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# The psychosocial and emotional experiences of cancer patients during the COVID-19 pandemic: A systematic review

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## ABSTRACT

**Background:** COVID-19 was declared a pandemic by the World Health Organization on March 11th, 2020. Global social lockdowns were instigated to reduce spread and prevent health-services from becoming overwhelmed. People having treatment for cancer are known to have heightened psychological/emotional burden. The combined impact of managing pandemic regulations alongside this may present additional burden. The purpose of this systematic review is to examine current evidence of the psychological and emotional impact of COVID-19 on people with cancer, early in the pandemic.

**Methods:** Five electronic databases were searched (Embase, Global Health, HMIC, PsychINFO, CINAHL) from September 2019 to October 2021. Qualitative, quantitative and mixed-method primary research studies exploring emotional and psychological impacts of COVID-19 on cancer patients, limited to English language, were included. Quality appraisal was conducted using the MMAT.

**Results:** Fifty-one papers, with 27,356 people from 21 countries treated for cancer, were included. 43 studies were quantitative with a survey method approach, six studies qualitative and four used a mixed methods design. MMAT score was mostly two or three. Four themes were identified: Emotional aspects and Quality of Life; Psychosocial aspects; Impact of COVID-19 on self; Impact of COVID-19 on cancer, with themes overlapping.

**Conclusion:** Whilst emotional/psychological impacts such as anxiety, isolation, employment fears, and uncertainty about the future were potentially universal concerns early in the pandemic, they may have been particularly acute for people living with cancer and represent complex, overlapping factors. As COVID-19 continues to impact health-services and society, it is important to focus on any ongoing impact to the experience of cancer patients. Most of the studies reviewed used tools that do not provide deeper understanding of how and why emotional states of people with cancer were affected. Further qualitative work may reveal patterns of what was unique to cancer patients during the pandemic, compared to general populations.

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## Introduction

SARS-COV-2 (COVID-19) was declared a pandemic by the World Health Organization [1] on March 11th, 2020. In response to the pandemic, governments worldwide instigated various social lockdowns to reduce the spread of the virus and prevent individual health services from becoming overwhelmed. Broadly, this involved restrictions on nonessential internal and international

travel, the closure of schools and nonessential businesses, a ban on public gatherings, and encouraging working from home. Varying government financial support put in place worldwide [2]. Media scrutiny has been intense and involved global coverage and daily reporting of infection and death rates [3].

Healthcare responses at the beginning of the pandemic required screening, planned diagnostic, surgical procedures, and follow-up services to be put on hold, which over time, for example in the UK, resulted in a 50% reduction in ordinary admissions and an 80% reduction in day-case care when compared to the previous year [4]. As part of the healthcare response, planned cancer surgical procedures and systematic treatments were initially paused. In the UK,

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the National Institute for Health, and Care Excellence [5] produced guidance for Oncology teams on systematic treatments, advising on prioritization and modifications of drug, mode of delivery and timings of systemic regimes for some patients with cancer. New ways of working such as virtual or telephone consultations were rapidly put in place [6]. People being investigated or having treatment for cancer were advised not to visit the hospital unless under very specific circumstances, and accompanying support was only allowed depending on particular individual need [7–9].

Discontinuation or curtailment of hospital visitors for inpatients was also instigated [10]. Furthermore, people having treatment for cancer were considered clinically vulnerable and were advised to shield at home for the foreseeable future [11]. Since the declaration of the pandemic, there have been ongoing waves of COVID-19 infection cases worldwide and this has led to responsive instigation and easing of protective guidance such as social distancing, stringent hand hygiene, mask wearing and the need for further social lockdowns. Whilst the UK vaccination program, started in December 2021, proved to be a gamechanger [12], viral mutation has continued to present problems and a prolonged situation of change and uncertainty is likely to persist [13].

People having treatment for cancer are already known to have heightened psychological and emotional burden [14] with a major source of distress originating from managing uncertainty [15]. The combined impact of managing daily pandemic regulations, difficulties with diagnosis, treatment, follow-up, visitor policy, and distinguishing between possible COVID-19 infection and underlying malignancy [16] may present additional burden. In adjunct to this the impact on individual finances, public transport, and access to support networks has the potential to further impact burden [17]. COVID-19 is predicted to remain an issue within the community [18] and society is likely to be living with the impact in varying degrees for some time. Many of the changes to delivery of care necessitated by COVID-19, such as remote video consultations, are also likely to remain in the long-term [19].

Research into the impact of COVID-19 on people with cancer was seen as a priority and many individual studies were published in the first wave of infections. Much of the data reflects the first lockdown and focuses on the practical experience of people with cancer. Whilst some of the harms, such as delays and disruption to screening, diagnosis and treatment are now known to us [6], it is important to establish what is known within the literature on the emotional and psychological impact of COVID-19 on cancer patients to inform future service development and identify forthcoming research priorities in this field.

All of this important work beginning in the early periods of the pandemic has produced a vast amount of evidence, therefore it is timely to attempt to collate the work and consider the body of literature as a whole. This systematic review aims to review the current evidence of the impact of COVID-19 on people with cancer in order to capture the psychosocial and emotional experiences during the early timeline of the COVID-19 pandemic.

Overall aim of the review:

To describe the experience of patients with cancer during the initial wave of the pandemic.

Objectives:

- To collate and synthesize evidence relating to psychosocial outcomes of anxiety, depression, and quality of life of cancer patients during the COVID-19 pandemic.
- To describe cancer patient's perceptions of COVID-19 in relation to their own health.
- To describe how the COVID-19 pandemic has impacted on the lives of patients psychologically and socially.
- To describe evidence of cancer related psychological sequelae impacted by the COVID-19 pandemic.

## Methods

This systematic review used the PRISMA guidelines to ensure transparent and complete reporting [20]. The paragraphs below outline the methods employed in this systematic review.

### Data sources

Relevant studies were identified by two authors (EH and SG) searching the following databases: Embase, Global Health, HMC, PsychINFO, and CINAHL. The time frame was September 2019 to October 2021. Additional resources on the PubMed database, such as “find similar search” and reference lists, were used to identify relevant studies. The main search terms included COVID “AND” “OR” COVID-19 “AND” “OR” Coronavirus “AND” “OR” 2019-nCoV “AND” “OR” experience “AND” “OR” cancer. To ensure that the search was comprehensive, and studies had not been missed or wrongly excluded, general search engines (Google, Yahoo), and reference lists of included papers were checked.

### Study eligibility

Qualitative, quantitative, and mixed methods primary research studies exploring the emotional and psychological impact of COVID-19 on cancer patients were included. Papers included were limited to the English language. Publication years were restricted from September 2019 to October 2021.

Inclusion criteria were defined using the following components:

- (P) Patient population: people diagnosed and treated for cancer prior and during the pandemic, any diagnosis, any stage of interest.
- (I) Intervention: received cancer treatment: surgery, chemotherapy radiotherapy, or immunotherapy alone or in combination.
- (C) Comparator: none.
- (O) Outcome: the phenomenon of interest is the reporting of the emotional and psychological impact of COVID-19 on cancer patients.
- (S) Study designs of interest: prospective observational cohort studies, cross-sectional studies, and qualitative studies.

The following exclusion criteria were determined:

- Studies that excluded cancer patients (ie, careers only, family, partners).
- Studies not reporting primary research.
- Studies including a pediatric population or studies including patients under the age of 18.
- Studies not assessing/reporting experiences of emotional or psychological impact using either a qualitative or quantitative method (ie, studies looking at changes in service provision, cancer treatment outcomes).
- Animal studies.

### Study selection and quality assessment

The relevance of studies was assessed based on title and abstract. To reduce the risk of bias all authors conducted a quality appraisal of the papers both independently and in pairs using the Mixed Methods Appraisal Tool (MMAT) [21]. The results were cross-checked within the author pair and any differences were discussed with all other authors to achieve consensus. Assessment using the MMAT includes a total of 25 criteria and 2 screening questions. The MMAT can appraise five different categories of study designs: (a) qualitative, (b) randomized controlled trial, (c) non-randomized, (d) quantitative descriptive and (e) mixed methods studies. For each category, there are five core criteria that are the

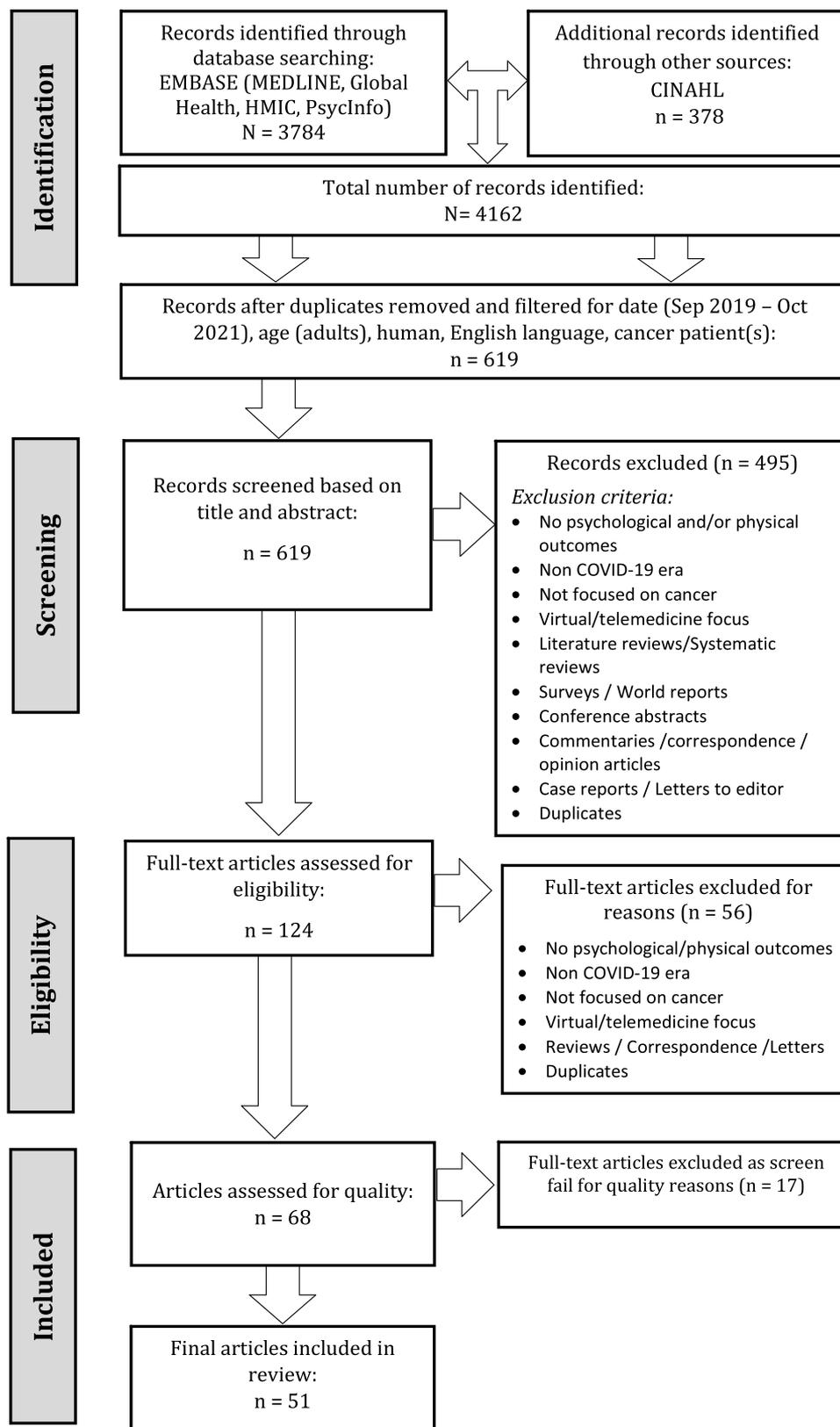


Fig. 1. Flow chart identification, screening and eligible papers.

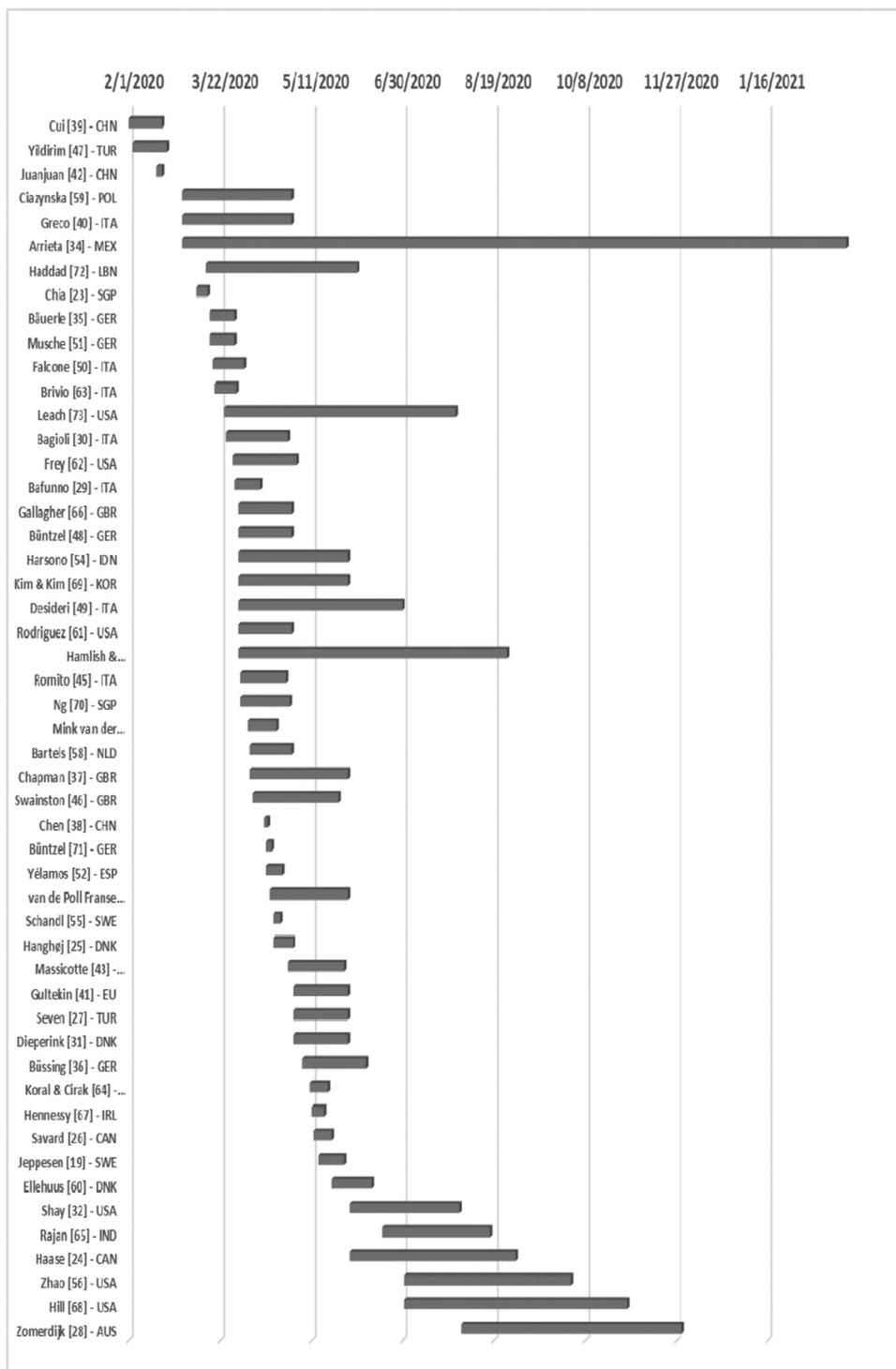


Fig. 2. Timeline of studies.

most relevant to appraise the methodological quality of studies. Each criterion is rated on a scale 'yes,' 'no,' and 'can't tell' [21].

## Results

The search identified 619 papers for consideration (Fig. 1). The majority (n=495) were excluded on title or after reading the abstract. Seventy-three papers were excluded on reading the full text. In total, 51 papers were included in this review.

## Study characteristics

These 51 studies reported on 27,356 people treated for cancer. More than half the studies (52%, n=27) included participants with various cancer types as opposed to focusing on a specific cancer cohort. Studies were primarily cross-sectional cohorts and reported some aspect of the impact of COVID-19 on the emotional or psychological wellbeing of cancer patients. With regards to the level of evidence, most studies were prospective cohort studies and are primary reports within the classification category B (A: ran-

**Table 1**  
Data extraction and quality scores.

Author	Location	Sample characteristics	Design	Outcome measures	Quality score
Arrieta [34]	MEX	<ul style="list-style-type: none"> <li>• N = 548, 57% female</li> <li>• Mean age: 61.5 years</li> <li>• Lung cancers</li> </ul>	<ul style="list-style-type: none"> <li>• Cross-sectional study</li> </ul>	DASS-21	***
Bafunno [29]	IT	<ul style="list-style-type: none"> <li>• N = 178, 51% female</li> <li>• age range: 22–85 years</li> <li>• Various cancers</li> </ul>	<ul style="list-style-type: none"> <li>• Cross-sectional survey and structured interviews</li> </ul>	HADS, IES-R	*****
Bartels [58]	NL	<ul style="list-style-type: none"> <li>• N = 169, 38% female</li> <li>• Age range: 38–92 years</li> <li>• Various cancers</li> </ul>	<ul style="list-style-type: none"> <li>• Longitudinal quantitative study</li> </ul>	BPI EORTC-C15-PAL, EORTC-BM22, EQ5D-3L, NVCS	*****
Bäuerle [35]	GER	<ul style="list-style-type: none"> <li>• N = 150, 52% female</li> <li>• Age range: 45–74 years</li> <li>• Various cancers</li> </ul>	<ul style="list-style-type: none"> <li>• Cross-sectional online survey</li> </ul>	EQ5D-3L, PHQ-2, GAD 2, Distress thermometer, NVCS	**
Biagioli [30]	IT	<ul style="list-style-type: none"> <li>• N = 195, 76% female</li> <li>• Age range: 25–78 years</li> <li>• Various cancers</li> </ul>	<ul style="list-style-type: none"> <li>• Cross-sectional survey</li> <li>• Mixed methods</li> </ul>	ISOLA scale plus 2 open-ended questions	*****
Brivio [63]	IT	<ul style="list-style-type: none"> <li>• N = 152, 100% female</li> <li>• Mean age: 51.07 years</li> <li>• Breast cancer</li> </ul>	<ul style="list-style-type: none"> <li>• Cross-sectional survey</li> </ul>	FR-SBS, FR-FOI, FR-USR, PACT, MLCS, PANAS	***
Büntzel [48]	GER	<ul style="list-style-type: none"> <li>• N = 146, gender not reported</li> <li>• 60 years: 54%</li> <li>• Various cancers</li> </ul>	<ul style="list-style-type: none"> <li>• Cross-sectional, online survey</li> </ul>	NVCS	**
Büntzel [71]	GER	<ul style="list-style-type: none"> <li>• N = 433, gender not reported</li> <li>• Age range: 50–60 years</li> <li>• Various cancers</li> </ul>	<ul style="list-style-type: none"> <li>• Cross-sectional online survey</li> </ul>	NVCS plus distress thermometer	***
Büssing [36]	GER	<ul style="list-style-type: none"> <li>• N = 292, 28% female</li> <li>• Age range: 29–92 years</li> <li>• Various cancers</li> </ul>	<ul style="list-style-type: none"> <li>• Cross-sectional online survey</li> </ul>	PCS, SpREUK-15, GrAw-7, MLQ, WHO-5, PBS, NVCS	***
Chapman [37]	UK	<ul style="list-style-type: none"> <li>• N = 234, 100% female</li> <li>• Age range: 27–78 years</li> <li>• Breast cancer</li> </ul>	<ul style="list-style-type: none"> <li>• Cross-sectional survey</li> </ul>	DQ; FACT-Cog, V3; RRS; HADS; PSWQ; CCI; WLQ; NVCS	**
Chen [38]	CH	<ul style="list-style-type: none"> <li>• N = 326, 47% female</li> <li>• Age range: 18–60 years</li> <li>• Various cancers</li> </ul>	<ul style="list-style-type: none"> <li>• Cross-sectional survey</li> </ul>	FoP-Q-SF, SAS, SDS, NVCS	**
Chia [23]	SNG	<ul style="list-style-type: none"> <li>• N = 16, 37.5% female</li> <li>• Mean age: 60.1 years</li> <li>• Various cancers</li> </ul>	<ul style="list-style-type: none"> <li>• Qualitative: 1:1 interview</li> </ul>	Semistructured questions	****
Ciążyńska [59]	POL	<ul style="list-style-type: none"> <li>• N = 19, gender not reported</li> <li>• Age not reported</li> <li>• Various cancers</li> </ul>	<ul style="list-style-type: none"> <li>• Cross-sectional survey</li> </ul>	EORTC QLQ-C30 NVCS	****
Cui [39]	CH	<ul style="list-style-type: none"> <li>• N = 207, 100% female</li> <li>• Age &lt;55 years: 72%</li> <li>• Breast cancer</li> </ul>	<ul style="list-style-type: none"> <li>• Cross-sectional online survey</li> </ul>	PHQ-9, GAD-7, ISI, and IES-R for PTSD	****
Desideri [49]	IT	<ul style="list-style-type: none"> <li>• N = 125, 66.4% female</li> <li>• Mean age range: 61–75 years</li> <li>• Various cancers</li> </ul>	<ul style="list-style-type: none"> <li>• Cross-sectional survey</li> </ul>	EORTC QLQ-C30, FACIT-TS-G, NVCS	**
Dieperink [31]	DK	<ul style="list-style-type: none"> <li>• N = 40, 65% female</li> <li>• Age range: 31–82 years (mean age: 62.2 years)</li> <li>• Various cancers</li> </ul>	<ul style="list-style-type: none"> <li>• Cross-sectional survey and telephone interviews</li> <li>• Mixed methods</li> </ul>	NCCN DT, CD-RISC2	*****
Ellehuus [60]	DK	<ul style="list-style-type: none"> <li>• N = 2239, 43% female</li> <li>• Mean age: 67 years</li> <li>• Hematological cancer</li> </ul>	<ul style="list-style-type: none"> <li>• Cross-sectional survey</li> </ul>	EORTC-QLQ-30, GAD-7	****
Falcone [50]	IT	<ul style="list-style-type: none"> <li>• N = 70, 57% female</li> <li>• Mean age: 57 years</li> <li>• Endocrine cancers</li> </ul>	<ul style="list-style-type: none"> <li>• Cross-sectional survey</li> </ul>	EORTC QLQ-C30; C-19EIS; NVCS	**

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Table 1 (continued)

Author	Location	Sample characteristics	Design	Outcome measures	Quality score
Frey [62]	USA + 5 OTHER COUNTRIES	<ul style="list-style-type: none"> <li>• N = 603, 100% female</li> <li>• &lt;65 years 73.58%</li> <li>• Ovarian cancer</li> </ul>	<ul style="list-style-type: none"> <li>• Cross-sectional survey</li> </ul>	HADS, CWS	***
Gallagher [66]	UK	<ul style="list-style-type: none"> <li>• N = 518, 60% female</li> <li>• Mean age range: 59.2–68.4 years</li> <li>• Various cancers</li> </ul>	<ul style="list-style-type: none"> <li>• Longitudinal survey</li> </ul>	GHQI	****
Greco [40]	IT	<ul style="list-style-type: none"> <li>• N = 50, 24% female</li> <li>• Median age: 65.5 years</li> <li>• Urological cancer</li> </ul>	<ul style="list-style-type: none"> <li>• Cross-sectional survey</li> </ul>	SF-36	**
Gultekin [41]	16 EU COUNTRIES	<ul style="list-style-type: none"> <li>• N = 1251, 100% female</li> <li>• Age range: 18–89 years</li> <li>• Gynecological cancer</li> </ul>	<ul style="list-style-type: none"> <li>• Cross-sectional survey</li> </ul>	NVCS, HADS	***
Haase [24]	CAN	<ul style="list-style-type: none"> <li>• N = 30, 57% female</li> <li>• Age range: 63–83 years</li> <li>• Breast or colorectal</li> </ul>	<ul style="list-style-type: none"> <li>• Qualitative: 1:1 telephone interview</li> </ul>	Semi-structured questions	*****
Haddad [72]	LEB	<ul style="list-style-type: none"> <li>• N = 216, 64.8% female</li> <li>• Age range: 23–90 years</li> <li>• Various cancers</li> </ul>	<ul style="list-style-type: none"> <li>• Cross sectional, online survey</li> </ul>	ECOG, NVCS	**
Hamlsh & Papautsky [53]	USA	<ul style="list-style-type: none"> <li>• N = 570, 100% female</li> <li>• Mean age: 47.92 years</li> <li>• Breast cancer</li> </ul>	<ul style="list-style-type: none"> <li>• Cross-sectional survey</li> </ul>	NVCS	***
Hanghøj [25]	DK	<ul style="list-style-type: none"> <li>• N = 13, 69% female</li> <li>• Age range: 18–29 years</li> <li>• Various cancers</li> </ul>	<ul style="list-style-type: none"> <li>• Qualitative 1:1 phone interview</li> </ul>	Questions re COVID experience	*****
Harsono [54]	IND	<ul style="list-style-type: none"> <li>• N = 100, 100% female</li> <li>• Mean age: 45.3 years</li> <li>• Gynecological cancer</li> </ul>	<ul style="list-style-type: none"> <li>• Cross-sectional survey</li> </ul>	DAS-42	**
Hennessy [67]	IRE	<ul style="list-style-type: none"> <li>• N = 100, 40% female</li> <li>• Age range: 31–80+ years</li> <li>• Various cancers</li> </ul>	<ul style="list-style-type: none"> <li>• Cross sectional survey</li> </ul>	NVCS	***
Hill [68]	USA & WW	<ul style="list-style-type: none"> <li>• N = 100, 100% female</li> <li>• Age range: 22–77 years</li> <li>• Ovarian cancer</li> </ul>	<ul style="list-style-type: none"> <li>• Cross-sectional study</li> </ul>	IUS-12, FCS, DASS-21, NVCS	***
Jeppesen [19]	DK	<ul style="list-style-type: none"> <li>• N = 4,571, 60% female</li> <li>• Age range: 18–90+ years</li> <li>• Various cancers</li> </ul>	<ul style="list-style-type: none"> <li>• Cross-sectional survey</li> </ul>	NVCS, EORTC QLQ-C30	*****
Juanjuan [42]	CHN	<ul style="list-style-type: none"> <li>• N = 658, 100% female</li> <li>• ≤40 years: 23%</li> <li>• Breast cancer</li> </ul>	<ul style="list-style-type: none"> <li>• Cross-sectional study</li> </ul>	GAD-7; PHQ-9; ISI; IES-R, NVCS	***
Kim and Kim [69]	S KOREA	<ul style="list-style-type: none"> <li>• N = 100, 100% female</li> <li>• Age range: 26–70 years</li> <li>• Breast cancer</li> </ul>	<ul style="list-style-type: none"> <li>• Cross-sectional survey</li> </ul>	NVCS, K-FCRI, HADS	***
Koral and Cirac [64]	TUR	<ul style="list-style-type: none"> <li>• N = 82, 100% female</li> <li>• Mean age: 43.2 years</li> <li>• Breast cancer</li> </ul>	<ul style="list-style-type: none"> <li>• Cross-sectional, survey</li> </ul>	FCRI-SF, SWB scale, BRS	***
Leach [73]	USA & TERRITORIES	<ul style="list-style-type: none"> <li>• N = 976, 72% female</li> <li>• Mean age: 60.5 years</li> <li>• Various cancers</li> </ul>	<ul style="list-style-type: none"> <li>• Cross-sectional survey</li> <li>• Mixed methods</li> </ul>	NVCS plus one open-ended question	*
Massicotte [43]	CAN	<ul style="list-style-type: none"> <li>• N = 36, 100% female</li> <li>• Mean age: 53.6 years</li> <li>• Breast cancer</li> </ul>	<ul style="list-style-type: none"> <li>• Cross-sectional study</li> </ul>	ISI; HADS; FCRI, NVCS	**
Mink van der Molen [44]	NL	<ul style="list-style-type: none"> <li>• N = 1,051, 99% female</li> <li>• Age not specified</li> <li>• Breast cancer</li> </ul>	<ul style="list-style-type: none"> <li>• Cross-sectional survey</li> </ul>	HADS; NVCS	***
Musche [51]	GER	<ul style="list-style-type: none"> <li>• N = 150, 52% female</li> <li>• &lt;45 years: 11%</li> <li>• Various cancers</li> </ul>	<ul style="list-style-type: none"> <li>• Cross-sectional survey</li> </ul>	EQ-5D-3L; GAD-7; NVCS	*****

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Table 1 (continued)

Author	Location	Sample characteristics	Design	Outcome measures	Quality score
Ng [70]	SNG	<ul style="list-style-type: none"> <li>• N = 624, 56% female</li> <li>• Mean age: 57.2 years</li> <li>• Various cancers</li> </ul>	<ul style="list-style-type: none"> <li>• Cross-sectional study</li> </ul>	GAD-7; MBI EE, MBI DP, NVCS	**
Rajan [65]	IND	<ul style="list-style-type: none"> <li>• N = 310, 40% female</li> <li>• Age range: 18–65+ years</li> <li>• Various cancers</li> </ul>	<ul style="list-style-type: none"> <li>• Cross-sectional survey</li> </ul>	NVCS	*
Rodriguez [61]	USA	<ul style="list-style-type: none"> <li>• N = 315, 57% female</li> <li>• Median age: 57 years</li> <li>• Various cancers</li> </ul>	<ul style="list-style-type: none"> <li>• Cross-sectional survey</li> </ul>	74 item questionnaire (non-validated)	**
Romito [45]	IT	<ul style="list-style-type: none"> <li>• N = 77, 49% female</li> <li>• Age range: 22–85 years</li> <li>• Hematological cancer</li> </ul>	<ul style="list-style-type: none"> <li>• Cross-sectional study</li> </ul>	NVCS	**
Savard [26]	CAN	<ul style="list-style-type: none"> <li>• N = 23, 100% female</li> <li>• Mean age: 51.8 years</li> <li>• Breast cancer</li> </ul>	<ul style="list-style-type: none"> <li>• Qualitative: telephone interview</li> </ul>	Semi-structured questions	**
Schandl [55]	SE	<ul style="list-style-type: none"> <li>• N = 134, 22% female</li> <li>• Mean age: 71 years</li> <li>• Esophageal cancer</li> </ul>	<ul style="list-style-type: none"> <li>• Longitudinal study (two time points)</li> </ul>	EORTC QLQ-C30	***
Seven [27]	TUR	<ul style="list-style-type: none"> <li>• N = 18, 100% female</li> <li>• Mean age: 51 years</li> <li>• Breast cancer</li> </ul>	<ul style="list-style-type: none"> <li>• Qualitative: 1:1 interview</li> </ul>	Semi-structured questions	*****
Shay [32]	USA	<ul style="list-style-type: none"> <li>• N = 15 (survey only<sup>a</sup>), N = 24 (survey + focus group), 73%<sup>a</sup> v 79% female</li> <li>• Age range: 18–39 years</li> <li>• Cancer diagnosis not reported</li> </ul>	<ul style="list-style-type: none"> <li>• Online survey</li> <li>• Focus groups</li> <li>• Mixed methods</li> </ul>	Semistructured questions	-
Swainston [46]	UK	<ul style="list-style-type: none"> <li>• N = 234, 100% female</li> <li>• Age range: 27–78 years</li> <li>• Breast cancer</li> </ul>	<ul style="list-style-type: none"> <li>• Cross-sectional study</li> </ul>	DQ; FACT-G v3; RRS; HADS; PSWQ; NVCS	***
Van de Poll-Franse [57]	NL	<ul style="list-style-type: none"> <li>• N = 4,094, 39% female</li> <li>• Mean age: 63 years</li> <li>• Various cancers</li> </ul>	<ul style="list-style-type: none"> <li>• Cross-sectional survey within a cohort/registry</li> </ul>	SCQ, PAT TC VC, EORTC QLQ-C30, HADS, Loneliness scale	*****
Yélamos [52]	SP	<ul style="list-style-type: none"> <li>• N = 2,779, gender not reported</li> <li>• &gt;54 years: 40.2%</li> <li>• Various cancers</li> </ul>	<ul style="list-style-type: none"> <li>• Cross-sectional survey</li> </ul>	Kessler (K-6), NVCS	***
Yildirim [47]	TUR	<ul style="list-style-type: none"> <li>• N = 595, 77% female</li> <li>• Age range: 18–76 years</li> <li>• Various cancers</li> </ul>	<ul style="list-style-type: none"> <li>• Longitudinal survey study</li> </ul>	BDI, BAI, record of treatment delays	**
Zhao [56]	USA	<ul style="list-style-type: none"> <li>• N = 1,300, 100% female</li> <li>• Mean age range: 55–61.6 years</li> <li>• Breast cancer</li> </ul>	<ul style="list-style-type: none"> <li>• Cross-sectional survey</li> </ul>	Questions adapted from PROMIS	***
Zomerdiijk [28]	AUS	<ul style="list-style-type: none"> <li>• N = 24, 50% female</li> <li>• Age range: 38–81 years</li> <li>• Hematological cancer</li> </ul>	<ul style="list-style-type: none"> <li>• Qualitative study: 1:1 interview</li> </ul>	Semi-structured questions	*****

Abbreviations: BAI, Beck Anxiety Inventory; BDI, Beck Depression Inventory; BPI, Brief Pain Inventory; BRS, Brief Resilience Scale; CCI, Modified Self-Report-Generated Charlson Comorbidity; CD-RISC2, Connor-Davidson Resilience Scale; CWS, Cancer Worry Scale; DASS-21, DASS-42, Depression Anxiety Stress Scales; DQ, Demographic and Clinical Questionnaire; ECOG, The Eastern Cooperative Oncology Group Performance status; EORTC QLQ C-30, Quality of Life Cancer patients; EORTC-BM22, Quality of Life Bone Metastases; EORTC-C15-PAL, Quality of Life Cancer patients in palliative care; EQ-5D-3L, Quality of Life; FACIT-TS-G, Functional Assessment of Chronic Illness Therapy - Treatment Satisfaction - General; FACT cog v3, Functional Assessment of Cancer Therapy-Cognitive Scale; FACT-G, Functional Assessment of Cancer Therapy General; FCRI-SF, Fear of Cancer Recurrence Inventory - Short Form; FCS, Fear of Covid-19 scale; FoP-Q-SF, Fear of Progression Questionnaire-Short Form; FR-FOI, Family Resilience Family Organization & Interaction; FR-SBS, Family Resilience Shared Beliefs and Support; FR-USR, Family Resilience Utilization of Resources; GAD 2, GAD 7, Generalized Anxiety Disorder; GHQI, General Health Questionnaire Items (Depression); GrAw-7, Gratitude and Awe scale; HADS, Hospital Anxiety and Depression Scale; IES-R, Impact of Event Scale Revised; ISI, Insomnia Severity Index; ISOLA scale, Isolation related suffering; IUS-12, Intolerance of Uncertainty Scale; K-FCRI, Korean Version - Fear of Cancer Recurrence Inventory; Kessler (K-6), Kessler Psychological Distress Scale; MBI EE, MBI DP, Maslach Burnout Inventory (Emotional Exhaustion, Depersonalization); MLCS, Mini Locus of Control Scale; MLQ, Meaning in Life Questionnaire; NCCN DT, National Comprehensive Cancer Network Distress Thermometer; NVCS, Non-Validated Covid Survey; PACT, Perceived Ability to Cope with Trauma scale; PANAS, Positive Negative Affect Schedule; PAT VC TC, Patient experience with Video conference Consultation or Telephone Consultation; PBS, Perception of Burden Scale; PCS, Perception of Change Scale; PHQ -2, PHQ-9, Patient Health Questionnaire Depression; PSWQ, Penn State Worry Questionnaire; RRS, Rumination Response Scale; SAS, Self-Rating Anxiety Scale; SCQ, Self-administered Comorbidity Questionnaire; SDS, Self-Rating Depression Scale; SF36, Health Related Quality of Life; SpREUK-15, Spiritual & Religious Attitudes in dealing with illness; SWB, Subjective Well-being Scale; WHO-5, World Health Organization Five-Well-being Index; WLQ, Work Limitations Questionnaire.

**Table 2**

Key concepts and main themes across the studies.

Key concepts	Concepts into main themes
Anxiety	Emotional aspects and Quality of Life
Depression	
Distress	
Employment	Psychosocial aspects
Financial difficulties	
Loneliness and isolation	
Social support	
Uncertainty about the future	Impact of COVID-19 on self
Fear and worry of getting COVID-19 infection	
Vulnerability	Impact of COVID-19 on cancer
Fear of cancer recurrence	
Treatment delays or cancellations	

domized controlled trials, B: prospective cohort studies, C: nonrandomized controlled/crossover trials, case control studies, D: non-controlled trials, case reports, observational studies) [22].

Fig. 2 shows that most studies collected data very early in the pandemic (April–May 2020), with eight collecting data until November 2020 and one longitudinal study (February 2020–February 2021).

#### Overall quality assessment

A quantitative paradigm was used in 43 studies (80%) with a survey method approach and results were presented using descriptive statistics. A mix of validated and nonvalidated tools was used across the studies. The MMAT scores are presented in Table 1 and the majority of papers acquired a score of two (n = 15) or three (n = 17) out of a maximum score of five. The scoring reflects consistent limitations across many of the studies; small samples, non-representative samples, lack of detail relating to cancer type and/or treatment and methodological flaws.

Studies used many different outcome measures in their cross-sectional designs (Table 1). Six studies employed a qualitative methodology [23–28] and four study used mixed methods [29–32].

#### Analysis and Synthesis of data

We used a form of meta synthesis to combine the studies of the emotional and psychological experiences of cancer patients during the COVID-19 pandemic into understandable concepts [33]. The process involved identifying key concepts from studies and translating them into one another. The term “translating” refers to the process of extracting concepts from one study and acknowledging the same concept in another study even if the concepts are expressed in different words (Table 2). The interconnectivity of the concepts and the main themes that emerged is illustrated in Table 3.

#### Theme 1: Emotional aspects and Quality of Life

The most common emotional aspects explored in these studies were anxiety and depression using a wide variety of tools (Table 1). Most studies reported increased levels of anxiety and depression, but comparators were not always clear or comparable across the studies [29,34–47].

In general, increased emotional distress was highlighted among cancer patients [26,48–50,52]. Hamlish and Papautsky (2020) [53] reported higher levels of distress in White breast cancer patients compared to Non-white participants. In contrast, other research teams found that levels of distress among cancer patients were lower or no different than before the pandemic [19,31,54–56]. Even more, one study found no difference in anxiety or depression

levels in cancer patients compared to the general population during the COVID-19 pandemic [57].

Quality of life was mostly assessed by European Organization for Research and Treatment of Cancer (EORTC) scales [19,49–50,55,58–60] and was reported as having been impacted negatively due to the COVID-19 pandemic. However, different versions of the scale were used across the studies, making it difficult to extrapolate common findings across the board.

During the COVID-19 pandemic, some contributing factors to worsening emotional status or quality of life included being younger and female [52], having advanced disease [34,61] and delays in oncology care [41,44–47,62]. On the other hand, an internal locus of control and strong family resilience mitigated the negative impact on emotional functioning [63–64].

#### Theme 2: Psychosocial impact

The psychosocial impact of the COVID-19 pandemic on cancer patients was evaluated using a number of different assessment tools (Table 1) but the most common aspects assessed were employment, financial difficulties, loneliness and isolation, social support, and uncertainty about the future.

Whilst cancer patients may not be working during treatment, many do return to work at some stage. The guidelines on working from home and social distancing introduced across most of the world meant that many patients experienced a higher level of anxiety about going or returning to work [26]. Although financial hardship hit many of the population, cancer patients are known to have a higher financial burden prepandemic [28,31,38,45,59,65].

Inherently linked to the COVID-19 restrictions was the sense of loneliness and isolation [25–27,30,32,36,45,48,56–59,66, 58]. Equally, the importance of social support from family and friends was highlighted in several studies [24,26,30–31,63]. The COVID-19 pandemic also accentuated uncertainty about the future for cancer patients in several studies [26,30,32,68]. All these psychosocial aspects were linked to increased anxiety and/or distress.

#### Theme 3: COVID-19 related fear

The studies mainly described the participants’ personal fears and health risk of the virus [23,35,41,45,51,57,60,62,67,69–70] or of the impact it will have on society’s resources [19,71–72]. In both cases this is further impacted by the perceived behavior of individuals to either adapt or not to the restrictions imposed on them, but also in the way healthcare services behave in response to the pandemic [19,24,45,67].

Fear was also expressed as a response to the perceived ability of participants with cancer to respond physically or otherwise to a COVID-19 infection [26,28,51,57,71], to feel able to continue [69,72] or curtail their treatment in some way [23,45].

**Table 3**

The interconnectivity of concepts and main themes across the studies.

	Theme 1: Anxiety, depression & stress	Theme 2: Social aspects	Theme 3: COVID-related Fear	Theme 4: Fear of cancer recurrence
Arrieta [34]	✓			✓
Bafunno [29]	✓			
Bartels [58]	✓	✓		
Bäuerle [35]	✓		✓	
Biagioli [30]		✓		
Brivio [63]	✓	✓		
Büntzel [48]		✓	✓	
Büntzel [71]	✓	✓		✓
Büssing [36]	✓	✓		✓
Chapman [37]	✓	✓		
Chen [38]	✓			
Chia [23]		✓	✓	✓
Ciążynska [59]	✓	✓		
Cui [39]	✓			
Desideri [49]	✓			
Dieperink [31]	✓	✓	✓	
Ellehuus [60]	✓		✓	
Falcone [50]	✓			
Frey [62]	✓		✓	✓
Gallagher [66]	✓	✓		
Greco [40]	✓			
Gultekin [41]	✓		✓	✓
Haase [24]		✓	✓	
Haddad [72]			✓	
Hamlisch & Papautsky [53]	✓			
Hanghøj [25]	✓	✓		
Harsono [54]	✓			
Hennessy [67]		✓	✓	
Hill [68]		✓		
Jeppesen [19]	✓		✓	
Juanjuan [42]	✓			
Kim and Kim [69]	✓		✓	✓
Koral and Cirac [64]				
Leach [73]				
Massicotte [43]	✓			✓
Mink van der Molen [44]	✓			✓
Musche [51]	✓		✓	
Ng [70]			✓	
Rajan [65]	✓	✓		
Rodriguez [61]			✓	✓
Romito [45]	✓	✓	✓	
Savard [26]	✓	✓	✓	✓
Schandl [55]	✓			
Seven [27]	✓		✓	✓
Shay [32]		✓	✓	✓
Swainston [46]	✓			
Van de Poll-Franse [57]	✓	✓	✓	
Yélamos [52]	✓	✓		
Yildirim [47]	✓			✓
Zhao [56]	✓	✓		✓
Zomerdijk [28]	✓	✓		

There is significant evidence that people with cancer are already living with a heightened awareness of infection prevention, compared to the general population. Positive changes in behavior, such as increased hand hygiene and coping with self-isolation or shielding, were noted in some studies [24,35,51,70,72].

Fear is an emotion induced by the perception or recognition of phenomena which can pose a danger or threat. The threat of getting a COVID-19 infection appears to be cited in relation to the existing threat that having cancer poses to people's life trajectory [23,35,45,51,57,60,69,72].

Vulnerability refers to the inability to withstand the effects of a hostile environment. Being vulnerable, when described in these papers, is done so from the clinician's point of view as a reduced health status [23,35,41,45,51,57,67,69]. Most often this is a physical vulnerability to infection [41,57], rather than an emotional vulnerability to anxiety or depression [69].

#### Theme 4: fear of cancer recurrence

Although fear of contracting COVID-19 was a big factor that increased cancer patients' levels of anxiety, depression and distress, there are several studies reporting higher levels of anxiety and depression associated with fear of cancer recurring or progressing due to treatment delays or cancellations [26,31,32,38,41,43,45-47,56-57,64,69,71,73].

Whilst fear of cancer recurrence and progression is a common concern among those with cancer, fear was seen as negative and harmful in the face of COVID disruptions [69]. It was noted that increased anxiety and depression in cancer patients during the COVID-19 pandemic was positively correlated with the disruption of their treatment [47]. Similarly, people who had experienced disruptions to their cancer treatment had higher levels of anxiety and depression [34,46].

In summary, the analysis identified four main themes that were consistent across the studies: emotional impact and quality of life, psychosocial impact, impact of COVID-19 on self and the impact of COVID-19 on cancer. These themes highlighted the complexity and impact of the COVID-19 pandemic on a cancer patient's psychosocial and emotional experience. In addition, the fear of cancer recurrence calls attention to a need that has importance for cancer patients.

## Discussion

### *Strengths and limitations of this literature review*

In the unique circumstances of a global pandemic, one could argue that emotional and psychosocial impacts are shared across society, with anxiety, isolation, fears about employment and uncertainty about the future being universal concerns. This review demonstrates that these concerns were particularly acute for patients living with cancer.

Most of the research in the review (80%) was from the very beginning of the first lockdown and thus very early in the COVID-19 pandemic. This limits the conclusions we can draw regarding the longer-term effects of this situation on cancer patients and those who support them. In addition, the real impact of the COVID-19 pandemic on early diagnosis, treatment outcomes and overall survival rates may not be known for many years. However, the themes identified across the studies in this review indicate a complex and overlapping set of factors that interact with the psychosocial and emotional implications of having a cancer diagnosis. For instance, the association between increased depression and anxiety and feeling isolated was featured in several studies but nuances were not evident as to whether this was due to the need to self-isolate due to the COVID-19 restrictions, visitor limitations, or living as a single person. Furthermore, physical vulnerability in relation to COVID-19 was acknowledged in terms of the threat to become infected or experience treatment delays that could result in disease progression or recurrence of the cancer but there was a lack of understanding of the emotional vulnerability cancer patients may experience.

Only six studies (12%) used a qualitative approach and four (8%) used mixed methods. The use of many different tools to measure the psychosocial and emotional impact of COVID-19 on cancer patients did not provide us with the opportunity to undertake any meta-analysis on the data. In contrast, quality of life was, in most studies, assessed using the EORTC questionnaire but one could question the use of tools validated for a cancer population in an unprecedented situation such as a global pandemic. In addition, only three studies were done in the UK, making it difficult to generalize the findings to local populations.

Many of the studies included people with a variety of cancer types and a few studies did not specify the kind of cancer the participants were treated for. With health care globally adapting to remote services such as virtual or telephone appointments, different needs for different cancer patient groups need to be recognized. For example, could telephone clinics for cancer follow-up be more appropriate for long term cancer survivors compared to patients receiving acute treatment? Caution is also warranted in terms of accessibility and there may be issues with inequality and digital poverty.

The quality scoring in this systematic review was done using the MMAT tool which allows for studies with different methodologies to be compared and contrasted in relation to the robustness and quality of the research. Whilst most of the studies received a medium score, there were also 16 studies (30%) which scored four or five stars. Considering the speed with which the COVID-19 pandemic developed pace, this shows high quality research remains a priority for many countries around the world.

### *Considerations for future studies*

The tools used to measure emotional aspects and quality of life across the studies in this review report on trends and some show factors that are related to those trends, however they are blunt tools. They do not provide deeper understandings and explanations as to how and why the emotional state of people living with cancer was affected by their experiences during the early pandemic. This deeper and richer detail would be provided by further qualitative work and could help reveal any patterns in what was unique about the experiences of living with cancer during a pandemic, compared to the general population.

As Covid-19 continues to impact upon healthcare services and society for a considerable time to come, we suggest that it is also important for healthcare professionals to understand the longer-term and ongoing impacts on the experiences of cancer patients, including investigating periods of adjustment to less restrictions.

### **Ethical/legal considerations**

This article is an original contribution not previously published and is not under consideration for publication elsewhere. Each author has contributed significantly to this research.

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### **Author contributions**

Ann Muls: conceptualization, methodology, validation, formal analysis, investigation, resources, data curation, writing (original draft), visualization, project administration. Sofia Georgopoulou: methodology, validation, formal analysis, investigation, resources, data curation, writing (review and editing), visualization. Emma Hainsworth: methodology, validation, formal analysis, investigation, resources, data curation, writing (review and editing). Ben Hartley: methodology, validation, formal analysis, investigation, writing (review and editing). Geraldine O'Gara: methodology, validation, formal analysis, investigation, data curation, writing (review and editing). Sarah Stapleton: writing (review and editing), supervision, project administration. Susanne Cruickshank: conceptualization, methodology, validation, formal analysis, investigation, resources, data curation, writing (review and editing), supervision, project administration.

### **Conflicts of Interest**

The authors declare no conflict of interest.

### **Supplementary materials**

Supplementary material associated with this article can be found, in the online version, at doi:[10.1053/j.seminoncol.2022.08.001](https://doi.org/10.1053/j.seminoncol.2022.08.001).

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