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ORIGINAL RESEARCH

Cancer Awareness Among People Living with HIV (PLWH): Insights from an Italian Survey of Oncologists and Infectious Disease Specialists

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Introduction: Since the mid-1990s, the adoption of combined antiretroviral therapy (cART) has significantly reduced HIV-related mortality and morbidity. Nevertheless, cancer continues to be the leading cause of death in people living with HIV (PLWH). We conducted a survey to assess the knowledge and inter-disciplinarity among the Italian oncologists and infectious disease specialists in the cancer prevention and treatment of PLWH.

Materials and Methods: All the members of AIOM, SIMIT and SITA who are oncologists and infectious disease specialists were invited via email. A survey with 24 queries was administered using a web-based platform. Data were analysed with the chi-square or Fisher exact tests to explore any significant difference between the two specialist subgroups.

Results: From April to June 2023, 182 participants filled in the questionnaires. A low rate of respondents from each scientific society was reported (3% for AIOM, 8% from SIMIT and 2% from SITA). All interviewees agreed that HIV infection was a relevant risk factor for cancer (95.1%) and that PLWH had limited access to clinical trials (73.1%). More than a third of oncologists worked in a hospital without an infectious diseases department, using a remote method of communication for interdisciplinary discussion (telephone and Email were used in 64.5% of cases). Eighty-four percent of the oncologists vs 51.4% of the infectious disease specialists had in charge less than 5 patients with HIV during the previous year.

Conclusion: The results of this survey underscore the opportunity for education, interdisciplinary collaboration, and organizational support to optimize cancer care for PLWH. A Hub&Spoke model could represent a potential facilitation to build-up in the near future through inter-societal collaboration.

Plain language summary:

- In the last years, antiretroviral therapy consistently prolonged the life expectancy of people living with HIV (PLWH).
- To date, cancer remains a leading cause of death for PLWH.
- We conducted a web-based survey directed to oncologists and infectious disease specialists.
- The survey underscored a reduced specialist awareness regarding the main needs of patients with HIV and cancer.

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Introduction

The availability of long-term effective combined antiretroviral therapy (cART) produced a significant shift in the trajectory of HIV infection, which has evolved by far into a chronic condition. As a result, the life expectancy of people living with HIV (PLWH) has nearly reached that of the general population and cancer remains one of the most serious comorbidity[1,2] and a frequent cause of mortality. Cancer risk factors may include altered immune response, a higher prevalence of chronic onco-viruses infection, and an increased prevalence of harmful lifestyle conditions such as smoking and alcohol consumption.

The incidence of AIDS-defining cancers (ADC – ie, Kaposi's sarcoma, non-Hodgkin lymphomas, and invasive uterine cervical carcinoma) decreased in recent years. Conversely, the prevalence of non-AIDS-defining cancers (NADC) has progressively increased (ie, Hodgkin lymphoma, anal cancer, lung cancer, hepatocellular carcinoma, non-melanoma skin cancers, and other solid tumors).[3,4]

A body of evidence has reported a higher cancer-related mortality rate among PLWH due to different reasons: the diagnostic delay, the more advanced stage at presentation, the greater number of comorbidities, infectious complications related to the state of immunodeficiency and an alarming disparity in access to cancer care.[5,6] The reasons behind these differences could be found among factors related to both the patient and the healthcare staff. It is therefore evident that the complexity of the combined management of HIV and cancer necessarily requires a multidisciplinary approach that provides cooperation at least between medical oncologist and infectious disease specialist. This might improve clinical outcomes and optimize cancer care, sparing unnecessary financial costs.

The rising incidence of newly diagnosed cancer in PLWH produced an unexpected challenge for current practitioners. For these reasons, we conducted a survey to assess the level of knowledge, inter-discipline collaboration and active networking between Italian oncologists and infectious disease specialists in the cancer prevention and treatment of PLWH. To enrol Italian oncologists, The Italian Foundation of Medical Oncology (Fondazione AIOM) and The Bridge Foundation supported the Italian Association of Medical Oncology (AIOM). Conversely, The Italian Society of Infection and Tropical Diseases (SIMIT) and the Italian Society of Anti-Infective Therapy (SITA) engaged Italian infectious disease specialists.

Materials and Methods

We elaborated a survey with 24 questions that we administered using a web-based platform (Google Forms, Google Inc., Ca, USA) to oncologists and infectious disease specialists that were members of AIOM, SIMIT and SITA. The initiative was built-up during March 2023, and participants were enrolled via Email from 1st of April 2023 until 30th of June 2023. Data were collected following an online consent and were anonymized for privacy protection. The study is in line with the General Data Protection Regulation (GDPR) of the European Union and with the Italian sub-regulations. We followed the checklist for reporting results of internet e-surveys (CHERRIES). This study did not require formal ethical approval since it did not involve the collection of patient data, personal identifiers, or sensitive information, according to Italian regulatory policy.

The survey aimed to evaluate in oncologists and infectious disease specialists the knowledge regarding the prevention and treatment of cancer in PLWH, characterize their daily clinical practice in the management of these patients, assess the organisation of their units and estimate the degree of interaction between the two specialists.

Statistical Methods

Answers to each item of the questionnaire are reported through descriptive statistics and the rate of respondents on the total number of physicians completing the survey. In order to explore the differences according to different specialities (ie, oncology and infectious disease), results were compared using Chi-square test or Fisher's exact test, where appropriate. All tests were two-sided, and p values <0.05 were considered statistically significant. Descriptive statistics of quantitative data are presented in percentage of respondents per item (%).

Results

Table 1 reports the list of the survey questions divided into four subgroups, according to the specific topic.

- Queries (Q) from 1 to 7 (Q1-Q7) explored the main demographic characteristics.
- Q8-Q13 evaluated the knowledge in the field of PLWH and cancer.
- Q14-16 analyzed the organization of healthcare pathways and the collaboration between the two professional figures.
- Q17-24 evaluated management of PLWH and cancer in clinical practice.

The results of the questionnaire, reported in Table 2, show the answers to each question, scattered by the specialty (oncology and infectious disease), with related p-value for difference.

Participant Demographics (Q1-Q7)

The survey had a balanced gender representation and was geographically skewed towards Northern Italy, with oncologists being younger than infectious disease specialists (p = 0.001).

Table 1 Survey Queries

Participant Demographics
Q1 - What is your specialization?
Q2 - Which scientific society do you belong to?
Q3 - What is your gender?
Q4 - What is your age?
Q5 - What is your working position?
Q6 - In which part of Italy do you practice?
Q7 - In which country region?
Knowledge about cancer in PLWH
Q8 - Is HIV infection considered an independent risk factor for cancer development?
Q9 - Do you think that PLWH and cancer have a higher prevalence of advanced stages at diagnosis?
Q10 - In your opinion, does the prognosis of PLWH and cancer is worse if compared to the general population?
Q11 - Do you think that PLWH and cancer have the same access to oncological care compared to the general population?
Q12 - Do you think that PLWH and cancer have the same access possibility to palliative care compared to the general population?
Q13 - Do you think that access to clinical trials for PLWH and cancer is reduced?
Organisation of healthcare pathways and interactions among professionals
Q14 - Does your hospital have both Medical Oncology and Infectious Diseases Units?
Q15 - In your clinical practice, how does collaboration take place between infectious disease specialist and an oncologist in the management of PLWH and cancer?
Q16 - In which department PLWH and cancer receive antineoplastic treatment?
Expertise in clinical practice
Q17 - Have you ever had PLWH and cancer in your charge?
Q18 - How many PLWH and cancer did you have in charge in 2022?
Q19 - In your clinical practice, are PLWH and cancer treated in your center or are they referred to specialized centers?
Q20 - Do you perceive a greater concern when treating these patients?
Q21 - Do you think PLWH and cancer should receive a different antineoplastic treatment compared to the general population?
Q22 - In your opinion, do PLWH and cancer have a higher frequency of toxicity/complications during anti-cancer treatment?
Q23 - Do you think that antiretroviral therapy should be administered concurrently with antineoplastic therapy?
Q24 - In your opinion, should PLWH and cancer undergo different follow-up/surveillance/screening compared to the general population?

Abbreviation: PLWH, people living with HIV.

Table 2 Complete Survey Queries and Responder Answers with Statistical Difference Significance Between Oncologists and Infectious Disease Specialists

	Total	Infectious Disease Specialists	Oncologists	p value*
	N=182 (%)	N=107 (%)	N=75 (%)	
Q1 - What is your specialization?				
Oncology	75 (41.2)	NA	NA	NA
Infectious Diseases	107 (58.8)			
Q2 - Which scientific society do you belong to?				
AIOM	74 (40.7)	NA	NA	NA
SITA	27 (14.8)			
SIMIT	81 (44.5)			
Q3 - What is your gender?				
Male	88 (48.4)	50 (46.7)	38 (50.7)	0.63
Female	93 (51.1)	56 (52.3)	37 (49.3)	
Gender non-conforming	1 (0.6)	1 (0.9)	0	
Not disclosed	0	0	0	
Q4 - What is your age?				
<40	65 (35.7)	29 (27.1)	36 (48.0)	**0.001**
40-50	43 (23.6)	23 (21.5)	20 (26.7)	
>50	74 (40.7)	55 (51.4)	19 (25.3)	
Q5 - What is your working position?				
Hospitalist	133 (73.1)	79 (73.8)	54 (72.0)	0.086
Researcher	15 (8.2)	5 (4.7)	10 (13.3)	
Director of department	24 (13.2)	14 (13.1)	10 (13.3)	
Associate Professor	8 (4.4)	7 (6.5)	1 (1.3)	
Full Professor	2 (1.1)	2 (1.9)	0	
Q6 - In which part of Italy do you practice?				
Northern	98 (53.9)	51 (47.7)	47 (62.7)	**0.026**
Central	30 (16.5)	18 (16.8)	12 (16.0)	
Southern	35 (19.2)	21 (19.6)	14 (18.7)	
Islands	19 (10.4)	17 (15.9)	2 (2.7)	

(*Continued*)

Table 2 (Continued).

Q7 - In which country region?				
Abruzzo	2 (1.1)	N.A.	N.A.	N.A.
Basilicata	2 (1.1)			
Calabria	7 (3.9)			
Campania	13 (7.1)			
Emilia Romagna	8 (4.4)			
Friuli Venezia Giulia	3 (1.7)			
Lazio	12 (6.6)			
Liguria	9 (5.0)			
Lombardia	55 (30.2)			
Marche	1 (0.6)			
Molise	2 (1.1)			
Piemonte	9 (5.0)			
Puglia	9 (5.0)			
Sardegna	5 (2.8)			
Sicilia	14 (7.7)			
Toscana	12 (6.6)			
Trentino Alto Adige	2 (1.1)			
Umbria	5 (2.8)			
Val d'Aosta	0			
Veneto	12 (6.6)			
Q8 - Is HIV infection considered an independent risk factor for cancer development?				
Yes	173 (95.1)	104 (97.2)	69 (92.0)	0.140
No	2 (1.1)	0	2 (2.7)	
I do not know	7 (3.9)	3 (2.8)	4 (5.3)	
Q9 - Do you think that PLWH and cancer have a higher prevalence of advanced stages at diagnosis?				
Yes	88 (48.4)	59 (55.1)	29 (38.7)	**0.012**
No	55 (30.2)	33 (30.8)	22 (29.3)	
I do not know	39 (21.4)	15 (14.0)	24 (32.0)	
Q10 - In your opinion, does the prognosis of PLWH and cancer is worse if compared to the general population?				
Yes	33 (18.1)	19 (17.8)	14 (18.7)	0.621
Sometimes	125 (68.7)	76 (71.0)	49 (65.3)	
No	16 (8.8)	9 (8.4)	7 (9.3)	
I do not know	8 (4.4)	3 (2.8)	5 (6.7)	

(*Continued*)

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Table 2 (Continued).

Q11 - Do you think that PLWH and cancer have the same access to oncological care compared to the general population?				
Yes	112 (61.5)	71 (66.4)	41 (54.7)	0.119
No	63 (34.6)	34 (31.8)	29 (38.7)	
I do not know	7 (3.9)	2 (1.9)	5 (6.7)	
Q12 - Do you think that PLWH and cancer have the same access possibility to palliative care compared to the general population?				
Yes	137 (75.3)	77 (72.0)	60 (80.0)	0.363
No	27 (14.8)	19 (17.8)	8 (10.7)	
I do not know	18 (9.9)	11 (10.3)	7 (9.3)	
Q13 - Do you think that access to clinical trials for PLWH and cancer is reduced?				
Yes	133 (73.1)	67 (62.6)	66 (88.0)	**0.001**
No	17 (9.3)	13 (12.2)	4 (5.3)	
I do not know	32 (17.6)	27 (25.2)	5 (6.7)	
Q14 - Does your hospital have both Medical Oncology and Infectious Diseases Units?				
Yes	142 (78.0)	94 (87.9)	48 (64.0)	**0.0001**
No	40 (22.0)	13 (12.1)	27 (36.0)	
Q15 - In your clinical practice, how does collaboration take place between infectious disease specialist and an oncologist in the management of PLWH and cancer?**				
No collaboration	3 (1.3)	1 (0.6)	2 (2.6)	**< 0.001**
By email/phone	106 (45.5)	57 (36.3)	49 (64.5)	
Periodic multidisciplinary board	18 (7.7)	14 (8.9)	4 (5.3)	
Medical consultation	106 (45.5)	85 (54.1)	21 (27.6)	
Q16 - Where PLWH and cancer receive antineoplastic treatment?				
In the Infectious Disease Unit	14 (7.7)	10 (9.4)	4 (5.3)	**< 0.001**
In the Oncology Unit	132 (72.5)	66 (61.7)	66 (88.0)	
In both	36 (19.8)	31 (29.0)	5 (6.7)	
Q17 - Have you ever had PLWH and cancer in your charge?				
Yes	171 (94.0)	105 (98.1)	66 (88.0)	**0.008**
No	11 (6.0)	2 (1.9)	9 (12.0)	
Q18 - How many PLWH and cancer did you have in charge in 2022?				
None	21 (11.5)	8 (7.5)	13 (17.3)	**< 0.0001**
<5	97 (53.3)	47 (43.9)	50 (66.7)	
5-12	49 (26.9)	41 (38.3)	8 (10.7)	
>12	15 (8.2)	11 (10.3)	4 (5.3)	

(*Continued*)

Table 2 (Continued).

Q19 - In your clinical practice, are PLWH and cancer treated in your center or are they referred to specialized centers?				
They are treated in my center	154 (84.6)	87 (81.3)	67 (89.3)	0.140
They are referred to another center	28 (15.4)	20 (18.7)	8 (10.7)	
Q20 - Do you perceive a greater concern when treating this patient?				
Yes	121 (66.5)	71 (66.4)	50 (66.7)	0.223
No	56 (33.8)	35 (32.7)	21 (28.0)	
I do not know	5 (2.8)	1 (0.9)	4 (5.3)	
Q21 - Do you think PLWH and cancer should receive a different antineoplastic treatment compared to the general population?				
Yes	23 (12.6)	16 (15.0)	7 (9.3)	0.334
No	140 (76.9)	78 (72.9)	62 (82.7)	
I do not know	19 (10.4)	13 (12.2)	6 (8.0)	
Q22 - In your opinion, do PLWH and cancer have a higher frequency of toxicity/complications during anti-cancer treatment?				
Yes	70 (38.5)	43 (40.2)	27 (36.0)	0.450
No	83 (45.6)	50 (46.7)	33 (44.0)	
I do not know	29 (15.9)	14 (13.1)	15 (20.0)	
Q23 - Do you think that antiretroviral therapy should be administered concurrently with antineoplastic therapy?				
Yes	160 (87.9)	99 (92.5)	61 (81.3)	**0.029**
Sometimes	16 (8.8)	7 (6.5)	9 (12.0)	
No	2 (1.1)	1 (0.9)	1 (1.3)	
I do not know	4 (2.2)	0	4 (5.3)	
Q24 - In your opinion, should PLWH and cancer undergo different follow-up/surveillance/screening compared to the general population?				
Yes	22 (12.1)	14 (13.1)	8 (10.7)	0.321
Sometimes (some screenings should be enhanced/adapted)	136 (74.7)	83 (77.6)	53 (70.7)	
No	21 (11.5)	9 (8.4)	12 (16.0)	
I do not know	3 (1.7)	1 (0.9)	2 (2.7)	

Notes: *chi-square o fisher test (when appropriate) to compare answers between oncologists and IDSs.**more than one answer selected.
Abbreviations: NA, not applicable; PLWH, people living with HIV.

There were 182 participants, 107 infectious disease specialists and 75 oncologists. Overall, 74 (41%) were associated with AIOM, 81 (44%) with SIMIT and 27 (15%) with SITA. The percentage of responders out of the overall number of associated with each scientific society was 3% for AIOM, 8% for SIMIT and 2% for SITA (Figure 1).

Items from *Q8* to *Q24* explore knowledge, patient management modalities and interdisciplinary interaction pathways among the different professionals involved.

Knowledge About Cancer in PLWH (Q8-Q13)

Most respondents recognize HIV as a cancer risk factor and that PLWH have a worse prognosis compared to the general population, but access to clinical trials remains a significant concern for 73%. Indeed, only half of the respondents estimated an increased prevalence of advanced stage at presentation.

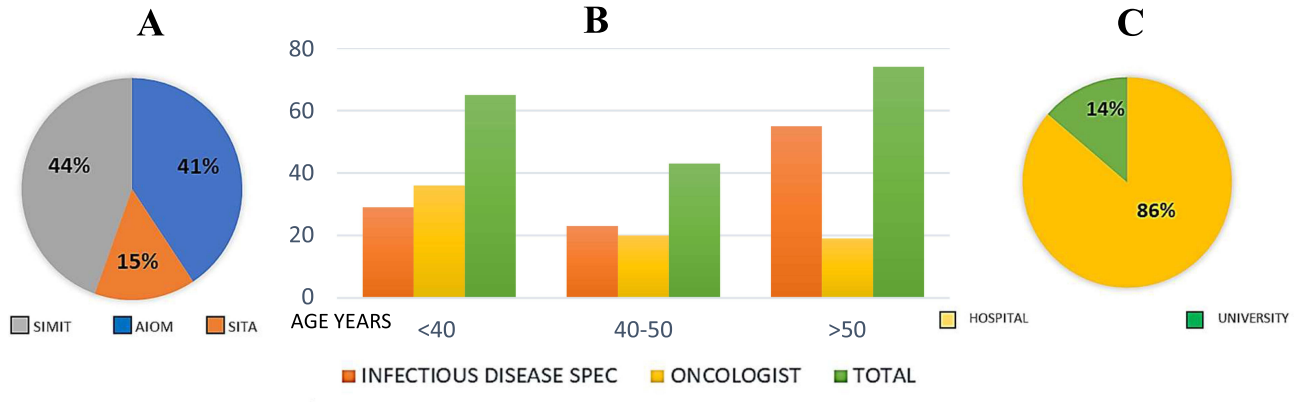

Figure 1 Participant demographics. (**A**) Scientific society of participants, (**B**) Participants' age, (**C**) Participants working place.

Regarding cancer care delivery, most interviewees believe that PLWH have no limitation in the access to standard cancer treatment (61.5%) and palliative care (75.3%) compared to the general population.

Although most respondents acknowledged HIV as a cancer risk factor, concerns about clinical trial access and prognosis disparities persist.

Organisation of Healthcare Pathways and Interactions Among Professionals (Q14-Q16)

Nowadays, multidisciplinary approach is crucial to ensure best practice in the management of patient with cancer. Since HIV infection further increases the complexity of patient care, interdisciplinary communication seems mandatory.

Significant differences emerged in how oncologists and infectious disease specialists approach HIV-related cancer care. More than a third of oncologists worked in a hospital without an infectious diseases department (36%), using communication methods that do not involve the physical and simultaneous presence of the infectious disease specialist (telephone and Email were used in 64,5% of cases). Moreover, the large majority of oncologists (88%) treat PLWH and cancer within oncology units.

Conversely, infectious disease specialists more frequently (54%) reported medical consultation as communication method with oncologists, made possible by the co-location of their units within the same hospital (87.9%). Then, less frequently opt for administering anticancer treatment in their own division instead of moving the patient to the oncology department (38.4%) (Figure 2).

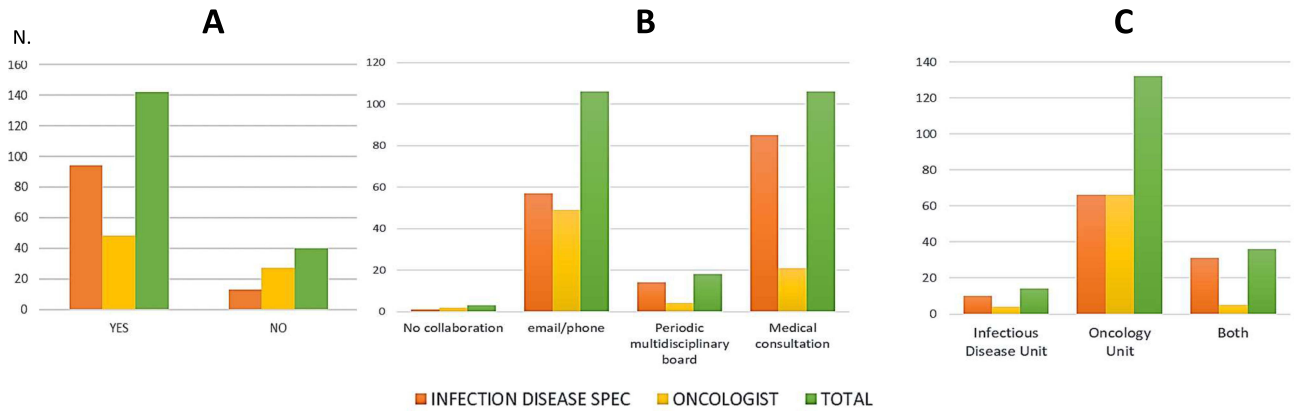

Figure 2 Organization of healthcare pathways and interactions among professionals. (**A**) answers to "Does your hospital have both Medical Oncology and Infectious Diseases Units?"; (**B**) Strategies of collaboration between infectious disease specialist and oncologist in the management of PLWH and cancer; (**C**) Department where PLWH and cancer receive antineoplastic treatment.

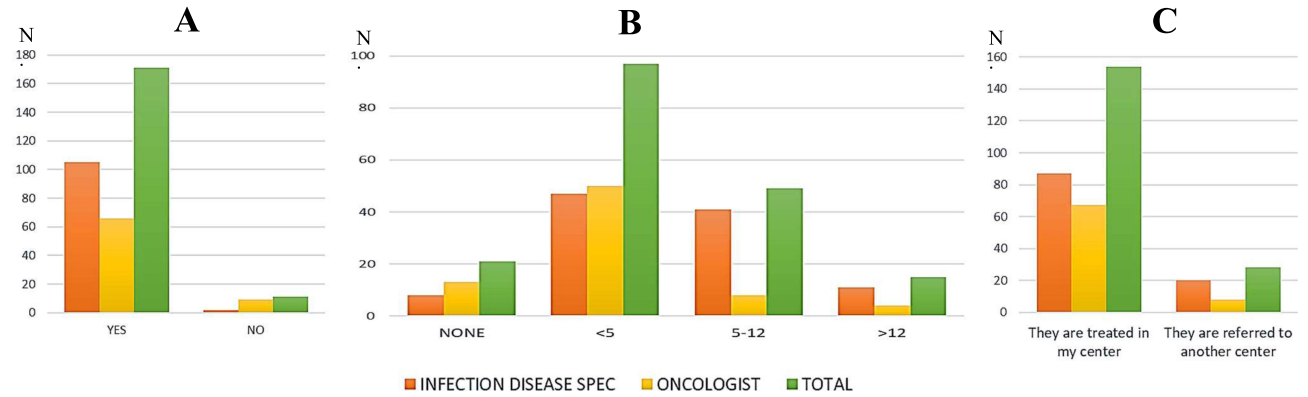

Figure 3 Expertise in Clinical Practice. (**A**) answers to "Have you ever had PLWH and cancer in your charge?"; (**B**) Number of PLWH treated in 2022; (**C**) answers to "In your clinical practice, are PLWH and cancer treated in your center or are they referred to specialized centers?".

Expertise in Clinical Practice (Q17-Q24)

Oncologists and infectious disease specialists differ significantly in patient management, collaboration methods, and treatment approaches.

Oncologists were more likely than infectious disease specialists to report never having had any patient with these characteristics (12% vs 1.9%, $p = 0.008$); referring to the previous calendar year (2022), the rate of responders having treated fewer than 5 patients was higher among the oncologists than among infectious disease specialists (84% vs 51.4%, $p < 0.0001$). There was no statistically significant difference in the rate of oncologists (10.7%) and infectious disease specialists (18.7%) referring PLWH and cancer to other specialized centres (Figure 3).

The majority of participants (67%) perceived a greater concern in treating cancer in PLWH. Seventy-seven percent of respondents believed that treatment of cancer in PLWH should not be different from the general population. On the contrary, the opinion on the possibility that adverse events may be more frequent in PLWH was less polarized, with 45.6% who do not expect more adverse events, 38.5% who rather do expect worse side effects and 15.9% declaring that they do not know what to expect. Most of the respondents (87.9%) think that cART must be administered concomitantly to anticancer treatment, with a slightly lower rate among oncologists (81.3%) compared to infectious disease specialists (92.5%).

Finally, 86.8% of interviewed physicians agreed on referring PLWH to a personalised cancer-screening program.

Discussion

Despite the introduction of cART in the mid-1990s, which profoundly changed mortality and morbidity related to HIV infection, cancer continues to be the leading cause of death in PLWH. In this regard, the low participation rate in the survey shown by both infectious disease (2% and 8%) and oncology (3%) scientific societies could be an indication of low awareness about the topic. However, the low rate of participation and non-representativeness of sampling are just some of the intrinsic limitations of the methodology used. On the other hand, the only other published survey conducted on the topic reported a response rate of 60% among US oncologists.[7] Therefore, the low rate of participation in Italy could represent an indicator for an important unmet need of adequate awareness and training. In this survey, there was a greater participation of younger oncologists. This may indicate a greater inclination of younger generations towards multidisciplinary approaches. The increasing complexity of cancer care, boosted by a fast technological evolution, may have stimulated interdisciplinary discussion among younger physicians. Moreover, modern health policies could have further incentivized collaborative works.

The second section of the survey (Q8-Q13) shows a fair degree of awareness among specialists on the topic addressed. The literature agrees in assigning a worse prognosis to PLWH affected by cancer. Delayed diagnosis and presentation with more advanced disease stages, higher prevalence of comorbidities, and infectious complications are the most important causes.[8,9]

Of note, there is a significant disparity in cancer care of PLWH, since they are less likely to receive antineoplastic treatments for almost all types of cancer except for anal cancer. This is probably due to factors related to both patients and healthcare professionals. Patient-related clinical and socio-demographic variables include a higher frequency of low healthcare coverage, low socioeconomic status, substance abuse, more advanced disease stages at diagnosis, and poor treatment compliance. Conversely, inappropriate knowledge of HIV-related issues, concerns about the adverse effects of antineoplastic treatments, drug interactions, and the perceived ineffectiveness of certain therapies in PLWH, as well as the exclusion from clinical trials are the main factors related to healthcare professionals.[10]

The explanation for the differences in the organization and collaboration methods between the two specialties shown in the third section of the survey (Q14-Q16) should first be sought in the different distribution and number of the two departments in Italy. There are approximately 125 infectious disease departments compared to 347 oncology departments (from Libro Bianco, AIOM, XIII edition, https://www.aiom.it/wp-content/uploads/2023/11/2023_Libro_bianco_AIOM_XIII_Ed.pdf).

These numbers also explain the different ways in which the two specialists interact. The unavailability of infectious disease specialists in their own hospital for about a third of oncologists forces them to communicate remotely (by Email or phone in 64.5% of cases).

The fourth section of the survey finally highlights an unexpected trend in the treatment of PLWH and cancer. Despite treating few of these patients (84% had less than 5 patients in charge in 2022), the vast majority of oncologists have declared, although showing poor expertise, not to refer patients to other specialized centres. This trend could be related to a lack of trust or knowledge of adequately trained specialists, concerns about access to another centre far from home or about continuity of care, and the fear of stigmatizing the patient.

Almost all oncologists and infectious disease specialists agreed that administration of cART has to be concomitant to anticancer treatment. Indeed, as widely demonstrated by the literature and reported in the main guidelines for the treatment of HIV infection (SIMIT 2017, EACS 2022, BHIVA 2022, DHHS 2023), cART should be started as soon as possible after a diagnosis of HIV infection and regardless of immuno-virologic status (CD4+ lymphocyte count and HIV viral load), especially in case of cancer co-diagnosis. This approach improves the efficacy of antineoplastic therapy by improving its tolerability and reducing the incidence of opportunistic infections.[6,11,12]

This survey has limitations. The main is the low-rate of respondents that implicates an indirect selection bias, hampering the reliability of results. Furthermore, surveys have other significant well-recognized inherent limitations.

Conclusions

Despite the inherent limitation of the method, this survey illustrates potential current critical issues in the treatment of PLWH and cancer in Italy, where the expertise in the management of these patients seems heterogeneous between different centres. Since cancer is a leading cause of morbidity and mortality in PLWH to date, it is imperative to raise awareness and provide comprehensive training for all healthcare professionals involved in the care of PLWH and cancer in Italy. These considerations have led to the collaboration between Italian scientific societies of oncology and infectious diseases aimed at drafting recommendations that can support clinicians in the management of PLWH and cancer (HIVreo network). This collaboration aims to address gaps in knowledge, standardize care practices, and ultimately improve patient outcomes. Moreover, broadening the spectrum of interventions, the promotion of public health initiatives that aim at creating dedicated healthcare pathways may ensure appropriate expertise in patient management. This could be optimized following pragmatic organizational models, ie, Hub&Spoke interaction between different Hospitals.

Abbreviations

PLWH, people living with HIV; cART, combined antiretroviral therapy; ADC, AIDS-defining cancers; NADC, non-AIDS-defining cancers; AIOM, Italian Association of Medical Oncology; SIMIT, Italian Society of Infection and Tropical Diseases; SITA, Italian Society of Anti-Infective Therapy; GDPR, General Data Protection Regulation; CHERRIES, checklist for reporting results of internet e-surveys; Q, Queries.

Data Sharing

Complete dataset generated and/or analysed in the current study is entirely reported in the current publication.

Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work. Dalu D and Iardino R are co-first authors of this manuscript. La Verde N and Beretta G are co-last authors of this manuscript.

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