The real-world impact of the COVID-19 pandemic on patients with cancer: a multidisciplinary cross-sectional survey

Kelvin KH Bao*, Ka-man Cheung, James CH Chow, Carmen WL Leung, Kam-hung Wong

ABSTRACT

Introduction: The coronavirus disease 2019 (COVID-19) pandemic has caused unprecedented disruptions to cancer care worldwide. We conducted a multidisciplinary survey of the real-world impact of the pandemic, as perceived by patients with cancer.

Methods: A total of 424 patients with cancer were surveyed using a 64-item questionnaire constructed by a multidisciplinary panel. The questionnaire examined patient perspectives regarding COVID-19–related effects (eg, social distancing measures) on cancer care delivery, resources, and healthcare-seeking behaviour, along with the physical and psychosocial aspects of patient well-being and pandemic-related psychological repercussions.

Results: Overall, 82.8% of respondents believed that patients with cancer are more susceptible to COVID-19; 65.6% expected that COVID-19 would delay anti-cancer drug development. Although only 30.9% of respondents felt that hospital attendance was safe, 73.1% expressed unaltered willingness to attend scheduled appointments; 70.3% of respondents preferred to receive chemotherapy as planned, and 46.5% were willing to accept changes in efficacy or side-effect profile to allow an outpatient regimen. A survey of oncologists revealed significant underestimation of patient motivation to avoid treatment interruptions. Most surveyed patients felt that there was an insufficient amount of information available concerning the impact of COVID-19 on cancer care, and most patients reported social distancing–related declines in physical, psychological, and dietary wellness. Sex, age, education level, socio-economic status, and psychological risk were significantly associated with patient perceptions and preferences.

Conclusion: This multidisciplinary survey concerning the effects of the COVID-19 pandemic revealed key patient care priorities and unmet needs. These findings should be considered when delivering cancer care during and after the pandemic.

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KKH Bao *, MB BChir, FRCR
KM Cheung, MB, ChB, FRCR
JCH Chow, MB, ChB, FRCR
CWL Leung, MB, ChB, FRCR
KH Wong, MB, ChB, FRCR

Department of Clinical Oncology, Queen Elizabeth Hospital, Hong Kong SAR, China

* Corresponding author: bkh641@ha.org.hk

New knowledge added by this study

- Most patients with cancer (73.1%) reported that their willingness to attend scheduled oncology appointments was not affected by the pandemic. All surveyed oncologists underestimated patient motivation to avoid treatment interruptions.
- Patient acceptance of telerehabilitation varied according to age and socio-economic status, whereas the negative impact of social distancing on patients with cancer were substantial and multidimensional.
- Psychometric analyses can stratify patients with cancer into psychological risk groups, based on their distinct perceptions of the pandemic.

Implications for clinical practice or policy

- These findings will help to increase awareness of the effects of the coronavirus disease 2019 pandemic on patients with cancer, revealing their priorities and unmet needs.
- This work aligns the expectations of oncologists and patients with cancer with respect to modifications of cancer services during the pandemic.
- These results will promote better resource allocation and earlier multidisciplinary interventions to reduce pandemic-related impact on at-risk populations.

Introduction

The coronavirus disease 2019 (COVID-19) pandemic poses an unprecedented threat to health systems worldwide. During the first year of the pandemic, there were more than 110 million confirmed COVID-19 cases globally and more than 2.6 million deaths.[1] In terms of scale, the number of COVID-19 cases during that period was at least sixfold more than the global number of new cancer cases in 2018; the mortality during that period exceeded the combined mortalities of lung cancer and breast cancer in 2018.[2] The many consequences of COVID-19 have included unprecedented disruptions to cancer care services,[3-5] such as cancellations of outpatient appointments to delays in scheduled systemic treatments and radiotherapy; during periods of increased transmission, such disruptions have forced oncologists to make difficult decisions in attempts to balance patient protection and disease control. There have been similar impact to the delivery of oncology-related allied health services, including physical therapy and occupational therapy,[6] dietetics,[7] diagnostic imaging,[8] and psychological services for patients with cancer[9]; there has been a particularly large shift in the use of telemedicine. Throughout the COVID-19 pandemic, and particularly during periods of increased transmission, good multidisciplinary coordination has been a crucial aspect of cancer care. By acquiring comprehensive knowledge regarding perceptions of the pandemic, changes in healthcare-seeking behaviour, impact on daily life, and the newly emerged unmet needs (physical, socio-economic, and psychological) of patients with cancer, multidisciplinary cancer caregivers can customise and adjust their services accordingly, thus enabling appropriate resource allocation. Considering these challenges, we designed and conducted a prospective study to comprehensively examine the real-world impact of COVID-19 on patients with cancer; we sought to identify actionable solutions from the perspective of experienced multidisciplinary cancer caregivers.

新冠病毒大流行對癌症患者的實際影響：多學科橫斷面調查

鮑景熙、張嘉文、周重行、梁偉濂、黃錦洪

引言：新冠疫情對全球癌症治療帶來了前所未有的打擊。我們進行了一項多學科調查，旨在了解癌症患者對於疫情實際影響的看法。

方法：在這項調查中，一個由多學科專家組成的小組使用了一份64道問題的問卷對424名癌症患者進行了調查。問卷涵蓋了患者對新冠病毒病相關影響（例如社交距離措施）對癌症治療、資源和就醫行為的影響，以及患者身體和心理健康狀況和疫情相關心理後果方面的看法。

結果：調查結果顯示，82.8%受訪者認為癌症患者更容易感染新冠病毒病，65.6%受訪者預計新冠病毒病會延誤抗癌藥物的開發。儘管只有30.9%受訪者認為往醫院就診是安全的，但73.1%受訪者表示仍然願意按照預定時間就診；70.3%受訪者希望按計劃接受化療，46.5%受訪者願接受功效或副作用稍遜的方案以實現非住院治療。對腫瘤科醫生的調查顯示，他們明顯低估了患者避免治療中斷的意願。大多數接受調查的患者認為關於新冠病毒病對癌症治療影響的資訊不足，大多數患者報告了社交距離措施所帶來的身體、心理和飲食習慣方面的惡化。此外，研究發現性別、年齡、教育程度、社會經濟地位和心理風險都與患者看法和偏好有顯著相關。

結論：新冠疫情對癌症治療產生了重大影響，患者關注的問題和未滿足的需求應該在疫情期間和之後的癌症治療中得到重視。

Methods

A prospective survey regarding the perspectives of patients with cancer on the impact of the COVID-19 pandemic was jointly developed by a multidisciplinary team at Queen Elizabeth Hospital, Hong Kong that consisted of clinical oncologists, clinical psychologists, physiotherapists, occupational therapists, and dieticians specialising in cancer care. A pilot survey was administered to 88 patients, followed by interviews to further assess patient understanding of the questions and to develop additional items via thematic analysis. The multidisciplinary team then refined the questionnaire. The final version consisted of 64 items with a combination of Likert scales and polar questions; it covered topics such as patient perceptions of cancer care resources, treatment delivery and quality, changes in healthcare-seeking behaviour, adequacy of available pandemic-related information, social distancing–related adverse impact, and psychological repercussions of the pandemic. We also invited patients who were newly diagnosed with cancer to complete an extended questionnaire which focused on psychometric measurements of post-traumatic stress disorder (PTSD) [the PTSD Checklist for DSM-5 (PCL-5)],[10] anxiety and depression (the Emotion Thermometers tool),[11] and intolerance of uncertainty (the Intolerance of Uncertainty Scale-12 [IUS-12]).[12] Patients were then stratified into risk groups. High-risk individuals had scores of ≥5 on the abbreviated PCL-5 scale,[13] ≥3 on the Emotion Thermometers for depression or anxiety,[14] and ≥25 on the IUS-12 scale.[11] Associations between patient perceptions and psychological risk were then explored. Full details of the patient questionnaire are shown in online supplementary Table 1.

Furthermore, we surveyed clinical oncologists in Hong Kong (practising in Queen Elizabeth Hospital, United Christian Hospital, and Buddhist Hospital) regarding their perceptions of the pandemic; the oncologists were also asked to predict the responses of patients with cancer in various domains of interest.

The patient survey was conducted between 12 and 22 May 2020 at Queen Elizabeth Hospital. Patients with cancer and survivors aged ≥18 years who attended their outpatient oncology appointments were invited to participate. Patients who could not read English or Chinese were excluded, and participation was voluntary. Detailed survey information was provided on the questionnaire cover sheet, and a patient's decision to participate in the survey was regarded as informed consent. Hardcopies of the questionnaire were anonymously completed by participants on site, then collected by dedicated nursing staff.

Data analysis

Descriptive analysis was used to describe various impact of the pandemic on patients. Patient demographics, disease characteristics, treatment details, and socio-economic information were summarised. Qualitative data are presented as the percentage of respondents who selected a particular response. Chi squared tests were used to determine associations between responses and categorical patient factors. P values <0.05 were considered indicative of statistical significance. Analyses were performed using SPSS software (Windows version 25.0; IBM Corp, Armonk [NY], United States).

Results

Demographic characteristics

Between 12 and 22 May 2020, 650 patients with cancer were invited to participate in the survey; 424 responses were received, yielding a response rate of 65.2%. Demographic and clinical characteristics of the participants are presented in the Table. Most survey respondents were female (70.0%), and more than half were aged 46 to 75 years. Nearly half (46.0%) of the respondents were receiving active cancer treatment. The cancer stage was III or below in half of the respondents and 20.3% of respondents were at stage IV; 29.2% of respondents were uncertain of their staging. Almost half (43.9%) of the respondents had a monthly family income of <HK$16 000 (around US$2000), which is Hong Kong's 2018 poverty line for a family of three.[15]

TABLE. Demographic and clinical characteristics of patients with cancer (n=424)

Characteristic	No. (%)
Sex	
Male	127 (30.0%)
Female	297 (70.0%)
Age, y	
18-45	54 (12.7%)
46-75	339 (80.0%)
>75	31 (7.3%)
Education level	
Primary or below	96 (22.6%)
Secondary	232 (54.7%)
Tertiary or above	96 (22.6%)
Monthly family income, HK$	
<16 000	186 (43.9%)
16 000-40 000	165 (38.9%)
>40 000	73 (17.2%)
Stage of cancer	
I	51 (12.0%)
II	75 (17.7%)
III	88 (20.8%)
IV	86 (20.3%)
Do not know	124 (29.2%)
Type of clinic visit	
Active treatment	195 (46.0%)
General follow-up	229 (54.0%)
Type of treatment received (n=195)	
Radical treatment	100 (51.3%)
Adjuvant treatment	56 (28.7%)
Palliative treatment	39 (20.0%)

Abbreviation: HK$ = Hong Kong dollars

Impact of coronavirus disease 2019 on cancer resources

As shown in online supplementary Table 1, most respondents (82.8%) believed that patients with cancer are more susceptible to COVID-19, while more than half (52.1%) believed that cancer-related resources will be depleted and 59.3% were concerned that healthcare workforce shortages during the pandemic would harm their treatment. Overall, 65.6% of respondents were concerned that COVID-19 would lead to delays in anti-cancer drug development. These concerns were significantly associated with education level of patients, in which the more educated respondents demonstrated less concern (tertiary level 57.6% vs secondary 64.4% vs primary 71.4%, P=0.01) [Fig 1a].

Impact of coronavirus disease 2019 on healthcare-seeking behaviour

As shown in online supplementary Table 1, fewer than one-third of respondents (30.9%) felt that it was safe to attend hospital appointments during the pandemic (the proportion was greater among men than among women: 37.8% vs 27.8%). Furthermore, most respondents reported that their willingness to attend oncology clinic appointments (73.1%) or undergo clinical tests (80.2%) was unaffected. Age (P=0.021), sex (P=0.029), and education level (P=0.003) were factors significantly associated with patient willingness; respondents aged 18-45 years or >75 years, female, and more educated individuals were more hesitant to attend their scheduled appointments (Fig 1b).

Compared with the pre-pandemic period, most respondents (79.0%) stated that they were equally willing (65.1%) or more willing (13.9%) to seek medical attention now if they felt unwell. Overall, 62.2% of respondents were equally willing or more willing to be hospitalised if requested by their oncologists. Male respondents were more willing to be hospitalised, compared with female respondents (68.3% vs 59.2%); additionally, respondents receiving radical treatment were more willing to be hospitalised, compared with respondents receiving palliative treatment (71.3% vs 59.0%).

Effects of social distancing on medical consultation and cancer treatment

Nearly all respondents (98.4%) felt that it was acceptable for medical staff to maintain an increased physical distance from patients during consultations, and most (83.3%) felt that it did not negatively impact the quality of their clinic experience. During the pandemic, some clinically stable patients were exempt from the requirement for oncologist examination prior to medication refills. Overall, 59.9% of respondents felt that such an arrangement should continue beyond the pandemic period (male respondents vs female respondents: 69.3% vs 55.9%; respondents receiving radical treatment vs respondents receiving palliative treatment: 54.4% vs 69.2%).

Concerning the effects of the pandemic on plans for cancer treatment, most respondents stated that their decisions to receive chemotherapy (70.3%) or radiotherapy (67.9%) were unaffected. However, 46.5% of the respondents were willing to accept changes in treatment efficacy or side-effect profile to allow an outpatient regimen; this preference was particularly strong among respondents receiving palliative treatment (61.5%), compared with respondents receiving radical treatment (33.7%).

Acquisition and adequacy of pandemic-related information

As shown in online supplementary Table 1, half of the respondents (49.1%) spent an average of 10 to 30 minutes daily interacting with news and information sources focused on COVID-19. Their most common news sources were television (41.7%), the internet (28.0%), and newspapers (12.9%). Only 3.5% of respondents received pandemic-related news or information from their hospitals. Young respondents (<45 years) were significantly more likely to receive news primarily from the internet, compared with older respondents (>75 years) (37.6% vs 13.4%; P=0.001); such a difference was also present between respondents with different education levels (tertiary education vs primary education: 35.5% vs 17.4%; P=0.001) and between respondents with different levels of monthly family income (>HK$40 000 vs <HK$16 000: 32% vs 25%; P=0.006).

Concerning the adequacy of information received regarding COVID-19 and its impact on patients with cancer, more than half of the

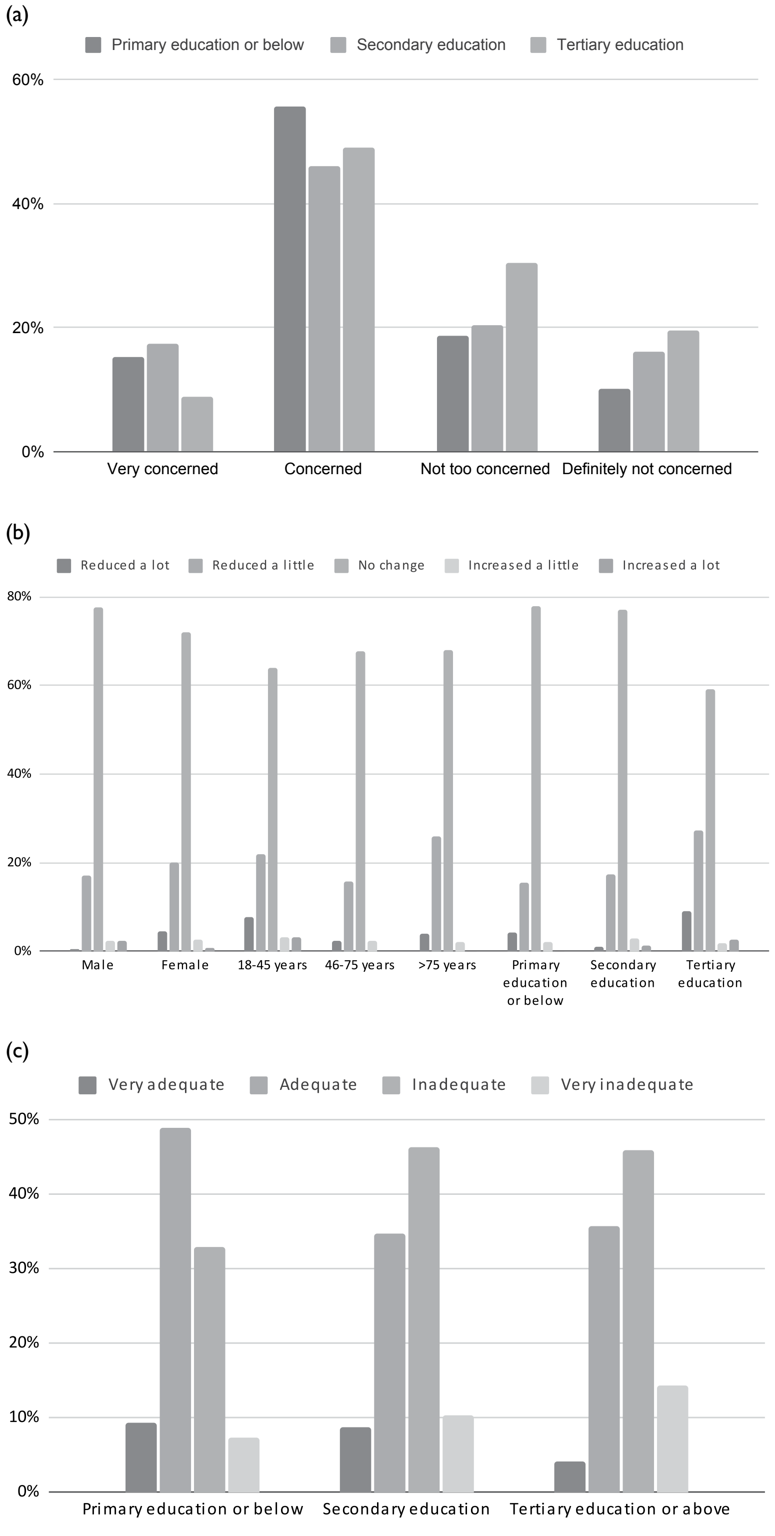

FIG 1. (a) Level of patient concern about the impact of coronavirus disease 2019 (COVID-19) on anti-cancer drug development by education level (n=424). (b) Effect of COVID-19 pandemic on patient willingness to attend hospital appointments by patient demographics (n=424). (c) Perceived availability of information about the impact of COVID-19 on patients with cancer by education level (n=424)

respondents (54.1%) felt that it was inadequate; this sentiment was more prevalent among respondents with a higher education level, compared with those who were less educated (tertiary vs primary level: 60.2% vs 40.3%; P=0.017) [Fig 1c].

Effects of social distancing on allied health professional services

During the pandemic, social distancing became the new daily norm. Nearly half of the respondents (49.5%) reported exercising less, whereas 10.4% reported exercising more. In general, 55.4% of respondents noticed an overall deterioration in their physical well-being (Fig 2a); about one-third of respondents (32.1%) reporting reduced walking tolerance, and 25.9% of respondents noticed some reduction in limb power (online supplementary Table 1).

With respect to patient preferences regarding physiotherapy delivery during the pandemic, 42.9% of young respondents (18-45 years) preferred online sessions, whereas 50.0% of older respondents (>75 years) preferred home visits by a therapist [Fig 2b]. Education level (P=0.029) and income (P=0.034) were significantly associated with patient preference. Respondents with a higher education level (tertiary vs primary level: 33.3% vs 16.3%) and respondents with a higher income (monthly income >HK$40 000 vs <HK$16 000: 50.3% vs 26.0%) preferred online sessions, rather than in-person sessions.

During the period of social distancing, 64.5% of older respondents (>75 years) felt that their lives had become monotonous and lonely; significantly fewer (39.3%) younger respondents (<45 years) expressed this sentiment. Most respondents (58.0%) agreed that their home care support had improved because family members spent more time together; this sentiment was more prevalent among older respondents (>75 years) [70.9%].

As shown in online supplementary Table 1, the pandemic caused dietary habit alterations in 38.9% of respondents. Approximately one-fifth of respondents reported reduced appetite (22.2%) and increased consumption of junk food (processed or ready-made meals) (19.3%). Significantly more respondents in the low-income subgroup reported reduced appetite, compared with respondents in the high-income subgroup (30.6% vs 8.2%, P=0.001). Notably, the use of face masks led to a reduction in meal frequency among 30.7% of respondents; this reduction was more prevalent among respondents with lower income, compared with respondents who had higher income (32.6% vs 23.2%).

Psychological impact of coronavirus disease 2019

Overall, 41.0% and 23.1% of respondents had recently experienced anxiety and/or depressed mood. In total, 103 consecutive newly diagnosed patients responded to the extended psychometric questionnaire. The results revealed greater levels of concern regarding the impact of COVID-19 on cancer care manpower and the risk of infection during outpatient clinic waiting time in patients with higher risks of PTSD (P=0.011 and P=0.015, respectively), anxiety (P=0.013 and P=0.034, respectively), depression (P=0.017 and P=0.043, respectively), and uncertainty intolerance (P=0.004 and P=0.044, respectively) [Fig 2c]. A high IUS-12 score (uncertainty intolerance) was associated with the presence of greater concern regarding the effects of the pandemic on cancer research and drug development (P=0.03). As shown in online supplementary Table 2, respondents with a high risk of anxiety were less likely to agree with the 'no visiting' policy of hospitals (P=0.013). More respondents with high risks of anxiety (P=0.024) and depression (P=0.044) felt that there was an insufficient amount of information available in the media regarding the impact of COVID-19 on patients with cancer (Fig 2d). Moreover, respondents with a high risk of PTSD demonstrated significantly greater concern when asked about their fear of being infected by their caregiver or family members, compared with respondents who had a low risk of PTSD (P=0.005). Detailed results of the psychometric questionnaire are shown in online supplementary Table 2.

Comparison of oncologist and patient perspectives

We invited 30 practising clinical oncologists to predict patient healthcare-seeking behaviour during the pandemic. All 21 responding oncologists predicted significant reductions in patient willingness to attend appointments and patient willingness to be hospitalised, but most patients reported no change in either type of willingness (73.3% and 54.7%, respectively). A greater proportion of oncologists (50.0%) than patients (16.7%) reported a negative impact on their clinic experience because of doctor-patient distancing measures (Fig 3a). Furthermore, when asked about their confidence in identifying the cause of a new fever (COVID-19–related vs other causes), most oncologists reported little (73.3%) or no confidence (13.3%), whereas almost half of the patients (47.4%) reported that they were quite or very confident in their ability to identify the cause of a new fever (Fig 3b).

Discussion

This study investigated the perceptions of patients with cancer regarding the real-world impact of COVID-19 (during the early days of the pandemic) through the perspective of a multidisciplinary team that included clinical oncologists, clinical

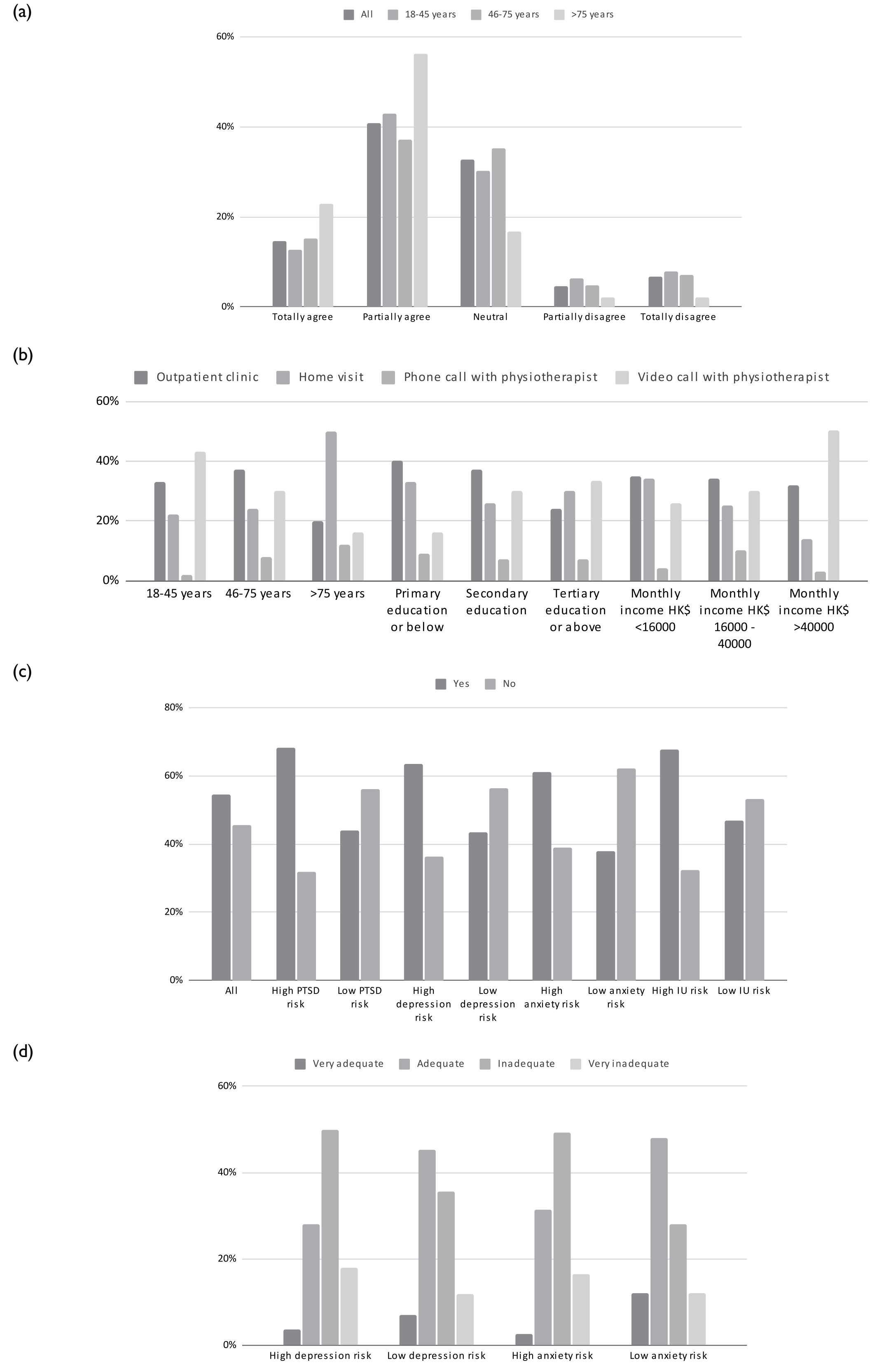

FIG 2. (a) Patient perception that being homebound during lockdown results in physical and functional deterioration by age-group (n=424). (b) Preferred method of physiotherapy delivery during the coronavirus disease 2019 (COVID-19) pandemic by patient demographics (n=424). (c) Level of patient concern about the waiting time at outpatient department and associated risk of infection, compared with the pre–COVID-19 pandemic period (n=424). (d) Perceived availability of information about the impact of COVID-19 on patients with cancer (n=424)

Abbreviations: HK$ = Hong Kong dollars; IU = intolerance of uncertainty; PTSD = post-traumatic stress disorder

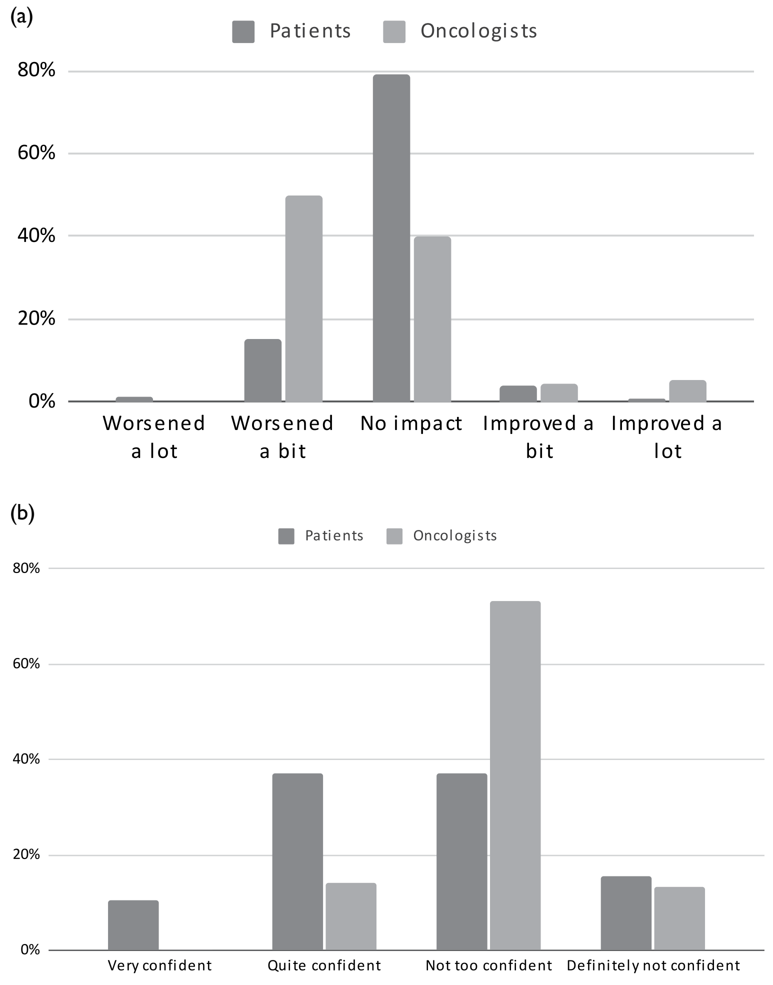

FIG 3. (a) Effect of physical distancing by medical staff during consultations on perception of clinic experience of patients (n=424) and oncologists (n=30) during coronavirus disease 2019. (b) Level of confidence among patients (n=424) and oncologists (n=30) in identifying the cause of a fever in the coming week

psychologists, physiotherapists, dieticians, and occupational therapists. Using a comprehensive set of questions, we identified key concerns, unmet needs, perceptions, and expectations of patients with cancer at different stages in their cancer care journeys. Cancer care[16] and pandemic management[17] are both resource-intensive endeavours. Because the COVID-19 pandemic has become the focus of healthcare worldwide, it is understandable that patients with cancer are concerned about pandemic-related negative impact on cancer care resources. Our results suggest that patients with cancer remained committed to attending scheduled appointments, despite the perceived risk of COVID-19 during the early days of the pandemic. This sustained clinical demand—along with general acceptance among patients regarding COVID-19 adaptive measures (staff-patient distancing), streamlined services (prescription-only clinics), and outcome trade-offs (efficacy and side-effect profile)—allowed our oncology services to continue with minimal disruptions despite the reduced availability of healthcare resources. Nevertheless, only 30.9% of surveyed patients felt that it was safe to attend the hospital; this observation highlights the need to ensure patients are informed about hospital safety measures for COVID-19 management, with details regarding rationale and efficacy. This study also revealed a discrepancy between male and female patients in terms of healthcare-seeking behaviour; moreover, patients receiving radical treatment demonstrated different perceptions and needs, compared with patients receiving palliative care. Oncology healthcare providers should consider the unique needs of various patient groups when implementing pandemic management strategies.

Between the initial outbreak and the time of this survey, the general public's understanding of COVID-19 heavily relied on mainstream media coverage,[18] which often did not focus on the needs of specific patient groups. International guidelines regarding cancer management during the pandemic began to emerge later in 2020,[19] but they mainly targeted medical professionals. Accordingly, patients with cancer felt that the COVID-19–related information provided to patients was inadequate. This perception was particularly prevalent among patients with a higher education level, who tended to obtain news and information more frequently from multiple sources (eg, the internet and social media). Notably, this situation highlights the phenomenon of 'the more you know, the more you realise you don't know', thereby emphasising the presence of an additional information barrier for underprivileged patient groups.[20] The situation is further complicated by the presence of COVID-19–related misinformation, which has been widespread on social media since 2020.[21] The findings in this study provide insights concerning the distinct pandemic-related information preferences and needs among patients according to age, education level, and income. Cancer services should focus on addressing these preferences and needs by providing patients with current COVID-19–related information from official sources, ensuring that the hospital remains a source of verified and practical pandemic-related information accessible to all patients.

The consequences of social distancing (eg, reduced exercise, poor diet, increased financial burden, and loss of social interactions) are detrimental to the physical and psychological well-being of patients with cancer,[22-24] potentially reducing cancer treatment tolerance and compromising outcomes. Although the impact of pandemic-related lockdowns on dietary patterns of diabetic patients[25] and older population[26] have been studied, there are limited prospective data regarding the nutritional status of patients with cancer and their needs during the pandemic. This study has revealed some real-world patient needs, particularly among socio-economically disadvantaged patients; it also highlights the importance of individualised dietetic and occupational health assessments and early interventions (inpatient or outpatient) by dieticians and occupational therapists who specialise in cancer care. Dedicated self-help materials prepared by allied health professionals to address the adverse effects of social distancing may also serve as effective resources.

When the pandemic began, telerehabilitation emerged as a promising alternative method for patient–clinician interactions, with effective use in a physiotherapy context.[27,28] However, our findings indicate that telerehabilitation may not be universally welcomed, particularly among older patients. Turolla et al[29] described the challenges of implementing telerehabilitation; our findings highlight the need to carefully examine telemedicine accessibility and 'telehealth literacy'[30] among socio-economically underprivileged populations.[31,32] When possible, conventional physiotherapy and rehabilitation should remain available, particularly for older adults, less-educated individuals, and low-income patients.[33] Our findings offer a rationale for triaging appropriate patients towards telemedicine; they also highlight the need for improving telemedicine quality and access, as well as the importance of ensuring that alternatives are available.

This study demonstrated that psychometric analysis is a meaningful tool for identifying at-risk populations of patients with cancer during the pandemic. Patients in psychological high-risk groups clearly demonstrated distinct perceptions, expectations, and needs when simultaneously confronted with a cancer diagnosis and the COVID-19 pandemic. Without effective management, such patients could experience long-lasting psychiatric morbidities, as revealed during the severe acute respiratory syndrome epidemic in 2003.[34,35] Wang et al[36] emphasised the importance of mental healthcare attention and resources for patients with cancer during the COVID-19 pandemic. Along with routine cancer care, targeted psychotherapies and follow-up care for both the acute impact and long-term sequelae of COVID-19 are needed.

Oncologists and patients with cancer have different perceptions of cancer symptoms, treatment priorities, and psychosocial needs.[37-39] We found that oncologists tended to underestimate patient motivation to avoid treatment interruptions, as well as patient risk acceptance, consistent with the observation by Catania et al[40] that patients with cancer were more concerned about their cancers than about the pandemic. Moreover, compared with oncologists, a greater proportion of our surveyed patients expressed confidence in identifying COVID-19 symptoms. These results illustrate differences in priorities and perceptions of pandemic severity, along with the challenge of balancing disruptions to cancer treatment and maintaining COVID-19–related safety.

Proposed interventions to minimise the impact of coronavirus disease 2019 on cancer patients

The following are some proposed interventions to minimise the impact of COVID-19 on cancer patients:

1. Ensure that patients are informed about hospital safety measures for COVID-19 management, with details regarding rationale and efficacy.
2. Ensure that healthcare staff maintain appropriate physical distance from patients.
3. Operate prescription-only clinics and lengthen follow-up intervals for clinically stable patients.
4. Triage appropriate patients towards telemedicine; enhance general telehealth literacy by implementing user-friendly interfaces, step-by-step demonstrations, and support hotlines.
5. Establish a regularly updated COVID-19–related newsfeed that is customised for patients with cancer.
6. Work with dieticians, physiotherapists, and occupational therapists to create self-help pamphlets that can guide patients with cancer in coping with the effects of social distancing; facilitate the establishment of virtual support groups for patients with cancer.
7. Implement early allied health assessments and interventions for at-risk patients.
8. Ensure early psychological support, particularly for newly diagnosed patients.
9. Compassionately and flexibly enforce restrictive measures for newly diagnosed patients, individuals approaching the end of life, and selected at-risk patients.
10. Periodically review these measures as the pandemic progresses.

Study strengths and limitations

To our knowledge, this is one of the first studies to simultaneously explore perceptions of the real-world impact of the COVID-19 pandemic among patients with cancer and oncologists. Importantly, the efforts of the multidisciplinary team to construct the questions contributed to a multidimensional, holistic understanding of issues and unmet needs that affect patients with cancer at different stages of their cancer care journeys. Because of the in-person survey invitation and paper-and-pen methodology, our survey achieved a high response rate of 65%, ensuring that the results are representative of the surveyed population. However, sampling bias was present because survey respondents were patients who physically attended their clinic appointments; data were missing for around 10% of patients who declined to attend their clinic appointments. Furthermore, this survey was conducted within a short interval (2 weeks) towards the end of the first wave of the COVID-19 pandemic in Hong Kong, when there was a gradual easing of lockdown policies and personal protective equipment availability began to improve[41]; thus, this cross-sectional assessment may not adequately reflect the evolution of patient perceptions regarding the COVID-19 pandemic. Other key limitations of the study include its inclusion of patients from a single cancer centre, as well as the exclusion of patients who could not read Chinese or English and patients who underwent treatment in private clinics. There is a need to repeat the study at various time points throughout the pandemic; future analyses should focus on other affected countries and patient populations.

Conclusion

This multidisciplinary survey concerning the effects of the COVID-19 pandemic impact revealed key care priorities among patients with cancer, as well as their unmet needs; in particular, it highlighted the importance of distinct priorities and needs among socio-economically underprivileged groups and patients with diverse psychological phenotypes. Oncologists should be aware that their own perceptions of pandemic-related effects differ from their patients' perceptions. These findings should be carefully considered as multidisciplinary teams modify their delivery of cancer care services during and after the pandemic.

Author contributions

Concept or design: KKH Bao, KM Cheung, JCH Chow.
Acquisition of data: All authors.
Analysis or interpretation of data: KKH Bao, KM Cheung, JCH Chow.
Drafting of the manuscript: KKH Bao, KM Cheung, JCH Chow.
Critical revision of the manuscript for important intellectual content: All authors.

All authors had full access to the data, contributed to the study, approved the final version for publication, and take responsibility for its accuracy and integrity.

Conflicts of interest

All authors have disclosed no conflicts of interest.

Acknowledgement

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Declaration

This research has been presented in part as poster presentations at the following conferences:

1. ESMO Congress 2020, virtual, 19-21 Sep 2020 (title: Cancer patients' perspectives on the real-world impact of COVID-19 pandemic: a multidisciplinary survey)
2. ESMO Asia Congress 2020, virtual, 20-22 Nov 2020 (title: Psychometric interplay of the perception of the real-life impact of COVID-19 pandemic: a cross-sectional survey of patients with newly diagnosed malignancies)

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Ethics approval

The study was approved by the Kowloon Central/Kowloon East Cluster Clinical Research Ethics Committee of Hospital Authority, Hong Kong (Ref No.: KC/KE-20-0126/ER-1). All eligible respondents explicitly agreed to join the panel and provided informed consent to participate in the study.

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