Supplementary Material – Statistical Analysis (Knowledge level)

Please indicate your knowledge level on artificial intelligence in cancer care

Sample size		942	
Margin of error		3.20%	
Mean		2.02	
Standard deviation		0.746	
Percentiles	¼	1 (High knowledge)	
	½	2 (Good knowledge)	
	¾	3 (Some knowledge)	
Kolmogorov-Smirnov		**Test ratio**	**P-value**
		0.223	0.000
Shapiro-Wilk		**Test ratio**	**P-value**
		0.809	0.000

	Some knowledge	**Good knowledge**	**High knowledge**	**Total**
Number of observations	272	418	252	942
Frequency	28.87%	44.37%	26.75%	100%

Artificial intelligence will be widely used in cancer care

Sample size		937	
Margin of error		3.21%	
Mean		1.35	
Standard deviation		0.509	
Percentiles	¼	1 (Likely before 10 years)	
	½	1 (Likely before 10 years)	
	¾	2 (Likely after 10 years)	
Kruskal-Wallis		**Statistic**	**P-value**
		1.592	0.451
Kolmogorov-Smirnov		**Statistic**	**P-value**
		0.418	0.000
Shapiro-Wilk		**Statistic**	**P-value**
		0.630	0.000

		Unlikely	**Likely after 10 years**	**Likely before 10 years**	**Total**
Some knowledge	**Number of observations**	1	93	175	269
	Frequency	0.37%	34.57%	65.06%	100.00%
Good knowledge	**Number of observations**	7	140	270	417
	Frequency	1.68%	33.57%	64.75%	100.00%
High Knowledge	**Number of observations**	6	70	175	251
	Frequency	2.39%	27.89%	69.72%	100.00%

Artificial intelligence will provide more reliable diagnostics

Sample size		938	
Margin of error		3.21%	
Mean		1.33	
Standard deviation		0.516	
Percentiles	¼	1 (Likely before 10 years)	
	½	1 (Likely before 10 years)	
	¾	2 (Likely after 10 years)	
Kruskal-Wallis		**Statistic**	**P-value**
		1.729	0.421
Kolmogorov-Smirnov		**Statistic**	**P-value**
		0.430	0.000
Shapiro-Wilk		**Statistic**	**P-value**
		0.618	0.000

		Unlikely	**Likely after 10 years**	**Likely before 10 years**	**Total**
Some knowledge	**Number of observations**	6	80	184	270
	Frequency	2.22%	29.63%	68.15%	100.00%
Good knowledge	**Number of observations**	12	122	283	417
	Frequency	2.88%	29.26%	67.87%	100.00%
High Knowledge	**Number of observations**	3	67	181	251
	Frequency	1.20%	26.69%	72.11%	100.00%

Artificial intelligence will reduce screening cost

Sample size		932	
Margin of error		3.21%	
Mean		1.39	
Standard deviation		0.599	
Percentiles	¼	1 (Likely before 10 years)	
	½	1 (Likely before 10 years)	
	¾	2 (Likely after 10 years)	
Kruskal-Wallis		**Statistic**	**P-value**
		2.721	0.257
Kolmogorov-Smirnov		**Statistic**	**P-value**
		0.413	0.000
Shapiro-Wilk		**Statistic**	**P-value**
		0.647	0.000

		Unlikely	**Likely after 10 years**	**Likely before 10 years**	**Total**
Some knowledge	**Number of observations**	12	68	189	269
	Frequency	4.46%	25.28%	70.26%	100.00%
Good knowledge	**Number of observations**	25	122	265	412
	Frequency	6.07%	29.61%	64.32%	100.00%

High Knowledge	**Number of observations**	19	61	171	251
	Frequency	7.57%	24.30%	68.13%	100.00%

Artificial intelligence will improve follow-up services

Sample size		928	
Margin of error		3.22%	
Mean		1.34	
Standard deviation		0.524	
Percentiles	¼	1 (Likely before 10 years)	
	½	1 (Likely before 10 years)	
	¾	2 (Likely after 10 years)	
Kruskal-Wallis		**Statistic**	**P-value**
		3.718	0.156
Kolmogorov-Smirnov		**Statistic**	**P-value**
		0.426	0.000
Shapiro-Wilk		**Statistic**	**P-value**
		0.624	0.000

		Unlikely	**Likely after 10 years**	**Likely before 10 years**	**Total**
Some knowledge	**Number of observations**	4	79	185	268
	Frequency	1.49%	29.48%	69.03%	100.00%
Good knowledge	**Number of observations**	14	128	271	413
	Frequency	3.39%	30.99%	65.62%	100.00%
High Knowledge	**Number of observations**	5	63	179	247
	Frequency	2.02%	25.51%	72.47%	100.00%

Artificial intelligence will aid the discovery of new drugs

Sample size		930	
Margin of error		3.22%	
Mean		1.52	
Standard deviation		0.621	
Percentiles	¼	1 (Likely before 10 years)	
	½	1 (Likely before 10 years)	
	¾	2 (Likely after 10 years)	
Kruskal-Wallis		**Statistic**	**P-value**
		5.386	0.068
Kolmogorov-Smirnov		**Statistic**	**P-value**
		0.349	0.000
Shapiro-Wilk		**Statistic**	**P-value**
		0.719	0.000

		Unlikely	**Likely after 10 years**	**Likely before 10 years**	**Total**
Some knowledge	**Number of observations**	22	110	136	268
	Frequency	8.21%	41.04%	50.75%	100.00%

Good knowledge	**Number of observations**	24	163	225	412
	Frequency	5.83%	39.56%	54.61%	100.00%
High Knowledge	**Number of observations**	17	80	153	268
	Frequency	6.34%	29.85%	57.09%	100.00%

Artificial intelligence will grade and classify cancer

Sample size		934	
Margin of error		3.21%	
Mean		1.29	
Standard deviation		0.497	
Percentiles	¼	1 (Likely before 10 years)	
	½	1 (Likely before 10 years)	
	¾	2 (Likely after 10 years)	
Kruskal-Wallis		**Statistic**	**P-value**
		4.301	0.116
Kolmogorov-Smirnov		**Statistic**	**P-value**
		0.451	0.000
Shapiro-Wilk		**Statistic**	**P-value**
		0.583	0.000

		Unlikely	**Likely after 10 years**	**Likely before 10 years**	**Total**
Some knowledge	**Number of observations**	4	73	191	268
	Frequency	1.49%	27.24%	71.27%	100.00%
Good knowledge	**Number of observations**	11	108	296	415
	Frequency	2.65%	26.02%	71.33%	100.00%
High Knowledge	**Number of observations**	4	51	196	251
	Frequency	1.59%	20.32%	78.09%	100.00%

Artificial intelligence will improve prognostics

Sample size		934	
Margin of error		3.21%	
Mean		1.37	
Standard deviation		0.564	
Percentiles	¼	1 (Likely before 10 years)	
	½	1 (Likely before 10 years)	
	¾	2 (Likely after 10 years)	
Kruskal-Wallis		**Statistic**	**P-value**
		3.758	0.153
Kolmogorov-Smirnov		**Statistic**	**P-value**
		0.414	0.000
Shapiro-Wilk		**Statistic**	**P-value**
		0.644	0.000

		Unlikely	**Likely after 10 years**	**Likely before 10 years**	**Total**

Some knowledge	**Number of observations**	12	85	171	268
	Frequency	4.48%	31.72%	63.81%	100.00%
Good knowledge	**Number of observations**	20	121	274	415
	Frequency	4.82%	29.16%	66.02%	100.00%
High Knowledge	**Number of observations**	7	65	179	251
	Frequency	2.79%	25.90%	71.31%	100.00%

Please rank the following applications of artificial intelligence in cancer care from most likely to least likely to be successful in the next 10 years (5 point scale. where 1 is the most likely and 5 is the least likely)

	Most Likely (1)	**2**	**3**	**4**	**Least likely (5)**
Cancer drug discovery	16.27%	12.17%	22.61%	19.75%	29.19%
Early cancer detection	38.02%	28.61%	15.31%	9.03%	9.03%
Cancer diagnostics	32.68%	36.35%	15.30%	9.06%	6.61%
Therapy administration	5.76%	12.48%	21.97%	36.01%	23.77%
Follow-up strategies	9.60%	13.11%	27.91%	22.94%	26.44%

		Cancer drug discovery	**Early cancer detection**	**Cancer diagnostics**	**Therapy administration**	**Follow-up strategies**
Kruskal-Wallis	**Statistic**	0.765	1.402	1.353	0.634	0.211
	P-value	0.682	0.496	0.508	0.728	0.900

Cancer drug discovery							
		1	**2**	**3**	**4**	**5**	**Total**
Some knowledge	**Number of observations**	41	26	53	42	76	238
	Frequency	17.23%	10.92%	22.27%	17.65%	31.93%	100.00%
Good knowledge	**Number of observations**	56	45	72	65	106	344
	Frequency	16.28%	13.08%	20.93%	18.90%	30.81%	100.00%
High Knowledge	**Number of observations**	34	27	57	52	53	223

	Frequency	15.25%	12.11%	25.56%	23.32%	23.77%	100.00%

Early cancer detection							
		1	**2**	**3**	**4**	**5**	**Total**
Some knowledge	**Number of observations**	86	62	36	33	19	236
	Frequency	36.44%	26.27%	15.25%	13.98%	8.05%	100.00%
Good knowledge	**Number of observations**	130	99	61	24	27	341
	Frequency	38.12%	29.03%	17.89%	7.04%	7.92%	100.00%
High Knowledge	**Number of observations**	87	67	25	15	26	220
	Frequency	39.55%	30.45%	11.36%	6.82%	11.82%	100.00%

Cancer diagnostics							
		1	**2**	**3**	**4**	**5**	**Total**
Some knowledge	**Number of observations**	76	85	37	22	18	238
	Frequency	31.93%	35.71%	15.55%	9.24%	7.56%	100.00%
Good knowledge	**Number of observations**	124	125	62	24	22	357
	Frequency	34.73%	35.01%	17.37%	6.72%	6.16%	100.00%
High Knowledge	**Number of observations**	67	87	26	28	14	222
	Frequency	30.18%	39.19%	11.71%	12.61%	6.31%	100.00%

Therapy administration							
		1	**2**	**3**	**4**	**5**	**Total**
Some knowledge	**Number of observations**	14	34	54	80	58	240
	Frequency	5.83%	14.17%	22.50%	33.33%	24.17%	100.00%
Good knowledge	**Number of observations**	124	125	62	24	22	357
	Frequency	34.73%	35.01%	17.37%	6.72%	6.16%	100.00%
High Knowledge	**Number of observations**	16	22	51	76	60	225
	Frequency	7.11%	9.78%	22.67%	33.78%	26.67%	100.00%

Follow-up strategies							
		1	**2**	**3**	**4**	**5**	**Total**
Some knowledge	**Number of observations**	22	37	71	59	64	253
	Frequency	8.70%	14.62%	28.06%	23.32%	25.30%	100.00%

Good knowledge	**Number of observations**	36	52	106	93	105	392
	Frequency	9.18%	13.27%	27.04%	23.72%	26.79%	100.00%
High Knowledge	**Number of observations**	27	27	70	51	65	240
	Frequency	11.25%	11.25%	29.17%	21.25%	27.08%	100.00%

Considering the recent FDA approval of artificial intelligence applications in cancer care and their future prospects, in your opinion which specific area of interest will benefit the most in the next 10 years?

Sample size		892	
Margin of error		3.29%	
Mean		3.460	
Standard deviation		2.167	
Percentiles	¼	1 (Pathology)	
	½	3 (Radiation Oncology)	
	¾	6 (Cancer radiology)	
Kruskal-Wallis		**Statistic**	**P-value**
		4.034	0.133
Kolmogorov-Smirnov		**Statistic**	**P-value**
		0.252	0.000
Shapiro-Wilk		**Statistic**	**P-value**
		0.802	0.000

	Some knowledge		**Good knowledge**		**High Knowledge**	
	Number of observations	**Frequency**	**Number of observations**	**Frequency**	**Number of observations**	**Frequency**
Cancer radiology	84	33.07%	149	37.44%	76	31.67%
Clinical Oncology	58	22.83%	83	20.85%	40	16.67%
Gastroenterology	8	3.15%	13	3.27%	7	2.92%
Gynecology	4	1.57%	7	1.76%	2	0.83%
Pathology	66	25.98%	96	24.12%	79	32.92%
Radiation Oncology	25	9.84%	41	10.30%	31	12.92%
Other	9	3.54%	9	2.26%	5	2.08%
Total	254	100.00%	398	100.00%	240	100.00%

Considering the following options, which one you believe is the most likely to hamper the use of artificial intelligence in cancer care?

Sample size	894

Margin of error		3.28%	
Mean		3.275	
Standard deviation		1.829	
Percentiles	¼	1 (Difficulty of incorporation into clinical practice)	
	½	4 (Lack of improvement in medical applications)	
	¾	5 (Lack of standardization in cancer-related health data)	
Kruskal-Wallis		**Statistic**	**P-value**
		0.607	0.738
Kolmogorov-Smirnov		**Statistic**	**P-value**
		0.294	0.000
Shapiro-Wilk		**Statistic**	**P-value**
		0.784	0.000

	Some knowledge		**Good knowledge**		**High Knowledge**	
	Number of observations	**Frequency**	**Number of observations**	**Frequency**	**Number of observations**	**Frequency**
Difficulty of incorporation into clinical practice	64	25.10%	106	26.57%	63	26.25%
Ethical or regulatory issues	50	19.61%	93	23.31%	61	25.42%
Lack of improvement in medical applications	14	5.49%	15	3.76%	11	4.58%
Lack of standardization in cancer-related health data	120	47.06%	165	41.35%	90	37.50%
Other	7	2.75%	20	5.01%	15	6.25%
Total	255	100.00%	399	100.00%	240	100.00%

Why do you believe artificial intelligence use in cancer care is likely to be hampered by the difficulty of incorporating it into clinical practice?

Sample size		233	
Margin of error		6.52%	
Mean		2.425	
Standard deviation		0.863	
Percentiles	¼	2 (Ignorance of the variables responsible for the artificial intelligence's decision)	
	½	3 (Aligning artificial intelligence to the specific context of clinical practice)	
	¾	3 (Aligning artificial intelligence to the specific context of clinical practice)	
Kruskal-Wallis		**Statistic**	**P-value**
		0.659	0.719
Kolmogorov-Smirnov		**Statistic**	**P-value**
		0.284	0.000
Shapiro-Wilk		**Statistic**	**P-value**
		0.845	0.000

	Some knowledge		Good knowledge		High Knowledge	
	Number of observations	Frequency	Number of observations	Frequency	Number of observations	Frequency
Aligning artificial intelligence to the specific context of clinical practice	30	46.88%	52	49.06%	27	42.86%
Conflicts between artificial intelligence and other clinical strategies	14	21.88%	17	16.04%	11	17.46%
Ignorance of the variables responsible for the artificial intelligence's decision	17	26.56%	31	29.25%	18	28.57%
Other	3	4.69%	6	5.66%	7	11.11%
Total	64	100.00%	106	100.00%	63	100.00%

Why do you believe artificial intelligence use in cancer care is likely to be hampered by ethical or regulatory issues?

Sample size		204	
Margin of error		6.97%	
Mean		1.554	
Standard deviation		0.900	
Percentiles	¼	1 (Uncertainty about legal responsibility and accountability for AI-supported clinical decisions)	
	½	1 (Uncertainty about legal responsibility and accountability for AI-supported clinical decisions)	
	¾	2 (Algorithmic bias caused by the underrepresentation of minorities and underrated groups)	
Kruskal-Wallis		**Statistic**	**P-value**
		3.280	0.194
Kolmogorov-Smirnov		**Statistic**	**P-value**
		0.398	0.000
Shapiro-Wilk		**Statistic**	**P-value**
		0.654	0.000

	Some knowledge		Good knowledge		High Knowledge	
	Number of observations	**Frequency**	**Number of observations**	**Frequency**	**Number of observations**	**Frequency**
Algorithmic bias caused by the underrepresentation of minorities and underrated groups	7	14.00%	22	23.66%	6	9.84%
Problems with financing. remuneration. reimbursement mechanisms and insurance models	4	8.00%	11	11.83%	6	9.84%
Uncertainty about legal responsibility and accountability for AI-supported clinical decisions	37	74.00%	55	59.14%	44	72.13%
Other	2	4.00%	5	5.38%	5	8.20%
Total	50	100.00%	93	100.00%	61	100.00%

Why do you believe artificial intelligence use in cancer care is likely to be hampered by a lack of improvement in medical applications?

Sample size		38	
Margin of error		16.21%	
Mean		2.132	
Standard deviation		0.875	
Percentiles	¼	2 (Unsuitability to a real-world context of care and services)	
	½	2 (Unsuitability to a real-world context of care and services)	
	¾	3 (Unrealistic expectations in patients regarding clinical outcomes)	
Kruskal-Wallis		**Statistic**	**P-value**
		0.106	0.948
Kolmogorov-Smirnov		**Statistic**	**P-value**
		0.270	0.000
Shapiro-Wilk		**Statistic**	**P-value**
		0.857	0.000

	Some knowledge	Good knowledge	High Knowledge

	Number of observations	Frequency	Number of observations	Frequency	Number of observations	Frequency
The intersection between multiple diagnoses or clinical practices	3	21.43%	2	15.38%	4	36.36%
Unrealistic expectations in patients regarding clinical outcomes	2	14.29%	2	15.38%	4	36.36%
Unsuitability to a real-world context of care and services	8	57.14%	8	61.54%	2	18.18%
Other	1	7.14%	1	7.69%	1	9.09%
Total	14	100.00%	13	100.00%	11	100.00%

Why do you believe artificial intelligence use in cancer care is likely to be hampered by the lack of standardization of cancer-related health data?

Sample size		375	
Margin of error		5.13%	
Mean		2.187	
Standard deviation		0.966	
Percentiles	¼	1 (Difficulties to access and share patient's data)	
	½	3 (Difficulties to test. validate. certificate. and audit AI algorithms and systems)	
	¾	3 (Difficulties to test. validate. certificate. and audit AI algorithms and systems)	
Kruskal-Wallis		**Statistic**	**P-value**
		1.936	0.380
Kolmogorov-Smirnov		**Statistic**	**P-value**
		0.307	0.000
Shapiro-Wilk		**Statistic**	**P-value**
		0.772	0.000

	Some knowledge		Good knowledge		High Knowledge	
	Number of observations	**Frequency**	**Number of observations**	**Frequency**	**Number of observations**	**Frequency**
Difficulties to access and share patient's data	35	26.92%	69	40.35%	36	37.50%

Difficulties to test. validate. certificate. and audit AI algorithms and systems	69	53.08%	76	44.44%	44	45.83%
Lack or misuse of electronic health records	23	17.69%	18	10.53%	13	13.54%
Other	3	2.31%	8	4.68%	3	3.13%
Total	130	100.00%	171	100.00%	96	100.00%