



## Medical oncology job satisfaction: Results of a global survey



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### ABSTRACT

**Background:** While physician burnout is increasingly recognized, little is known about medical oncologist job satisfaction, and the factors associated with low satisfaction. Here, we report the results of an international survey of medical oncologists.

**Methods:** An online survey was distributed using a modified snowball methodology via national oncology societies to chemotherapy-prescribing physicians in 65 countries. Oncologist job satisfaction was assessed by asking, "On a scale of 1-10, how would you rate your satisfaction as an oncologist? 1 = unsatisfying, 10 = satisfying." Low, moderate and high job satisfaction was defined as scores of 1-6, 7-8, and 9-10, respectively.

**Results:** 1,115 physicians from 42 countries completed the survey. Overall job satisfaction rates were 20% (222/1,115), 51% (573/1,115), and 29% (320/1,115) for low-, moderate-, and high-satisfaction, respectively. Respondents with low job satisfaction were younger ( $P = 0.001$ ) and had fewer years in clinical practice ( $P = 0.013$ ) compared to those with high satisfaction. Increasing hours worked by per week ( $p = 0.042$ ), decreasing annual weeks of paid vacation ( $P = 0.007$ ), being on-call every night ( $P = 0.016$ ), higher clinic volumes ( $P = 0.004$ ) and lack of access to on-site radiotherapy ( $P = 0.049$ ), palliative care ( $P = 0.005$ ), and chemotherapy pharmacists ( $P = 0.033$ ) were associated with low-job satisfaction. Respondents with low-job satisfaction were less likely to discuss prognosis with their patients compared to those with moderate or high job satisfaction (median 45% of patients  $v$  65%  $v$  75%,  $P < 0.001$ ).

**Conclusions:** Globally, 1 in 5 medical oncologists report low job satisfaction. The main correlates of job satisfaction are related to system-level pressures resulting in less time for quality patient care and personal resilience. Improving oncologist job satisfaction will require new approaches to models of care delivery.

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### Introduction

While the practice of medical oncology can be very rewarding, oncologists face many challenges in the delivery of cancer care. Rising clinical volumes, the emotional toll of the disease,

increasing complexity of treatment, and financial constraints on access to therapies pose unique challenges to medical oncologists [1]. Amid these expectations and challenges, concern has been raised about job satisfaction and burnout among cancer care providers [2]. Common contributing factors to these conditions include increased administrative workload, higher patient volumes, reduced work-life balance, and loss of autonomy [1,3-5].

While many of the contributing factors are similar, it is important to recognize that job satisfaction and burnout are distinct concepts [6-8]. Physicians may experience significant stress and/or

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burnout but retain high levels of job satisfaction [9–11]. Burnout is commonly defined as a syndrome of emotional exhaustion, depersonalization, and feelings of low achievement [12]. Physician satisfaction is less well-defined, but is generally assessed as a self-reported measure of subjective career satisfaction and desire to remain in the same specialty or choose it again if given the chance [13,14]. While multiple recent studies have demonstrated alarming rates of burnout among medical oncologists, there is less information available on job satisfaction, even less so in a global context [2,9,15]. Identifying potential contributing factors to job satisfaction is critically important to help inform optimal models of care and human resource planning. To address this gap in knowledge, we explore job satisfaction, and factors associated with satisfaction, among medical oncologists who participated in a global workload and clinical practice survey.

## Methods

### Participants

The methods of the survey design and distribution have been previously described [16]. The eligible study population included any practicing physician who administers chemotherapy; trainees were excluded. Potential participants were identified by contacting the established national associations of medical oncologists in 54 countries and two regions (Caribbean and Africa). When contact with the national association was not possible, the senior investigator (C.M.B) contacted one personal contact per country to invite participation and distribution of the survey using an informal national network. This study was approved by the Research Ethics Board of Queen's University.

### Survey design

An online electronic survey was developed using Fluid Surveys (Ottawa, ON). The survey was designed using multidisciplinary input from study investigators practicing in diverse clinical environments including those located in high-, middle- and low-middle income countries. The survey was then piloted and revised in an iterative fashion based on feedback from 10 oncologists from diverse global backgrounds. The final survey included 51 questions and took 10–15 minutes to complete. The web-based survey was distributed using a modified snowball methodology in November 2016. A reminder e-mail was sent via all national and/or regional contacts in January 2017.

Physician job satisfaction was assessed by asking, "On a scale of 1–10, how would you rate your satisfaction as an oncologist? 1 = unsatisfying, 10 = satisfying." A priori, it was determined that respondents answering 1–6 would be classified as having "low satisfaction," 7–8 as having "moderate satisfaction," and 9–10 as having "high satisfaction." Several follow-up questions then aimed to clarify contributing factors to job satisfaction. A full copy of the survey tool can be found in [Appendix A](#).

### Statistical analysis

Countries were classified into low-middle income countries (LMICs), upper-middle income countries (UMICs) and high-income countries (HICs) based on the World Bank Criteria. The primary objective of this study was to describe oncologist job satisfaction and factors associated with low and/or high job satisfaction. All data were initially collected in Fluid Surveys (Ottawa, ON) and subsequently exported to IBM Statistical Package for the Social Sciences (SPSS) for Windows version 24.0 (SPSS, Armonk, NY, 2016). Data consisted of categorical, ordinal, and continuous formats, occasionally collected as ranges. Pearson chi-square tests were used to test

for the difference in proportions, and the one-way analysis of variance or the Kruskal-Wallis test was used to compare ordinal and continuous data by income stratification. A *P* value of 0.05 was considered as the criteria for statistical significance, and no adjustments were made for multiple comparisons.

## Results

### Survey distribution and response

Among the 54 countries and 2 regional networks (Africa and Caribbean), 42 countries and/or regional networks (75%) agreed to participate. The study cohort included 1,115 respondents from 65 different countries. Survey response rates were available for 40% (17 of 42) of all countries and/or regional networks and ranged from 3% in Singapore and Portugal to 76% in Slovenia. Among study participants, 70% (782 of 1,115), 17% (186 of 1,115), and 13% (147 of 1,115) were from HICs, UMICs, and LMICs, respectively. The mean response rate across all countries for which response rate was available was 12% (461 of 3,967) ([Appendix B](#)).

### Characteristics of study participants

Fifty-eight percent (647/1,115) of respondents were male and the median age was 44 years. The median number of years in practice was 10, with a median of 6 years of postgraduate training. Eighty-one percent (898/1,115) of respondents were medical oncologists, 10% (112/1,115) were clinical oncologists, 4% (49/1,115) were hematologists, and 5% (56/1,115) were other specialists that prescribed chemotherapy. Participants from LMICs were more likely to be clinical oncologists (ie, delivering chemotherapy and radiation; 20%; 29 of 147) than were those from UMICs (9%; 16 of 186) and HICs (9%; 67 of 782; *P* < 0.001).

### Demographics, practice setting, and job satisfaction

Overall job satisfaction rates were 20% (222/1,115), 51% (573/1,115), and 29% (320/1,115) for low-, moderate-, and high-satisfaction, respectively ([Table 1](#)). Respondents with low-job satisfaction were younger (*P*=0.001) and had fewer years in clinical practice (*P*=0.013) compared to those with high satisfaction. Job satisfaction did not vary substantially by sex. Across country-level economic groups, the only outlier were medical oncologists from UMICs which were more likely than medical oncologists in LMICs and HICs to have high-job satisfaction (38% [71/186] v 28% [41/147] and 27% [208/782], respectively, *P*=0.006). Physicians working in the private sector had higher job satisfaction than those working exclusively in the public sector (35% [133/381] v 26% [187/733], *P*=0.001). Medical oncologists working at smaller hospitals (*P*=0.011) and within smaller clinical groups (*P*=0.051) were more likely to have high-job satisfaction than those at larger centres. Medical oncologists without access to on-site radiotherapy (*P*=0.049), palliative care (*P*=0.005), and chemotherapy pharmacists (*P*=0.033) were more likely to have low-job satisfaction.

### Clinical workload and job satisfaction

Increasing hours worked per week was associated with a gradient of decline in job satisfaction (*P*=0.042) ([Table 2](#)). Likewise, decreasing annual weeks of paid vacation was associated with less job satisfaction (*P*=0.007). Physicians who were on-call every night also had significantly lower job satisfaction (*P*=0.016). The annual number of new patient consultations was not associated with lower job satisfaction (*P*=0.257). However, there was an

**Table 1**  
Demographics and clinical practice setting of respondents to a global medical oncology workload survey for those with low, moderate, and high job satisfaction (N = 1,115).\*

	Job satisfaction			P value
	Low N = 222	Moderate N = 573	High N = 320	
	<b>N (% by row)</b>			
<b>Demographics</b>				
<b>Sex</b>				
Male	120 (19)	330 (51)	197 (30)	0.237
Female	101 (22)	239 (52)	123 (27)	
<b>Economic status</b>				
Low-middle income country	29 (20)	77 (52)	41 (28)	0.006
Upper-middle income country	42 (23)	73 (39)	71 (38)	
High income country	151 (19)	423 (54)	208 (27)	
<b>Age (median)</b>	43	44	46	0.001
<b>Years in practice (median)</b>	9	11	10	0.013
<b>Specialty</b>				
Medical oncologist	172 (19)	464 (52)	262 (29)	0.057
Clinical oncologist	25 (22)	50 (45)	37 (33)	
Pediatric oncologist	2 (18)	3 (27)	6 (55)	
Hematologist	11 (22)	34 (69)	4 (8)	
Surgeon	6 (33)	6 (33)	6 (33)	
Internal medicine	5 (26)	11 (58)	3 (16)	
Other	1 (13)	5 (63)	2 (25)	
<b>Years postgraduate training (median)</b>	6	6	6	
<b>Clinical practice setting</b>				
<b>System</b>				
Public	158 (22)	388 (53)	187 (26)	0.011
Private <sup>+</sup>	64 (17)	184 (48)	133 (35)	
<b>Setting<sup>#</sup></b>				
Hospital in-patient	178 (21)	444 (52)	237 (28)	0.234
Hospital outpatient	177 (19)	503 (53)	267 (28)	0.012
Other outpatient	12 (9)	78 (59)	43 (32)	0.004
<b>Hospital type</b>				
General hospital	145 (20)	374 (52)	205 (28)	0.054
Cancer hospital	77 (20)	195 (51)	107 (28)	
Not in hospital setting	0 (0)	4 (33)	8 (67)	
<b>Oncology in-patient beds in center</b>				
0-9	20 (20)	48(48)	33(33)	0.011
10-50	95 (18)	262 (50)	171 (32)	
51 <sup>+</sup>	107 (20)	259 (49)	108 (20)	
<b>Number of chemotherapy prescribers</b>				
1-4	45 (25)	81 (45)	56 (31)	0.051
5-10	49 (16)	160 (52)	99 (32)	
11 <sup>+</sup>	128 (20)	332 (53)	165 (26)	
<b>Radiotherapy on site<sup>^</sup></b>				
Yes	184 (20)	473 (51)	263 (29)	0.049
No	38 (21)	96 (52)	49 (27)	
<b>Palliative care on site<sup>^</sup></b>				
Yes	175 (19)	478 (52)	270 (29)	0.005
No	47 (25)	91 (51)	42 (23)	
<b>Chemotherapy pharmacist on site<sup>^</sup></b>				
Yes	176 (19)	478 (52)	267 (29)	0.033
No	45 (25)	91 (50)	45 (25)	
<b>Training program in center</b>				
Yes	156 (19)	439 (53)	228 (28)	0.088
No	66 (23)	134 (46)	92 (32)	
<b>Supervise trainees</b>				
Yes	180 (20)	439 (49)	270 (30)	0.220
No	42 (24)	80 (47)	50 (29)	
<b>EMR</b>				
Yes	177 (24)	465 (63)	260 (35)	0.854
No	44 (21)	104 (50)	58 (28)	
<b>Clinic assistants</b>				
Nurse	168 (21)	415 (41)	235 (29)	0.649
Nurse practitioner	95 (17)	291 (52)	179 (32)	0.011
Medical Students	52 (16)	167 (52)	101 (32)	0.113
Residents	114 (17)	366 (53)	208 (30)	0.002
Other physicians	53 (17)	152 (50)	98 (32)	0.195

Percentages do not always equal 100 due to rounding.

\* Job satisfaction was reported on a 10-point Likert scale with 10 representing high satisfaction. Respondents were classified as low (1-6), moderate (7-8), and high (9-10) job satisfaction.

<sup>^</sup> Data were missing for 12 radiotherapy on site; 12 palliative care; 13 chemotherapy pharmacist responses.

<sup>#</sup> Respondents could select more than one response.

<sup>+</sup> Respondents worked exclusively in the private sector or in both private and public sectors.

**Table 2**

Delivery of clinical care by respondents to a global medical oncology workload survey for those with low, moderate, and high job satisfaction (N = 1,115).\*

	Job satisfaction			P value
	Low N = 222	Moderate N = 573	High N = 320	
<b>Delivery of Clinical Care</b>				
<b>Work Week</b>				
No. hours worked/week (median)	51-60	41-50	41-50	0.042
No. days worked/week (mean)	5.4	5.3	5.2	
<b>Leave</b>				
No. weeks annual vacation (median)	4	4	4	0.007
No. weeks annual vacation (mean)	3.8	4.1	4.4	
No. weeks annual conference leave (median)	1	2	2	0.022
<b>On-call duties<sup>#</sup></b>				
No. days on-call/month (median)	3.5	3	3	0.562
Respondents on-call every night (%) <sup>#</sup>	33	22	28	0.016
<b>Allocation of duties</b>				
% Time on clinical duties (mean)	64	64	62	0.246
% Time on research (mean)	12	14	14	0.080
% Time on teaching (mean)	8	9	9	0.332
% Time on administration (mean)	13	13	14	0.494
<b>Clinical Volumes</b>				
<b>No. annual new consults (median)</b>				
≤100 N (%)	151-200	151-200	151-200	0.257
100-300	68 (23)	142 (48)	80 (28)	
>300	102 (19)	284 (52)	165 (30)	
	49 (19)	140 (53)	73 (28)	
<b>No. patients seen per clinic day (median)</b>				
≤20 N (%)	21-30	21-30	11-20	0.004
20-40	94 (17)	274 (50)	176 (32)	
>40	101 (22)	238 (52)	118 (26)	
	25 (23)	59 (54)	25 (23)	

\* Job satisfaction was reported on a 10-point Likert scale with 10 representing high satisfaction. Respondents were classified as low (1-6), moderate (7-8), and high (9-10) job satisfaction.

<sup>†</sup> Number of weeks with paid vacation had an identical median but the means differed resulting in a significant difference using both the one-way ANOVA and the Kruskal-Wallis test.

<sup>#</sup> On-call duties were not reported by all respondents, actual responses for low, moderate, high were 57/174, 90/411, 56/198, respectively.

**Table 3**

Top 5 reported barriers to patient care as reported by respondents to a global medical oncology workload survey for those with low, moderate, and high job satisfaction (N = 1,115).\*

Job satisfaction Low (N = 222)	Moderate (N = 573)	High (N = 320)
High clinical volumes (70%, 156/222)	High clinical volumes (60%, 344/573)	High clinical volumes (48%, 155/320)
Insufficient time for reading (40%, 89/222)	Insufficient time for reading (41%, 234/573)	Limited access to newer treatments (37%, 119/320)
Shortage of oncologists (32%, 72/222)	Limited access to newer treatments (34%, 196/573)	Insufficient time for reading (32%, 103/320)
Limited access to newer treatments (25%, 56/222)	Shortage of oncologists (29%, 166/573)	Shortage of oncologists (25%, 81/320)
Shortage of nurses (21%, 46/222)	Shortage of nurses (26%, 146/573)	Shortage of nurses (22%, 71/320)

\* Job satisfaction was reported on a 10-point Likert scale with 10 representing high satisfaction. Respondents were classified as low (1-6), moderate (7-8), and high (9-10) job satisfaction.

association with daily clinic volumes: medical oncologists who saw >40 patients per day were less likely to have high-job satisfaction (23% [25/109] v 32% [176/544],  $P=0.052$ ) compared to those who saw <20 patients per day. Physicians with low-job satisfaction were less likely to discuss prognosis with their patients compared to those with moderate- or high-job satisfaction (median 45% of patients v 65% v 75%, respectively,  $P < 0.001$ ).

#### Barriers to care and job satisfaction

The top barriers to patient care reported by study respondents are shown in Table 3. Physicians expressing low-job satisfaction were substantially more likely than those with moderate- or high-job satisfaction to report high clinical volumes as a major barrier to care (70% [156/222] v 60% [344/573] v 48% [155/320],  $P < 0.001$ ). Other common barriers reported by those physicians with low job satisfaction include: insufficient time for reading (40%), shortage of oncologists (32%), limited access to treatments (25%), and shortage of nurses (21%).

#### Discussion

To our knowledge, this is the first international study evaluating oncologist job satisfaction. Representing 42 countries and over 1,100 oncologists from a diverse background of socioeconomic environments and practice settings, this survey provides an overview of oncology job satisfaction from a global context. Several important findings have emerged. First, 20% of oncology providers express low job satisfaction. Second, job satisfaction is related to measures of clinical workload. Oncologists expressing low satisfaction worked more hours per week, saw more clinic patients per day, and had less annual paid vacation. Third, oncologists with low job satisfaction are more likely to work in the public system and have less access to supporting services such as radiotherapy, palliative care, and chemotherapy pharmacists. This study provides evidence to support what is intuitive: oncologists value working in a multidisciplinary environment with the resources and time to properly care for their patients and for themselves. The intuitiveness of this finding makes its confirmation no less important; rather, it should be a call to action.

The findings of this study add to a growing body of evidence concerning physician wellness. Physician wellness is a multifaceted concept characterized not only by the absence of distress, but also by the achievement of success in one's personal and professional life [17]. Burnout and job satisfaction are thus two related but distinct components of physician wellness that share many common determinants. To date, the majority of the publications in the oncology literature have focused on wellness from the perspective of oncologist burnout. In 2012, Shanafelt et al reported on a survey of US oncologists identified from the American Society for Clinical Oncology membership file [9]. Among 1,500 respondents, 45% were burned out on the emotional exhaustion and/or depersonalization domains of the Maslach Burnout Inventory. Hours per week directly devoted to patient care was identified as the greatest professional predictor of burnout. Other important factors contributing to burnout included increasing hours per week spent on work tasks at home, focus on one certain type of cancer, and increasing age. More recently, Banerjee et al reported on a survey of 737 young medical oncologists from 41 European countries recruited through the European Society for Medical Oncology website. Alarming, among this group of medical oncologists under the age of 40, 71% reported experiencing symptoms of burnout [15]. Factors associated with burnout included lack of access to support services, living alone, work-life balance, and inadequate vacation time.

In contrast, much less is known about oncologist job satisfaction and its correlates. In our global study, 20% of oncologists reported low job satisfaction. This is comparable to the 2012 study of US oncologists by Shanafelt et al where 20% of respondents answered “no” to the question of whether they would become an oncologist again [9]. Balch et al reported on a 2008 survey of US surgical oncologists and identified a 25% prevalence of low-career satisfaction [18]. More concerning, however, is the longitudinal trend in oncologist job satisfaction. In a 2011 Medscape report, 79% of oncologists indicated they would choose oncology as a specialty again; this dropped drastically to 51% in an update performed in 2015 [19].

Few previous studies have examined factors associated with oncologist job satisfaction. In a study using survey and focus group techniques, Grunfeld et al reported that, counter to popular belief, the daily interaction with suffering and dying patients is not a major source of job stress for cancer care providers [20]; in fact, those interviewed identified that helping patients and families was the major source of their job satisfaction. This is supported by 2 findings in our study. First, although higher annual new patient volume is not associated with lower job satisfaction; in contrast, working more hours and seeing more patients per clinic day are both associated with lower job satisfaction. Second, our results show that those oncologists with high job satisfaction were considerably more likely than those with low satisfaction to have important conversations with their patients regarding prognosis. It is interesting to note that physicians from LMICs, despite having significantly higher clinical volumes, days per week worked, on call duties, and less paid vacation, were not more likely to have low job satisfaction. This highlights that strategies to improve physician satisfaction, much like those needed to address physician burnout, must be tailored according to geographical and cultural needs [15]. Finally, common contributors to oncologist job satisfaction and physician burnout, such as less onsite access to supporting services, working more hours per week, having less paid vacation, suggest that system-level changes to delivery of care and human resource planning have the potential to significantly improve physician wellness. These efforts are needed given the projected shortages in cancer care providers in the coming years [21].

There are several methodologic limitations important to consider in the interpretation of our study. First, as with any survey, respondents may not be representative of all providers in their

health system. Second, 16 of 42 countries did not have a formal national association, and therefore, relied on informal survey distribution by one oncologist contact. Third, two of the world's largest countries, the United States and Russia, declined to participate in this study. Given that much of the previous data on physician satisfaction derives from the United States, this limits our ability to compare and contrast with past publications. Fourth, the assignment of job satisfaction scores to categories corresponding to low-, medium-, and high-satisfaction is arbitrary. Finally, like any survey, the results are subject to the validity of the response; questions concerning job satisfaction may be prone to social desirability bias, that is, the tendency to answer question in a manner that will be viewed favorably.

In conclusion, this international study demonstrates that 1 in 5 oncologists express low job satisfaction. The main correlates of job satisfaction appear to be related to system-level pressures which may result in less time for quality patient care and personal resilience. Therefore, improving oncologist job satisfaction will require innovative new approaches to models of care delivery and attention to health human resources. Physician wellness is important to the sustainability of the oncology workforce in the face of increasing system pressure. In order for physicians to care well, they must be well themselves. Further research into methods to improve physician wellness, both from the perspective of burnout and job satisfaction, are needed.

#### Authorship Responsibility, and Contribution to Manuscript

- Michael J. Raphael—Original idea for the research; data analyses; first draft of the manuscript
- Adam Fundytus—Original idea for the research; collection of data; review of manuscript for critically important intellectual content
- Wilma Hopman—Original idea for the research; collection of data; data analyses; review of manuscript for critically important intellectual content
- Verna Vanderpuye—Original idea for the research; collection of data; review of manuscript for critically important intellectual content
- Bostjan Seruga—Original idea for the research; collection of data; review of manuscript for critically important intellectual content
- Gilberto Lopes—Original idea for the research; review of manuscript for critically important intellectual content
- Nazik Hammad—Original idea for the research; review of manuscript for critically important intellectual content
- Manju Sengar—Original idea for the research; collection of data; review of manuscript for critically important intellectual content
- Michael Brundage—Original idea for the research; review of manuscript for critically important intellectual content
- Richard Sullivan—Original idea for the research; review of manuscript for critically important intellectual content
- Christopher Booth—Original idea for the research; collection of data; data analyses; review of manuscript for critically important intellectual content

#### Conflicts of interest

The authors have no disclosures.

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### Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:[10.1053/j.seminoncol.2018.12.006](https://doi.org/10.1053/j.seminoncol.2018.12.006).

### Appendix A. Global Oncology Workload Survey

Cancer is now the second leading cause of death worldwide. There is an urgent need to build health system capacity globally to address the growing burden of disease. This is particularly relevant in low and middle-income countries, who experience a disproportionate burden of cancer. There is no contemporary data that describes work environment and clinical volume of practicing oncologists worldwide. To address this gap in the literature, we have created this brief survey to learn from thousands of oncologists globally in high income and low-middle income countries. This information will be useful to national societies in advocating for oncology specific resources within their own health setting. This study has been approved by the Research Ethics Board at Queen's University in Canada. This survey will take 5-10 minutes to complete. This survey is anonymous. You are under no obligation to participate. Completion of the survey will be regarded as implied consent to participate. Thank you for supporting this effort in global oncology.

Do you consent to participate in this research study?

- Yes
- No

Do you prescribe chemotherapy?

- Yes
- No

Which best describes you?

- Medical trainee
- Fully qualified physician who has completed training

Do you provide?

- Chemotherapy
- Both chemotherapy and radiation therapy

Which of the following best describes you?

- Medical Oncologist
- Clinical Oncologist (prescribes chemotherapy and radiotherapy)
- Hematologist
- Surgeon
- Internal medicine physician
- Gynecologist
- Other \_\_\_\_\_

You have selected clinical oncologist. What proportion of your clinical time is spent on (enter as numerical value in percent)

- Radiation therapy
- Chemotherapy

Which country do you currently practice in?

- Afghanistan
- Albania
- Algeria
- American Samoa
- Andorra

- Angola
- Anguilla
- Antigua and Barbuda
- Argentina
- Armenia
- ... 215 additional choices hidden ...
- Uruguay
- Uzbekistan
- Vanuatu
- Venezuela
- Vietnam
- Virgin Islands
- Wallis and Funtana Islands
- Yemen
- Zambia
- Zimbabwe

Did you complete your core oncology training in the country listed above?

- Yes
- No

After medical school, how many years of clinical training did you complete?

How many years have you been practicing since you completed your training? Please enter as numerical value in years with no words

Do you work in the

- Public health care system
- Private health care system
- Both

Is your primary practice location in an urban or rural center? Note: rural is defined as a population of less than fifty thousand and not within a two hour reasonable commuting distance of a larger center.

- Urban
- Rural

Which cancers do you treat? (Select as many as apply)

- All cancers
- Brain
- Breast
- Endocrine/Neuroendocrine
- Gastrointestinal
- Genitourinary
- Gynecological
- Head and Neck
- Lung
- Lymphoma/Leukemia
- Sarcoma
- Skin/Cutaneous
- Other \_\_\_\_\_

Which of the following best describes your oncology practice?

- Adults only
- Pediatric patients only
- I treat both adult and pediatric patients

Which of the following describes your practice? (select all that apply)

- Hospital inpatient care
- Hospital based outpatient clinics
- Non-hospital outpatient clinics

If hospital was selected is it a

- General hospital
- Dedicated cancer hospital
- I do not work in a hospital setting at all

What proportion of your clinical time is spent on

- Inpatient care
- Outpatient care

How many physicians prescribe chemotherapy at your primary clinic/hospital?

- 1 (I am the only physician that prescribes chemotherapy at my center)
- 2-4
- 5-7
- 8-10
- 11-14
- >15

In an average month how often do you participate in a multi-disciplinary case conference (tumor board, multidisciplinary team meeting)?

- 0 (This is not available at my center)
- 1
- 2
- 3
- 4+

Is there radiotherapy on site?

- Yes
- No

Is there palliative care team or specialist on site?

- Yes
- No

Are there dedicated chemotherapy pharmacists at your institution?

- Yes
- No

How many oncology IN-PATIENT beds are there in your institution? Include all beds for hemato-oncology, medical oncology and radiation oncology.

- 0
- 1-9
- 10-20
- 21-50
- 51-100
- >100

Is there an oncology residency or fellowship training program in your center?

- Yes
- No

Is there an on oncology residency training program in your country?

- Yes
- No

Do you supervise trainees (Medical Students, Registrars, Residents or Fellows) in clinic?

- Yes

- No

Which of the following assist you in your outpatient clinical practice? (select all that apply)

- Nurses
- Oncology nurse specialist/practitioner
- Medical students
- Resident physicians/ Registrar physicians
- Other physicians who work under your supervision

Are you responsible for overnight or weekend call-duties?

- Yes
- No

How many days per month are you on call on average? Please enter as numerical value in days

- \_\_\_\_\_
- I am always on call unless I am away on leave

Typically, how many days per week do you work?

- <1
- 1
- 2
- 3
- 4
- 5
- 6
- 7

Typically, how many days per week do you see patients in the outpatient clinic?

- <1
- 1
- 2
- 3
- 4
- 5
- 6
- 7

How many hours do you typically work per week?

- 0-10
- 11-20
- 21-30
- 31-40
- 41-50
- 51-60
- 61-70
- 71-80
- >80

How many weeks of paid leave (vacation) do you get per year?

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- >6

How many weeks of paid conference leave do you get per year?

- 0
- 1
- 2

- 3
- 4
- 5
- 6
- >6

What percentage of your time is spent on

- Clinical Practice
- Research
- Teaching (formal lectures/seminars)
- Administrative duties
- Other

How many new cancer patient consults do you see per year?

- <50
- 51-100
- 101-150
- 151-200
- 201-250
- 251-300
- 301-350
- 351-400
- 401-450
- 451-500
- 501-600
- 601-700
- 701-800
- 801-900
- 901-1000
- 1001-1250
- 1251-1500
- 1501-1750
- 1751-2000
- >2000

What is the average wait time for a new consult to be seen after referral?

- New consults are seen same day without a referral
- 1-3 days
- 4-7 days
- 1-2 weeks
- 3-4 weeks
- 5-6 weeks
- 7-8 weeks
- >8 weeks

What percentage of your patients will be prescribed anti-cancer systemic therapy (i.e cytotoxic chemotherapy, hormonal therapy, immunotherapy, targeted therapy)?

- 0-20%
- 21-40%
- 41-60%
- 61-80%
- 81-100%

In a typical full day out-patient clinic how many patients will you see?

- <10
- 10-20
- 21-30
- 31-40
- 41-50
- 51-60
- 61-70
- 71-80

- 81-90
- 91-100
- 100+

What is the average time that you as the consultant spend with a new patient during the initial consultation?

- <5 minutes
- 5-10 minutes
- 10-20 minutes
- 21-30 minutes
- 31-40 minutes
- 41-50 minutes
- 51-60 minutes
- >1 hr

What is the average time spent per clinic visit with an out-patient who is receiving chemotherapy?

- <5 minutes
- 5-10 minutes
- 10-20 minutes
- 21-30 minutes
- 31-40 minutes
- 41-50 minutes
- 51-60 minutes
- >1 hr

In what percentage of your new patient consults do you discuss estimated survival or prognosis?

- 0-10%
- 11-20%
- 21-30%
- 31-40%
- 41-50%
- 51-60%
- 61-70%
- 71-80%
- 81-90%
- 91-100%

Does your primary work site have an electronic medical record?

- Yes
- No

How do you order chemotherapy?

- Handwritten
- Electronic
- Both
- With regards to recording clinic notes do you (check all that apply)
- Dictate notes
- Hand-write clinic notes
- Type clinic notes

On a scale of 1-10 how would you rate your job satisfaction as an oncologist? 1=unsatisfying, 10= satisfying

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10

High patient volumes adversely affect my job satisfaction

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

What are the three biggest barriers to effective patient care in your practice (select up to three maximum)

- High clinical patient volumes
- Insufficient time to read current literature
- Unavailability or limited access to diagnostic imaging
- Unavailability or limited access to accurate pathology
- Unavailability or limited access to standard chemotherapy
- Unavailability or limited access to newer anti-cancer treatment options (i.e immune therapy, targeted therapies)

- Unavailability or limited access to radiotherapy
- Patients unable to pay for treatment, diagnostic imaging, pathology
- Patients cannot reach clinic for regular follow-up
- Shortage of oncologists
- Shortage of chemotherapy pharmacists
- Shortage of nurses
- Lack of electronic medical record
- Other, please specify... \_\_\_\_\_

Sex

- Male
- Female

Age

**Appendix B. Country-level participation and response rates**

Country	World Bank Classification	Distribution Method	Complete Responses	Denominator	Country specific response rate^
Bahrain	HIC	Declined participation	0	Declined	N/A
Belgium	HIC	Declined participation	0	Declined	N/A
Czech Republic	HIC	Declined participation	0	Declined	N/A
Israel	HIC	Declined participation	0	Declined	N/A
Jordan	UMIC	Declined participation	0	Declined	N/A
Korea	HIC	Declined participation	0	Declined	N/A
Lebanon	UMIC	Declined participation	0	Declined	N/A
Montenegro	UMIC	Declined participation	0	Declined	N/A
Netherlands	UMIC	Declined participation	0	Declined	N/A
Nicaragua	LMIC	Declined participation	0	Declined	N/A
Norway	HIC	Declined participation	0	Declined	N/A
Taiwan	HIC	Declined participation	0	Declined	N/A
Uruguay	HIC	Declined participation	0	Declined	N/A
USA	HIC	Declined participation	0	Declined	N/A
Australia	HIC	National Organization	39	N/A	N/A
Bosnia	UMIC	National Organization	3	N/A	N/A
Brazil	UMIC	National Organization	57	N/A	N/A
Canada	HIC	National Organization	58	322	18%
Chile	HIC	National Organization	23	108	21%
Colombia	UMIC	National Organization	20	N/A	N/A
Estonia	HIC	National Organization	10	20	50%
Finland	HIC	National Organization	21	217	10%
Greece	HIC	National Organization	25	N/A	N/A
Hungary	HIC	National Organization	41	N/A	N/A
Italy	HIC	National Organization	25	N/A	N/A
Japan	HIC	National Organization	160	N/A	N/A
Mexico	HIC	National Organization	24	N/A	N/A

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