c) vs telephone FU groups (Intervention b) + d)) b+d) Intervention N=120, a+c) Ctrl N=149 Mean b+d) Intervention 55yrs – SD9, (TSS only) a+c) Ctrl 56 yrs – SD10.7 0% male Recruited via 7 hospitals + 2 RT clinics	RCT – 4 groups a) Standard hospital FU - 4 sessions, 3monthly b) Telephone FU- 4 sessions, 3 monthly c) Hospital FU + Educational Group Program 2 EGP sessions within 3 months after treatment d) Telephone FU + Educational Group Program 4 sessions, 3 monthly and 2 EGP sessions within 3 months after treatment (Telephone FU – symptom monitoring, treatment side effect management, drug compliance) (Educational Group Program – education, information coping strategies, group discussion) (Groups c) + d) received 2 group sessions) Structured educational group sessions Nurse delivered telephone FU Nurse + psychologist delivered EGP	Satisfaction PSQIII Validated	Baseline, 3, 6 and 12 mths post treatment AD: Intervention N=120 (100%) Ctrl N=149 (100%)	Quant (low)
Leahy et al 2013 Australia <i>Medium</i>	Prostate cancer pts receiving HT, RT, brachytherapy, prostatectomy or WW a) Intervention N=86, b) Ctrl N=83 Mean a) Intervention 68.4yrs (range 49-80), b) Ctrl 70.2yrs (range 55-82) 100% male Recruited via cancer centre OP clinics	nRCT – 2 groups a) Telephone FU – general and symptom monitoring, PSA level review, information provision Once every 6 months – NOS Structured intervention following evidence based algorithms Nurse-led b) Standard care	Satisfaction Adapted Satisfaction with Consultation Scale Not re-validated	1 week after intervention AD: Intervention N=86 (100%) Ctrl N=83 (100%)	Quant (low)	
Livingston et al 2010 Australia <i>Medium</i>	Colorectal cancer pts post CT N=59 Range 30-79yrs 63% male Recruited via 6 public + private health services	Quasi-experimental - Single group Screening for depression post CT – DIT completion, information provision, support, referral to psycho-oncologist 2 sessions (1 st 7-10 days post recruitment, 2 nd 4 weeks later) Intervention based on clinical practice guidelines Nurse-led	Experience / Perception / Satisfaction Likert scale questionnaire (topics provided) Not validated Telephone interview with open questions - NOS	1 mth after last call AD: N=45 (100%) NR	Quant (low) Qual (low)	
Marcus et al, 1993 USA <i>Low</i>	Breast cancer pts post adjuvant treatment N=30 Mean 49.9yrs (range 40-70) 0% male Recruited via 4 Hospitals + 1 cancer clinic	Quasi-experimental - Single group Telephone counselling – interviews assessing physical and psychosocial concerns – NOS Timing NR Structure NR Counsellor-led	Feasibility 1 evaluation indicator (provided) Not validated	Evaluation timing NR AD: N=30 (100%)	Quant (low)	
Marcus et al, 2010 USA <i>Medium</i>	Breast cancer pts post treatment a) Intervention N=152, b) Ctrl N=152 'About half the sample was 50 yrs of age or less' a) Intervention (range <40-70+) b) Ctrl (range <40-70+) 0% male Recruited in 21 hospitals & medical centres nationwide	RCT – 2 groups a) Booklet provided listing psychosocial + rehabilitation services in their community + telephone counselling over 12 months – 6 modules: living with uncertainty, physical change, self-change, sexuality, relationships, economic change 16 sessions - 9 sessions at bi-wkly intervals, 7 sessions monthly Structured – thematic modules, guides, worksheets (prioritised by participant) Psycho-oncology counsellors b) Booklet provided listing psychosocial + rehabilitation services in their community	Helpfulness Questionnaire on component of intervention which was most helpful (provided) Not validated	End of intervention AD: Intervention group only N=129 (85%)	Quant (low)	
Mordenti et al, 2013 Italy <i>Low</i>	Patients receiving CT - NOS N=170 Age NR Gender NR Recruitment - consecutive patients invited - NOS	Quasi-experimental - Single group Telephone support post CT – monitoring, education and support One call the 1 st day after 1 st cycle of CT Structured (3q's) Nurse-led	Usefulness Survey (topics provided) Not validated	At the following visit AD: N=170 (100%)	Quant (low)	
Munro et al, 1994 UK <i>Medium</i>	Variety cancer pts receiving RT a) Intervention N=49, b) Ctrl N=51 Mean a) Intervention 63yrs (range 30-87), b) Ctrl 65yrs (range 37-88)	RCT - 2 groups a) Telephone intervention between clinic visits – general, side effect and symptom monitoring, information provision 4 sessions on days 4, 8, 14 and 18 post RT Semi-structured calls with open ended q's	Helpfulness Likert scale 1q (provided) Not validated	4 weeks after RT AD: Intervention N=49 (100%) Ctrl N=51 (100%)	Quant (low)	

	Recruited via RT department	Radiographer, nurse or doctor led			
Reese et al, 2012 USA <i>Medium</i>	Colorectal cancer pts post-surgery, RT / CT combinations (and partners) N=9 Mean 61.6yrs – SD14.5 56% male Recruited via cancer centre registry, medical record screening, GI cancer clinic, self-referral	b) Standard care Quasi-experimental - Single group Intimacy enhancement program – education, behavioural skills for coping, improving sexual intimacy, intimacy building activities Weekly sessions over mean 5.1wks (SD1.1) Manual provided Agent NR	Acceptability / Ease of participation / Helpfulness Likert scale 4q's (topics provided) Not validated	Evaluation timing NR AD: N=9 (and 9 partners) (100%)	Quant (low)
Reese et al, 2014 USA <i>Medium</i>	Colorectal cancer pts post-surgery / on treatment (and partners) a) Intervention N= 10, b) Ctrl N=8 Mean a) Intervention 48.7yrs – SD11, b) Ctrl 57.4yrs – SD8.4 a) Intervention 60% male, b) Ctrl 60% male Recruited via cancer centre registry, medical record screening, GI cancer clinic, self-referral	RCT – 2 groups a) Intimacy enhancement program – education, behavioural skills for coping, improving sexual intimacy, intimacy building activities Weekly sessions over mean 4.8wks (SD2.5) Manual provided Psychologist-led b) Standard care	Acceptability / Ease of participation / Helpfulness Likert scale 3q's (topics provided) Not validated	Evaluation timing NR AD: Intervention group only N=10 (and 10 partners) (100%)	Quant (low)
Salonen et al, 2009 Finland <i>Medium</i>	Breast cancer pts post-surgery a) Intervention N=120, b) Ctrl N=108, Mean a) Intervention 57yrs (range 31-75), b) Ctrl 56 yrs (range 24-75) 0% male Recruited via departments of Oncology + Surgery	nRCT – 2 groups a) Social support – education, information provision, instructions for exercise, support, health education 1 session 1 week post surgery Semi-structured interview manual Physiotherapist-led b) Standard care	Perception Revised likert scale [80] Validated 1 open ended q (topic provided)	Within 2 weeks after discharge AD: Intervention group only N=unclear (unclear %)	Quant (low) Qual (low)
Sandgren et al, 2000 USA <i>Medium</i>	Breast cancer pts receiving surgery, RT, CT or HT combinations a) Intervention N=24, b) Ctrl N=29 Mean a) Intervention 51.23yrs – SD 12.5, b) Ctrl age NR (TSS only) 0% male Recruited via hospital – NOS	RCT – 2 groups a) Cognitive Behavioral Therapy – support, teaching coping skills, managing anxiety & stress, problem solving 10 sessions (weekly for 4 weeks then bi-weekly) Structure NR Clinical Psychology Masters Candidate-led b) Standard care	Value Likert scale 4q's (provided) Not validated	4 and 10 mth FU intervals AD: Intervention group only N=24 (100%)	Quant (low)
Sardell et al, 2000 UK <i>Medium</i>	Neurological cancer pts receiving surgery or RT N=45 Median 50yrs (range 23-69) (TSS only) 67% male (TSS only) Recruited via hospital - NOS	nRCT – 2 groups a) Telephone FU – general & symptom monitoring, medication issues, support, information, ADL assessment 3 sessions (monthly over 3 months) Semi-structured questionnaire Nurse-led b) Standard care	Satisfaction Satisfaction questionnaire (topics provided) Not validated	Unclear - pts still receiving telephone FU AD: Intervention group only N=22 (49%)	Quant (low)
Smithies et al, 2009 Canada <i>Medium</i>	Breast cancer pts receiving CT N=20 Mean 54yrs – SD8.2 0% male Recruited via hospital cancer centre	Quasi-experimental - Single group Telephone support post 1 st chemotherapy – symptom monitoring, provision of information, support 1 session (average 3 days post CT, range 1-5) Checklist questionnaire Member of research team, nurse or doctor	Value / Utility Likert scale 1q (topic provided) Not validated Method NR	Post consultation - NOS AD: N=20 (100%)	Quant (low) Qual (low)
Steginga et al, 2007 Australia <i>Medium</i>	Prostate cancer pts receiving RT, brachytherapy, prostatectomy combinations or WW N=20 Mean 63yrs – SD6.7 100% male Recruited via hospital from treating urologist	Quasi-experimental - Single group Telephone counselling – decision support, stress management, preparation for treatment, adjustment to cancer, problem solving, coping strategies 4 sessions (2 pre-treatment and at 4 and 7 weeks post) Nurse-led Structured counselling protocols	Acceptability Likert scale 1q (topic provided) Not validated Verbatim responses (topics provided)	2 mths post treatment AD: N=20 (100%)	Quant (low) Qual (low)
Wilmoth et al, 2006	Breast cancer pts receiving surgery, CT, RT, HT or no treatment	Nested – subjects from 2 groups a) Educational materials and telephone social support – information provision	Comments about the project	End of study (13mths)	

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USA <i>High</i>	a) Intervention N=35, b) Ctrl N=42 Mean a) Intervention 57yrs, b) Ctrl 59yrs 0% male Sample of patients participating in an RCT with a telephone intervention vs standard care Recruited via hospital + community - NOS	Unclear number of telephone sessions (initially weekly, then bi-weekly, then monthly up to 13 months post surgery) Semi-structured intervention with manual supporting educational materials Nurse-led b) Standard care + educational materials	Interview with schedule (topics provided)	AD: Intervention group only N=35 (100%)	Qual (high)
Young et al, 2010 Australia <i>Medium</i>	Colorectal cancer pts post-surgery / receiving adjuvant therapy a) Intervention N=20, b) Ctrl N=21 Mean a) Intervention 66.9yrs, b) Ctrl 64.5yrs (TSS only) a) Intervention 60% male, b) Ctrl 50% male (TSS only) Recruited via hospital	nRCT – 2 groups a) Telephone support – general and side effect monitoring, information provision, emotional support, advice 5 sessions (day 3 and 10, 1mth, 3mths and 6mths post discharge) Standardised checklist screening for patients needs Nurse-led b) Standard care	Views of content and timing Questionnaire – NOS Not validated	6mths after hospital discharge AD: Intervention group only N=13 (65%)	Quant (low) Qual (low)
Young et al, 2013 Australia <i>Low</i>	Colorectal cancer pts post-surgery a) Intervention N=387, b) Ctrl N=369 Mean a) Intervention 68.6yrs SD12.2, b) Ctrl 67.0yrs – SD12.1 a) Intervention 56.8% male, b) Ctrl 54.2% male Recruitment NR	RCT – 2 groups a) Telephone support – general and side effect monitoring, information provision, emotional support, advice 5 sessions (day 3 and 10, 1mth, 3mths and 6mths post discharge) Standardised checklist screening for patients needs Nurse-led b) Standard care	Views of intervention Likert scale 13 statements (provided) Not validated Semi-structured interviews - NOS	Questionnaire at 6mths Every 3 mths semi-structured interviews AD: Intervention group only Quantitative N=350 (90%) Qualitative n=29 (7%)	Quant (low) Qual (low)
Zhang et al, 2013 China <i>High</i>	Rectal cancer pts post-surgery a) Intervention N=59, b) Ctrl N=60 Mean a) Intervention 52.9yrs – SD13.3, b) Ctrl 55.3yrs – SD13.7 a) Intervention 59.6% male, b) Ctrl 70.6% male Recruited via regional hospitals	RCT – 2 groups a) Telephone FU for post-op adjustment – monitoring, motivation, information provision 1 st call 3-7 days post discharge, 2 nd call on day 14-20, 3 rd call on day 23-27 Structured program Nurse-led b) Standard care	Satisfaction Likert scale 1q (topic provided) Not validated	At 1 and 3 months after discharge AD: Intervention group only N=52 (88%)	Quant (low)
Zheng et al, 2013 China <i>High</i>	Colorectal cancer pts post-surgery Random sample of patients receiving telephone intervention (N= 59 – main study) [31] Recruitment NR	Nested – Single group Telephone FU for post-op adjustment – monitoring, motivation, information provision 1 st call 3-7 days post discharge, 2 nd call on day 14-20, 3 rd call on day 23-27 Structured program Nurse	Explore perceptions of telephone FU Semi-structured interviews (topics provided)	Evaluation timing NR AD: N=11 (NR)	Qual (high)

AD – Acceptability Data, CI – Confidence Interval, CT – Chemotherapy, DGH – District General Hospital, ESAS – Edmonton Symptom Assessment Score, FU – Follow up, HT – Hormone Therapy, MISS – Medical Interview Satisfaction Scale, MMS – Mohs Micrographic Surgery, NOS – Not Otherwise Specified, NR – Not Reported, nRCT – non-Randomised Controlled Trial, OP – Outpatient, PSQ III - Ware's Patient Satisfaction Questionnaire III, RCT – Randomised Controlled Trial, RT – Radiotherapy, SD – Standard Deviation, THE - Telephone health education, TIC - Telephone interpersonal counselling, TSS – Total Sample Size, VIC - Videophone interpersonal counselling, WW – Watch & Wait

Table 7: Acceptability / Satisfaction Data Quality

Qualitative Data

First Author / Date	Qualitative / open ended questioning	Sufficient data to support findings	Outcome descriptor	Acceptability data quality
Alter et al, 1996	Y	N	Discussion of intervention - NOS	Low
Archer et al, 2014	Y	Y	Semi structured interviews -NOS	High
Badger et al, 2013	N	N	Open ended q's (topic provided)	Low
Beaver et al, 2010	Y	Y	Semi structured interviews (topics provided)	High
Booker et al, 2004	Y	N	Comments	Low
Campbell et al, 2007	Y	Y	1q – what was it like to undergo CST by telephone?	High
Cimprich et al, 2005	Y	U	2 open ended q's (topics provided)	Low
Cox et al, 2008	Y	U	Open section on general views of care experienced - NOS	Low
Dixon, 2010	U	U	Comments during telephone calls	Low
Donnelly et al, 2013	Y	Y	Focus groups with open ended q's (topics provided)	High
Hafiji et al, 2012	Y	U	Comments / feedback	Low
Hagopian & Rubenstein, 1990	U	U	Comments	Low
Inman et al, 2011	Y	U	Comments from patients during calls	Low
Jefford et al, 2011	Y	Y	Interview - NOS	High
Kelly, 1999	Y	U	2 open q's (improvements / positive effects)	Low
Kilbourn et al, 2013	U	U	Exit interviews - NOS	Low
Livingston et al, 2010	Y	N	Telephone interview with open questions - NOS	Low
Salonen et al, 2009	Y	N	1 open ended q (most appropriate timing for call)	Low
Smithies et al, 2009	U	U	Method NR	Low
Steginga et al, 2007	Y	U	Verbatim responses (topics provided)	Low
Wilmoth et al, 2006	Y	Y	Interviews with schedule (topics provided)	High
Young et al, 2013	Y	U	Semi structured interviews	Low
Zheng et al, 2013	Y	Y	Semi structured interviews (topics provided)	High

CST – coping skills training, N – No, NOS – Not Otherwise Specified, NR – Not reported, U – Unclear, Y - Yes

Quantitative Data

Author / Date	Qualitative / open ended questioning	Sufficient data to support findings	Outcome descriptor	Acceptability data quality
Anderson, 2010	N	N	Likert scale - 12 q's (provided) – NV	Low
Barsevick et al, 2002	N	N	Interview - 10 closed q's (topics provided) – NV	Low
Beaver et al, 2009	N	U	Questionnaire designed and piloted – NOS – NV	Low
Beaver et al, 2012	N	Y	Adapted Likert scale questionnaire – (topics provided) – NV Likert scale - overall satisfaction – NV	Low
Booker et al, 2004	N	Y	Closed q's (topics provided) – NV	Low
Cimprich et al, 2005	N	Y	Likert scale 1 closed q (provided) – NV	Low
Cirillo et al, 2014	N	U	Rating scale – NOS – NV	Low
Cox et al, 2005	N	Y	Adapted MISS (26 items) - NV	Low
Cox et al, 2008	N	N	Likert scale questionnaire (4 domains provided) - V	Low
Craven et al 2013	U	U	Questionnaire (topics provided) – NV	Low
Delaney et al, 2009	N	Y	Likert scale 2q's – (provided) – NV	Low
Garrett et al, 2013	N	N	Likert scale questionnaire (topics provided) – NV	Low
Hafji et al, 2012	N	N	Likert scale questionnaire – NOS – NV	Low
Hagopian & Rubenstein 1990	U	U	Questionnaire – NOS – NV	Low
Hegel et al, 2011	N	Y	Likert scale 2q's (topics provided) – NV	Low
Heidrich et al, 2009 (Pilot Study 1)	N	U	8 q's (topics provided) – NV	Low
Heidrich et al, 2009 (Pilot Study 2)	N	U	8 q's (topics provided) – NV	Low
Heidrich et al, 2009 (Pilot Study 3)	N	U	8 q's (topics provided) – NV	Low
Inman et al, 2011	Y	U	1 closed q (provided)	Low
Jensen et al, 2011	U	U	Likert questionnaire (topic provided) – NOS - NV	Low
Kelly, 1999	N	U	4 closed q's (topics provided) - NV	Low
Kilbourn et al, 2013	N	Y	Likert scale 2 closed q's (topics provided) – NV	Low
Kim et al, 2011	N	N	Likert scale questionnaire (topics provided) – NV	Low
Kimman et al, 2010	N	N	PSQIII – V	Low
Leahy et al, 2013	N	N	Adapted Satisfaction with Consultation Scale - NV	Low

Livingston et al, 2010	N	N	Likert scale questionnaire (topics provided) – NV	Low
Marcus et al, 1993	N	N	Single evaluation indicator (topic provided) - NV	Low
Marcus et al, 2010	N	Y	Questionnaire which component most helpful (provided) - NV	Low
Mordenti et al, 2013	N	U	Survey (topics provided) – NV	Low
Munro et al, 1994	N	N	Likert scale 1q (provided) – NV	Low
Reese et al, 2012	N	Y	Likert scale 4q's (topics provided) – NV	Low
Reese et al, 2014	N	Y	Likert scale 3q's - (topics provided) – NV	Low
Salonen et al, 2009	N	Y	Revised likert scale questionnaire (Kaunonen, 2000) - V	Low
Sandgren et al, 2000	N	N	Likert scale 4q's (provided) – NV	Low
Sardell et al, 2000	N	N	Satisfaction questionnaire (topics provided) - NV	Low
Smithies et al, 2009	N	Y	Likert scale 1q (topic provided) – NV	
Steginga et al, 2007	N	Y	Likert scale 1q (topic provided) - NV	Low
Young et al, 2010	U	U	Questionnaire – NOS – NV	Low
Young et al, 2013	N	Y	Likert scale 13 statements (provided) – NV	Low
Zhang et al, 2013	N	Y	Likert scale 1q (topic provided) - NV	Low

CST – coping skills training, MISS – Medical Interview Satisfaction Scale, N – No, NOS – Not Otherwise Specified, NV – Not Validated, PSQ III – Patient Satisfaction Questionnaire III, U – Unclear, V – Validated, Y - Yes

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Table 8 Summary of Outcomes

	Intervention Category	TFU post initial diagnosis and treatment				Side effect monitoring during/ post treatment				Psycho-educational interventions			
		Qualitative Data		Quantitative Data		Qualitative Data		Quantitative Data		Qualitative Data		Quantitative Data	
		High	Low	High*	Low	High	Low	High*	Low	High	Low	High*	Low
Positive Findings	Convenience	√	√		√	√		√	√	√	√		√
	Familiar environment / facilitating sensitive discussions	√	√							√	√		√
	Positive personal experiences	√				√	√		√	√	√		√
	Accessibility to HCP/ continuity of care	√			√	√	√		√				
	Support / reassurance					√	√		√	√	√		√
	Positive aspects of intervention structure	√								√			
	Positive Patient – HCP relationship				√		√		√				√
	Prefer telephone based intervention						√				√		
Negative Findings	Overall satisfaction				√				√		√		√
	Lack of contact - Peer / HCP	√											
	Negative Patient – HCP relationship	√							√		√		
	Barrier to emotional discussions					√							
	Not useful for all patients					√	√						√
	Changes to Intervention structure					√	√		√	√	√		√
	Lack of choice – receiving calls/ timing						√				√		
Preference for other intervention methods								√		√		√	

HCP – Healthcare Professional, TC – telephone consultation
 *no high quality data, √ - at least one reported finding