

# Impact of COVID-19 on Mental Health of Palliative Care Professionals and Services: A Mixed Method Survey Study

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## Research Article

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# Abstract

**Background:** The impact of the COVID-19 pandemic on the mental health of health care professionals is profound, but few studies have examined this phenomenon. The way palliative care services have been affected during the pandemic remains underexplored. This study aimed to 1. examine the mental health of palliative care professionals during the pandemic and the relationship of mental health with socio-demographic factors; and 2. explore the impact of the pandemic on palliative care services.

**Methods:** A cross-sectional survey study was conducted, and 142 palliative care professionals from public hospitals in Hong Kong completed an online questionnaire, which includes measurements on depression, anxiety, perceived stress, post-traumatic stress, professional quality of life, and 15 questions on the effect of COVID-19 on palliative care services. Descriptive and multivariate regression analyses were conducted. Quantitative and qualitative data about the impact of COVID-19 on palliative care services were analyzed and triangulated using a mixed-methods approach.

**Results:** Our findings indicated that 82%, 43% and 42% of the participants felt moderately to highly stressed, anxious, and depressed during the pandemic. Female professionals who are younger or have no religious belief tended to have poorer mental health. Qualitative findings identified three themes which affected the provision of palliative care: 1. the tightening of restrictions on visitors; 2. The limited provision of services; and 3. staff deployment.

**Conclusions:** This study suggests the need for concern about the mental health of palliative care professionals and for developing strategies of coping with the challenges during the pandemic.

**Trial registration:** N/A (This paper does not involve a health care intervention)

## 1. Introduction

In 2019, the novel coronavirus, COVID-19, emerged in China and caused a pandemic. By April 2021, there were more than 131 million confirmed cases and 2.8 million reported deaths worldwide (1). The first reported case of COVID-19 in Hong Kong was on 23 January 2020. By the end of April 2021, there were 11,711 confirmed cases and 209 deaths (2).

The outbreak of COVID-19 has led to a substantial amount of pressure on the global health care system. Front-line health care workers are the most vulnerable group, due to excessive workload, stigmatization, and fear of infection(3). A systematic review examined the prevalence of depression and anxiety among health care workers during COVID-19 (Papa et al., 2020). It was found that, globally, 23% of health care workers experienced symptoms of depression and anxiety during the pandemic. A more adverse psychological impact was reported among health care workers in East Asia. A study revealed that around 72% of health care workers in China experienced an extremely high rate of distress, and around 50% exhibited symptoms of depression and anxiety(4). A review confirmed that health care workers in China on average had a higher depression rate during COVID-19 than did workers in other countries(5). Despite

consistent evidence of the detrimental psychological effects of the pandemic on health care workers, few studies have specifically examined the mental health of palliative care professionals (PCP) during the COVID-19 pandemic. Due to allocation of resources in response to COVID-19, many PCP were asked to work in a different ward and had work duties that they were not familiar with (6) The majority of PCP also experienced an increased workload(6). Some palliative care (PC) services, such as palliative radiotherapy, had to be postponed or cancelled. PCP therefore had more emotionally and ethically challenging communication with patients and family to inform them of the new service arrangement. The impact of COVID-19 on mental health of PCP and service provision of PC are unique and profound especially when human touch and quality of life are highly important in PC. In Hong Kong, hospital PC is the major mode of PC services, which is also part of the public health care system. Currently, 16 medical and oncology PC teams which include multidisciplinary professionals are providing inpatient, outpatient and homecare services (7).

This study aimed to address the above research gap by 1. examining the mental health of PCP during the pandemic and the relationship of mental health with socio-demographic factors and 2. exploring the impact of the pandemic on PC services as perceived by PCP. The findings of this study may highlight the way PCP and PC services in Hong Kong were affected during the pandemic and may shed light on the measures that could be taken to ensure the quality of PC provision.

## 2. Method

### 2.1 Study design

A cross-sectional survey was conducted. Participants were PCP of public hospitals in Hong Kong. They were first recruited from the networks of the research team and then by snowball sampling. Ethical approval was obtained from the research ethics committee of the first author's affiliated university (Reference No. SBRE-19-529). Participants were invited via email to complete an online self-reported questionnaire from 3 April 2020 to 31 May 2020. No incentives were offered to undertake the survey. To examine the mental health of PCP during COVID-19 and associated socio-demographic factors (objective 1), a battery of mental health measurements and demographic questions were included. Details of the measurements are as follows:

***The Patient Health Questionnaire-9 (PHQ-9):*** PHQ-9 is a 9-item scale which measured depression level. Participants were asked about their symptoms of depression since the outbreak of COVID-19. The options for each response options were presented on a 4-point Likert scale (from '0', not at all, to '3', nearly every day). The total score ranges from 0 to 27, a higher score indicating a higher depression level. The Chinese version of PHQ-9 demonstrated good validity and reliability among the Hong Kong general population (8)Cronbach's alpha is 0.87, demonstrating good reliability in our samples.

***The Generalized Anxiety Disorder-7 (GAD-7):*** GAD-7 is a 7-item scale used to measure anxiety level. For each item, participants were asked how often they were bothered by each anxiety symptom since the outbreak of COVID-19. The options for each response were recorded on a 4-point scale (from '0', not at all,

to '3', nearly every day). The total score of the scale ranges from 0 to 21, a higher score indicating a higher anxiety level. GAD-7 demonstrated good validity and reliability among the Chinese general population(9). Cronbach's alpha is 0.92, demonstrating excellent reliability.

***The Perceived Stress scale (PSS):*** PSS assessed participants' perception of stress level since the outbreak of COVID-19 (10). The scale consists of 10 items, in which participants were asked how they feel since the COVID-19 pandemic. The total score ranges from 0 to 40, a higher score indicating higher distress. PSS exhibited good validity and reliability among the Chinese service workers (11). Cronbach's alpha is 0.75, demonstrating acceptable reliability.

***The Impact of Event Scale–revised (IES-R):*** IES-R is a 22-item scale assessing a participant's post-traumatic stress. All the items correspond directly to the DSM-IV symptoms of post-traumatic stress disorder. For each item, participants were asked to indicate how much they were bothered by the COVID-19 pandemic, according to a 5-point Likert scale (from '0', not at all, to '4', extremely). IES-R generates a total score ranging from 0 to 88, a higher score indicating a higher level of psychological distress. The scale exhibited satisfactory validity and reliability in the Chinese population (12). Cronbach's alpha is 0.92, indicating excellent reliability.

***The Professional Quality of Life Scale (ProQOL):*** ProQOL assessed both the compassion satisfaction and compassion fatigue of helping professionals. The scale consists of 30 items. Participants were asked how they have felt and what they think at work during the pandemic, using a 5-point Likert scale ('1', never, to '5', very often). The scale creates three subscale scores: Compassion Satisfaction Subscale (CS), the Burnout Scale (BO) and the Secondary Traumatic Stress Scale (STS). A higher CS score suggested greater compassion satisfaction. A higher BO score and STS score indicated a greater risk of burnout and secondary traumatic stress. Each subscale total score ranges from 10 to 50. The Traditional Chinese version of ProQOL demonstrated satisfactory reliability and validity in a previous study in Hong Kong(13). Cronbach's alphas for CS, BO and STS are 0.88, 0.78 and 0.73 respectively, indicating acceptable to excellent reliability.

***Demographic information:*** Items included age, gender, marital status, type of profession, educational level, years of experience in PC services and whether the participant has direct involvement in caring for COVID-19 patients.

The impact of COVID-19 on PC service was explored using the same online survey via a mixed-methods approach. For the quantitative arm, 14 questions about the effect of COVID-19 on PC services were asked. These questions were designed by the research team after reviewing relevant literature and discussing with frontline PCPs. The questions depicted common scenarios that PCP would face during the COVID-19 pandemic. Three aspects of questions were included: interruption to everyday PC services (5 questions), fear of infection and infection control support (6 questions) and overall support from government and hospital (3 questions). Participants were asked to rate their level of agreement with each statement on a 4-point Likert scale (from strongly disagree to strongly agree). For the qualitative arm, participants were asked whether they think COVID-19 influenced the provision of PC service. Participants

who responded yes were asked to provide additional details to describe how the service was influenced. Their answers became the qualitative data of this study.

## **2.2. Analysis**

Data analyses of quantitative data was performed by IBM SPSS version 26. The mental health profile of the participants was presented according to severity of symptoms (depression, anxiety, perceived distress, post-traumatic stress, and professional quality of life) using count and percentages. To analyze potential socio-demographic factors associated with each mental health outcome, multivariate regression analyses were undertaken using backward elimination. All six potential demographic predictors were entered into the model initially. At each step of the procedure, a variable with  $p > 0.1$  was removed. The process continued until all  $p$  value of predictors in the model met the alpha criteria of 0.1. The procedure resulted in a final risk prediction model for each mental health outcome. The variance inflated factor was examined for all predictors, and we confirmed an absence of multicollinearity.

For the 14 quantitative questions related to the impact of COVID-19 on PC services, counts and percentages for each question were presented. For qualitative data, the responses to the open-ended question were extracted by one author (DK) and analyzed with thematic analyses. DK read all the texts, generated initial codes, and developed potential themes(14). The codes and themes were then further reviewed, discussed, clarified and refined with the first author. The final version of themes was confirmed with all the authors. The quantitative and qualitative data were triangulated.

## **3. Results**

### **3.1. Participants**

A total of 142 PCPs participated in the survey. Sample characteristics are summarized in Table 1. Most are female ( $n = 118, 83\%$ ) with a mean age of 44 (SD: 10.06; Range: 23–69). Around two-third of the participants were married ( $N = 91, 64\%$ ), and only 38% have a religion ( $n = 54$ ).

Nurses constitute the largest proportion in the samples ( $n = 56, 39\%$ ), followed by physicians ( $n = 24, 17\%$ ) and social workers ( $n = 24, 17\%$ ). On average, the participants have been working in the PC setting for nine years (SD = 8.17). Only 9% ( $n = 12$ ) reported that they had worked in the high-risk areas which served COVID-19 patients during the pandemic. Although our sample size was small, the socio-demographic background, such as age, gender, and type of profession, was broadly representative of the workforce of PCP in Hong Kong's public hospitals (15)(HKSAR, 2019).

Table 1  
Demographics and Characteristics of the Respondents (n = 142)

	<b>Mean</b>	<b>SD</b>
<b>Age</b>	43.64	10.06
<b>Years in the profession</b>	17.34	9.85
<b>Years of PC service</b>	8.97	8.17
	<b>n</b>	<b>(%)</b>
<b>Gender</b>		
Male	24	(16.9)
Female	118	(83.1)
<b>Education Level</b>		
Non-degree holder	7	(4.9)
Degree holder	55	(38.7)
Master's degree or higher	82	(57.7)
<b>Profession</b>		
Physician	24	(16.9)
Nurse	56	(39.4)
Medical social worker	24	(16.9)
Physiotherapist/Speech therapist/Occupational therapist/Dietitian	16	(11.3)
Spiritual care provider	14	(9.9)
Clinical psychologist	8	(5.6)
<b>Religion</b>		
Have a religion	54	(38)
No religion	88	(62)
<b>Marital Status</b>		
Single	46	(32.4)
Married	91	(64.1)
Divorced or other	5	(3.5)
<b>Children</b>		

	Mean	SD
No	87	(61.3)
Yes	55	(38.7)
<b>Professional Status in SARS</b>		
Worked in non-medical field	13	(9.2)
Worked in health care profession	78	(54.9)
Student in health care field	16	(11.3)
Primary or secondary school student	35	(24.6)
<b>Worked in high-risk area</b>		
Yes	12	(8.5)
No	130	(91.5)

## 3.2. Mental Health Outcomes And Associated Socio-demographic Factors

Our results suggest that 86% of the participants (N = 110) felt moderately and highly stressed during the pandemic (Table 2). A considerable proportion of participants reported at least mild depression (43%), mild anxiety symptoms, (42%) and mild post-traumatic stress symptoms (60%). Despite this, 99% of participants had average and above average levels of compassion satisfaction from their work, and none showed high levels of burnout or secondary traumatic stress.

Table 2. Mental Health of Palliative Care Professionals		
	N	(%)
Depression; PHQ-9 (n = 134)		
Normal	76	(56.70)
Mild	44	(32.80)
Moderate	11	(8.20)
Severe	3	(2.20)
Anxiety; GAD-7 (n = 134)		
Normal	78	(58.20)
Mild	48	(35.80)
Moderate	4	(3.00)
Severe	4	(3.00)
Perceived distress; PSS (n = 129)		
Low	18	(14.00)
Moderate	98	(76.00)
High	13	(10.10)
Post-traumatic stress; IES-Revised (n = 125)		
Normal	50	(40.00)
Mild PTSD	40	(32.00)
Moderate PTSD	15	(12.00)
Severe PTSD	20	(16.00)
Professional quality of life; PROQoL (n = 118)		
Compassion Satisfaction subscale (CS)		
Low	1	(0.80)
Average	93	(78.80)
High	24	(20.30)
Secondary Traumatic Stress subscale (STS)		
Low	45	(38.10)
Average	73	(61.90)

High	0	(0.00)
Burnout Subscale (BO)		
Low	45	(38.10)
Average	73	(61.90)
High	0	(0.00)

PHQ-9: Patient Health Questionnaire-9; The severity categorization was based on cut-off points suggested by(8). The mean of PHQ-9 is 4.42 (SD: 4.14).  
 GAD-7: Generalized anxiety disorder-7. The severity categorization was based on cut-off points suggested by(16). The mean of GAD-7 is 4.08 (SD: 3.86).  
 PSS: Perceived stress scale. The mean score of perceived stress is 19.63 (SD: 5.28).  
 IES-Revised: The impact of event scale. The severity categorization was based on cut-off points of (4). The mean total score of IES-R of our sample is 25.74 (SD: 11.35), and the subscale scores of intrusion, avoidance, and hyperarousal are 1.34 (SD: 0.58), 1.03 (SD: 0.61) and 1.11 (SD: 0.51) respectively. The cut-off point for all the subscale scores is 2.  
 ProQOL: Professional Quality of life. The severity categorization was based on (12) The mean scores of CS, ST and BO in our sample are 36.84 (SD: 4.98), 23.64 (SD: 4.36) and 23.58 (SD: 4.57) respectively.

Multivariate regression (Table 3) showed that a younger age was associated with more symptoms of depression during the COVID-19 pandemic (Beta: -0.33,  $p < .001$ ) Participants who are younger (Beta: -0.25,  $p = 0.05$ ) and do not have a religion (Beta = 0.14,  $p = 0.97$ ) were also associated with more anxiety symptoms. There was no statistically significant association between any of the demographic variables with perceived stress and post-traumatic stress symptoms ( $p > .05$ ).

Regarding professional quality of life, being younger (Beta: -0.30,  $p < .001$ ), female (Beta: 0.20,  $p = 0.03$ ), and without a religion (Beta: 0.18,  $p = 0.04$ ) were associated with a higher level of secondary traumatic stress. We also found that being younger was associated with a higher level of burnout (Beta: -0.35,  $p < .001$ ). There was no statistically significant association between any of the demographic variables with compassion satisfaction ( $p > .05$ ).

Table 3. Final Risk Prediction Model on Mental Health Outcomes after Backward Elimination

	Standardized Beta (95% CI)	P	Model's statistics		
			R <sup>2</sup>	F	p
<b>PHQ-9-Depression symptoms<sup>a</sup></b>			0.11	F (1, 131) =16.13	0.00
Age	-0.33 (-0.21 - -0.70)	0.00		-	
<b>GAD-7 Anxiety symptoms<sup>b</sup></b>			0.07	F (2, 130) = 4.88	0.01
Age	-2.45 (-.16- .03)	0.05		-	
Religion					
With	Ref			-	
Without	.143 (-.206-2.46)	0.97			
<b>ProQOL-Secondary Traumatic Stress<sup>c</sup></b>			0.15	F (3,113) =6.68	0.00
Age	-0.30 (-0.20-0.05)	0.00		-	
Gender					
Male	Ref			-	
Female	0.20 (0.26-4.04)	0.03			
Religion					
With	Ref			-	
Without	0.18 (0.05-2.98)	0.04			
<b>ProQOL-Burnout<sup>d</sup></b>			0.13	F (1, 115) =16.47	0.00
Age	-0.35 (-0.244-0.084)	0.00		-	

Abbreviation: Ref= Reference group in the regression

Remarks: As none of the socio-demographic variables were found associated with the total score of the perceived stress scale (PSS), the impact of event scale (IES-R) and the subscale score of Professional quality of life-Compassion satisfaction (ProQOL-CS), and multivariate regression analyses were not conducted on these mental health outcomes.

<sup>a</sup> This is the final risk prediction model on PHQ-9. Through the procedure, gender (female versus male), occupation (doctor, nurse, allied health professional) marital status (married, not married), years of experience, religion (with versus without) and direct involvement with COVID patients (with versus without) were eliminated.

<sup>b</sup> This is the final risk prediction model on GAD-7. Through the procedure, gender (female versus male), occupation (doctor, nurse, allied health professional) marital status (married, not married), years of experience and direct involvement with COVID patients (with versus without) were eliminated.

<sup>c</sup> This is the final risk prediction model on ProQOL secondary traumatic stress after backward elimination. Through the procedure, occupation (doctor, nurse, allied health professions), marital status (married, not married), years of experience and direct involvement with COVID patients (with versus without) were eliminated.

<sup>d</sup> This is the final risk prediction model on ProQOL-burnout after backward elimination. Through the procedure, gender (female versus male), occupation (doctor, nurse, allied health professional), marital status (married, not married), years of experience, religion (with versus without) and direct involvement with COVID patients (with versus without) were eliminated.

### 3.3. Impact Of Pandemic On Pc Services

#### 3.3.1. Survey findings

The majority of participants (90%; 113 out of the 125 who answered this question) agreed that PC services had been affected by the COVID-19 pandemic. Table 4 shows the details. Regarding questions on ‘interruption to PC services’, 82% (n = 102 reported feeling stressed when communicating with patients and family about the visitor policy, 78% (n = 98) agreed that the negative social atmosphere had influenced PC service quality, and 50% (n = 63) agreed their workload had increased. Around 33–43% reported that wearing a face mask and limiting physical contact during the pandemic had affected the service quality of PC.

Regarding questions on 'fear of infection and infection control support', around 64% (n = 80) reported they feared being infected during work, but only 20% (n = 25) reported fear of death. About 34% (n = 42) worried that that compassionate visiting (hospital visits of patients' relatives are not allowed during the pandemic except on compassion grounds) in the PC ward may put them at greater risk of infection. Only 47% (n = 59) felt at ease when serving febrile PC patients during the pandemic. For perceived support on infection control measures, 73% (n = 90) believed they received sufficient and appropriate infection control training for COVID-19. A similar proportion of participants reported feeling safe (n = 92, 74%) when they wore personal protective equipment (PPE) while serving PC patients.

For questions on overall support from government and hospital, 62% (n = 77) and 76% (n = 95) expressed lack of confidence in the anti-epidemic policy of the Hong Kong government and the Hospital Authority respectively. Despite this, 80% (n = 100) felt they were well supported in general by their own PC team during the pandemic.

Table 4  
Respondents' Response about the Impact of the Pandemic on Palliative Care

		Agree or Strongly Agree		Disagree or Strongly Disagree	
		n	(%)	n	(%)
1.	Under the no-visiting policy, I feel stressed when communicating with patients and family members. (INTERR)	102	(81.6)	23	(18.4)
2.	With the personal protection equipment provided, I feel safe when serving patients in palliative care. (IC)	92	(73.6)	33	(26.4)
3.	I worry I would be infected if I allow family members to visit dying patients under compassionate visiting. (IC)	42	(33.6)	83	(66.4)
4.	I feel at ease when serving febrile palliative care patients. (IC)	59	(47.2)	66	(52.8)
5.	The negative social atmosphere would influence the palliative care service quality. (INTERR)	98	(78.4)	27	(21.6)
6.	I am confident about the anti-epidemic policy and instructions of the Hospital Authority. (SUP)	48	(38.4)	77	(61.6)
7.	During the COVID-19 epidemic, I feel the support of the palliative care team. (SUP)	100	(80.0)	25	(20.0)
8.	During the COVID-19 epidemic, my workload has increased. (INTERR)	63	(50.4)	62	(49.6)
9.	I think I have received enough and appropriate infection control. (IC)	90	(72.0)	35	(28.0)
10.	I am confident about the anti-epidemic policy of the government. (SUP)	30	(24.0)	95	(76.0)
11.	I am afraid I would be infected by COVID-19 at work. (IC)	80	(64.0)	45	(36.0)
12.	I am afraid I would die of COVID-19. (IC)	25	(20.0)	100	(80.0)
13.	The patient and I need to wear masks during the epidemic, and it affects my communication with patients. (INTERR)	41	(32.8)	84	(67.2)
14.	During the epidemic, my patient and I are afraid of physical contact, and it affects the service I provided. (INTERR)	54	(43.2)	71	(56.8)
(INTERR) represent questions about 'interruption to everyday PC services' (5 questions).					
(IC) represent questions about 'fear of infection & infection control support' (6 questions).					
(SUP) represent questions about 'overall support from government and hospital' (3 questions).					

### 3.3.2. Qualitative Findings

The majority of participants (83%) provided a response to the open-ended question relating to the perceived impacts of COVID-19 on PC services. Three major themes were identified: 1. Tightening the restrictions on visitors, 2. Limiting the provision of PC services and 3. Staff deployment.

### **3.3.2.1. Tightening The Restrictions On Visitors**

Our findings showed that participants expressed the most concern about the tightening the restrictions on visitors. About 72% of responses (75 out of 104) were related to this theme. During COVID-19, visiting hours and number of visitors were restricted in the inpatient PC service. Visits were only granted for the family on compassionate grounds, when patients deteriorated to the final stage of life: “In my acute care setting, although the family visit is allowed for end-of-life cases on compassionate grounds...still subject to individual ward policy, some wards only allow short visits like 15 minutes, twice per week” (Participant 12, physician). The tightening of restrictions on visitors affected the following people.

#### **A) Patients**

Participants reported that tightening the restrictions on visitors has limited patients’ chances to interact with their loved ones, leading to distress and loneliness. Although video calls were arranged, participants found they did not really replace family visits. One participant said: “Our patients are profoundly affected, as ward visits are banned now. Their mood is influenced by the physical disconnection from families” (participant 45, physician).

#### **B) Family Caregivers**

Participants reported family caregivers were particularly concerned and anxious about their patient’s health condition because of the visiting policy. They were upset because they could not convey their support directly to the patients “Diet is traditionally the main concern of many families. Caregivers can no longer take homemade meals to patients every day. And many of them were upset to see patients feeling lonely in their hospital bed” (Participant 45, physician). It also potentially led to complicated bereavement. Participants reported that most family caregivers expressed guilty feelings for not being able to uphold their caregiving responsibility during the pandemic.

#### **C) Pcp**

Participants reported that tension and conflicts had increased between them and patients and patients’ family caregivers because of tightening of restrictions on visitors. One participant reported, “The majority of PC patients have a poor prognosis... it is difficult to give discretion to relatives to visit patients just because of their terminal condition. If we allow all families to visit, the ward will be too crowded, and this will increase the risk of infection” (Participant 36, physician).

Participants also stated that the no-visiting policy created an additional workload for them. Front-line PC nurses needed to make an extra effort in arranging video conferences and implementing additional infection control measures (e.g., temperature checking and filling in visit records). They also needed to rearrange appointments, as patients declined admission during COVID-19. Additional emotional support had to be provided to family caregivers, as they showed more concern about the patients' situation during the pandemic. Moreover, one nurse reported that it is difficult to assess the needs of family caregivers and provide them with timely support during the outbreak, as they now had limited chances to interact with family caregivers during the pandemic.

### **3.3.2.2. Limiting The Provision Of Pc Services**

About half of the responses (54%; 56 out of 104) described how the provision of PC services had been affected during COVID. Different PC service components were affected.

#### **A) Homecare Support Service**

Some nurses stated that the number of home visits had been greatly reduced due to the outbreak. Homecare support service is often considered non-essential by the authorities. Therefore, participants claimed that they were unable to provide timely intervention to patients and families. They also shared their worries in providing homecare support services, due to the scarcity of PPE. One participant mentioned, "PPE was limited, which creates great anxiety for the homecare nurses... The department has to buy raincoats for us to replace the formal PPE, which harms our professional image" (Participant 40, nurse).

#### **B) Spiritual Support Service**

Spiritual support service for PC patients was limited during COVID-19. This service changed to provision-on-request from patients and required approval from the hospital chief executive. The spiritual needs of patients were ignored, which may lead to further emotional distress to patients. One participant reported, "The referral procedure of spiritual support service in my hospital is complicated, and the time for approval may need a whole day... In some cases, the patients died while waiting" (Participant 59, spiritual care worker).

#### **C) Service Routine**

PC routine service was delayed or suspended. Participants mentioned that patients were required to undergo a complicated admission procedure to PC wards during the pandemic and that affected the patient's well-being: "The new admission procedure is so complicated that the patients suffered a lot from it... They have to waste a lot of time being admitted to the PC ward, and some patients need to stay

at home without any assistance while waiting...This arrangement totally contradicts the value of PC” (Participant 30, nurse). Some PC services (e.g., pain management consultation) and interventions (e.g., palliative radiotherapy/surgery) were suspended, as they were regarded as non-essential. Multidisciplinary team meetings also became less frequent. In one hospital, the entire PC ward was closed, and all cubicles were converted to managing suspected/confirmed COVID-19 cases. Support received from non-governmental organizations was reduced because their staff was not allowed to enter the clinical areas of the hospital. Furthermore, participants said that many patients were afraid of entering the hospital and therefore declined their outpatient follow-up appointments.

## **D) Post-death Service**

Participants mentioned that post-death support had been reduced. This created hassles to the family and affected the quality of service. For example, due to infection control measures, funeral service providers and family members could not go to the hospitals to do the make-up or change clothes for the deceased. Also, the hospital stopped providing the venue (e.g., a farewell hall) for family members to hold simple memorial rituals before transferring the bodies to the crematorium. This created additional financial burden to the families, as they had to use the services of private funeral parlors. Some social workers mentioned the difficulty of providing bereavement support to family. They found the comprehensiveness of bereavement risk assessment conducted solely by phone was inevitably compromised.

### **3.3.2.3. Staff Deployment**

Nine out of 104 responses were related to staff deployment during COVID-19. Participants reported that some PC staff had been deployed to other wards or a ‘dirty team’ (team that provides care to suspected and confirmed COVID-19 patients), as PC services were regarded as non-essential. Such deployment caused distress and confusion and increased the workload of the PC team.

One physician mentioned that “In my hospital, two-thirds of PC physicians are deployed to either dirty teams or acute medical duties. Two-thirds of PC homecare nurses are deployed to either the dirty team or acute medical duties” (Participant 28, physician). One nurse also stated: “The situation was the same during SARS, that PC service in acute hospitals was once again regarded as a non-essential service. The PC ward was even temporarily closed, and only ambulatory service remained” (Participant 19, nurse). Some participants also mentioned that the reduction of staff caused an increased workload in PC services. One physician even said that his role in PC service was diminished and became ambiguous, as all the attention had been shifted to infection control.

## **4. Discussion**

### **4.1. Mental health of health care professionals**

This study found that the prevalence of mental health symptoms was high among PCP in Hong Kong. About 82% felt moderately and highly stressed, and 42% and 43% reported symptoms of depression and anxiety during the COVID-19 pandemic. These figures are similar to the depression (50%) and anxiety rates (45%) reported by Lai et al. (4), which targets Chinese health care workers who treat COVID patients. This may suggest that the degree of psychological impact of the pandemic on PCP could be as substantial as for professionals directly involved in the care of COVID-19 patients. The effect of the pandemic on the mental health of PCP should not be underestimated. Despite this, in our study, we found a lower proportion of participants (60% versus 72%) reporting post-traumatic stress symptoms compared to the proportion in Lai et al.'s study (4), which may suggest the differences in the major challenges in their work (e.g., taking care of COVID-19 patients directly vs. taking care of PC patients during the COVID-19 pandemic).

Our study further indicated that younger PCP tend to be more depressed, and those who are younger and had no religion were more anxious during the pandemic. Female PCP who do not have a religion and are younger showed higher levels of secondary traumatic stress and burnout. This finding is in line with findings in the existing literature which indicate that age and religion constitute a protective effect during a pandemic, as older participants tend to have a greater ability to self-reflect and adopt positive coping (17), while a religious belief may provide faith to the person in times of crisis(18). Our study suggested that this subgroup of PCP could be the most vulnerable workforce during the pandemic. They may require further attention and psychological support from the hospital team. The encouraging side is that despite all the challenges to the mental health of these PCP during the COVID-19 pandemic, about 20% of participants indicated a high level of compassion satisfaction in their work, which is comparable to what we found in a study conducted before the pandemic (about 22%) (Chan et al., 2020).

## 4.2. Impact Of Pandemic On Pc Services

Our findings on the effect of the pandemic on PC services can provide some context for understanding why PCP experienced poor mental health during the COVID-19 pandemic. Our participants reported that the tightening of the restrictions on visitors had affected their routine service the most. Many revealed that the change of visiting policy increased tension and conflicts with their patients and family caregivers. Our quantitative findings also consistently suggested that over 80% of the participants reported difficulty in communicating with their clients about the visiting policy. The restrictions on visitors also drastically reduced the in-person contact between patients and caregivers. PC patients may often experience loneliness and existential isolation when facing death and dying (19, 20). Our findings illustrate that lack of in-person contacts with family members due to tightening restrictions on visitors may further exacerbate these feelings. Our findings also pointed out that family caregivers suffered when they could not often visit patients in PC wards and express their support. Culturally among Hong Kong Chinese family caregivers, preparing food and soup for patients is a way of expressing support (21);(22)).

Many PCP witnessed their patients dying alone, and their family caregivers experienced strong caregiving guilt. Many PC services were also suspended or delayed (e.g., spiritual support services, homecare support service, post-death support service), affecting the prognosis of patients and the well-being of caregivers. Facing such a situation, PCP might feel guilty and helpless at not being able to do more for their clients (Roycroft, Wilkes, Pattani, Fleming, & Olsson-Brown, 2020). Litz et al. (23) termed such experience 'moral injuries', which describes moral distress experienced when a circumstance clashes with one's moral or ethical code. It is especially true when PCP have a strong belief in improving the quality of life and providing holistic care in PC. Moral injuries are common among health care professionals during the COVID-19 pandemic (24), and continuous exposure of these events was associated with poorer mental well-being (25). From our findings on the effect of the pandemic on PC services, the source of distress of PCP may also come from fear of infection, perceived lack of support from government and hospital and frustration in staff deployment (e.g., the PC ward was closed, and different PCP were deployed to other units). Such results are consistent with those of the existing study which suggest these factors as potential reasons leading to the poor mental health of health care professionals during the pandemic (6)

Overall, in light of our findings, we suggest several measures to help mitigate the negative effects of the COVID-19 pandemic on the mental health of PCP. First, the self-care of PCP should be promoted during the pandemic. Workshops which focus on self-care and enhancing their competence to cope with personal emotional and existential challenges in providing PC could be provided to PCP ((26); (27)). Second, education and training should also be provided to PCPs on communicating effectively with patients and caregivers during the pandemic, during which complications are experienced (e.g., change in visiting policy, suspension, and delays of PC services). Lastly, from a more macro perspective, the government and the Hospital Authority should ensure adequate PPE be given to health care professionals, and be open to listening to the feedback and suggestions from the front-line workers.

### **4.3. Limitations**

There are several limitations of this study. First, this study was cross-sectional. It is difficult to determine whether the poor well-being resulted from the pandemic, as the baseline psychological health of the participants was unknown. Future studies should consider using a case control/ longitudinal study design to verify the findings. Second, our sample size was small, which decreases the power of the study. However, the profile of the sample was broadly representative of the workforce profile of PC in Hong Kong. This guaranteed the generalizability of our findings to the Hong Kong PC health professional populations. Thirdly, coping skills, resiliency level and social support network were not measured among participants in our study. They are likely confounders affecting the psychological health of the PCP. These outcomes should be added in future studies, as this may gauge more understanding about why certain PC subgroups are more vulnerable to the pandemic crisis.

## **5. Conclusion**

This is the first study which examined the mental health of PCP during the COVID-19 pandemic in Hong Kong, and the impact of the pandemic on the local provision of PC.

Our study showed preliminary findings that the pandemic has affected the mental health of PCP. Those who are younger, female and without a religion represented the most vulnerable group, who require additional psychological support. Our study also found the pandemic had affected routine PC services, which could potentially explain why PCP felt distress during this period. The tightening of the restrictions on visitors brought difficulties to patients, family caregivers and professionals. Provision of PC service was affected, and services such as spiritual support and post-death support were limited. Some PCP were deployed to other units, and PC service might even be suspended. PC teams may need to better respond to these challenges to uphold the quality of services.

## **6. Declarations**

### **Ethics approval and consent to participate:**

The study was conducted in accordance with the Declaration of Helsinki. Ethics approval was granted by the Survey and Behavioral Research Ethics Committee of the Chinese University of Hong Kong (reference number: SBRE-19-529). Written informed consent was obtained from participants prior to the data collection of the study.

### **Consent for publication:**

Not applicable

### **Availability of data and materials:**

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

### **Competing interests:**

The authors declare that they have no competing interests.

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### **Authors' contributions:**

WCHC, RKWW, DKSK, LMHC participated in the study design and data collection of the study. WCHC, DKSK and CTKY analyzed and interpreted the quantitative and qualitative data. All authors contributed to the writing of the manuscript and have read and approved the final manuscript for submission.

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