

Exploring the link between psychoactive substance use and pain among cancer patients and survivors: Findings from the CAPS study

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Ragusa C, Pereira B, Balayssac D. Study of the relationship between psychoactive substance use and pain in cancer patients and cancer survivors: A French nationwide cross-sectional study. *Int J Cancer*. 2024 May 15. doi: 10.1002/ijc.35006. <https://hal.science/hal-04577888>



1. Introduction

Pain: prevalent symptom among cancer patients and survivors

Psychoactive substance use (PSU): associated with both the presence and severity of pain

Limited knowledge regarding this association in the context of cancer

3. Results

1 041 individuals (patients: 50.4% and survivors: 49.6%) 61.5% breast cancer 82.6% females 55.2 ± 11.2 years

Pain: 44.7% (95% CI: 41.6; 47.8%) **Chronic pain: 92.7%** (95% CI: 89.9; 94.9%) **Neuropathic pain: 67.1%** (95% CI: 62.6; 71.4%)

Higher proportions of tobacco and cannabidiol uses in painful individuals than non-painful ones

Table 1: Characteristics of individuals

Items	All N = 1041	Painful N = 465	Non-painful N = 576	P-values
Gender				
Male	180 (17.3)	43 (9.2)	137 (23.8)	<0.001
Female	860 (82.6)	422 (90.8)	438 (76.0)	
Non-binary	1 (0.1)	0	1 (0.2)	
Age (years)	55.2 ± 11.2	54.1 ± 10.2	56.0 ± 11.9	0.005
≤ 44 years	681 (65.4)	322 (69.3)	359 (62.3)	0.01
44-65 years	171 (16.4)	77 (16.6)	94 (16.3)	
≥ 66 years	189 (18.2)	66 (14.2)	123 (21.4)	
BMI (kg/m²)	24.3 [21.5; 27.7]	25.94 [22.1; 29.0]	23.7 [21.2; 26.6]	<0.001
Normal weight	531 (51.3)	198 (42.86)	333 (58.1)	<0.001
Underweight	54 (5.2)	23 (4.98)	31 (5.4)	
Pre-obesity	295 (28.5)	149 (32.25)	146 (25.5)	
Obesity	155 (15.0)	92 (19.91)	63 (11.0)	
Cancer status				0.003
Patients	525 (50.4)	259 (55.7)	266 (46.2)	
Survivors	516 (49.6)	206 (44.3)	310 (53.8)	
Cancer type				<0.001
Breast	640 (61.5)	330 (71.0)	310 (53.8)	
Prostate	92 (8.8)	14 (3.0)	78 (13.5)	<0.001
Pulmonary	78 (7.5)	35 (7.5)	43 (7.5)	0.97
Blood	67 (6.4)	24 (5.2)	43 (7.5)	0.13
Gynecological	66 (6.3)	28 (6.0)	38 (6.6)	0.71
Kidney	57 (5.5)	15 (3.2)	42 (7.3)	0.004
Colorectal	29 (2.8)	10 (2.2)	19 (3.3)	0.26
Others	57 (6.2)	9 (1.9)	2 (0.3)	0.02
Time since diagnosis (months)	39 [17; 82]	37 [17; 69]	41.5 [17; 90.5]	0.027

Table 2: Psychoactive substance use and frequency in all, painful, and non-painful individuals

Substances	Frequency of use (at least)	All N = 1041	Painful N = 465	Non-painful N = 576	Odds-ratios 95% CI	P-values
Any substance n (%)	Yearly	788 (75.7)	349 (75.1)	439 (76.2)	0.94 [0.71; 1.25]	0.7
	Monthly	697 (67.0)	307 (66.0)	390 (67.7)	0.93 [0.72; 1.20]	0.6
	Weekly	459 (44.1)	204 (43.9)	255 (44.3)	0.99 [0.77; 1.26]	0.9
	Daily	176 (16.9)	91 (19.6)	85 (14.8)	1.42 [1.09; 1.97]	0.046
Alcohol n (%)	Yearly	723 (69.5)	310 (66.7)	413 (71.7)	0.79 [0.61; 1.03]	0.09
	Monthly	635 (61.0)	265 (57.0)	370 (64.3)	0.74 [0.57; 0.95]	0.02
	Weekly	377 (36.2)	151 (32.5)	226 (39.2)	0.74 [0.58; 0.96]	0.03
Tobacco n (%)	Yearly	140 (13.4)	80 (17.2)	60 (10.4)	1.79 [1.25; 2.56]	0.002
	Monthly	115 (11.0)	63 (13.5)	52 (9.0)	1.58 [1.07; 2.33]	0.02
	Weekly	95 (9.1)	52 (11.2)	43 (7.5)	1.56 [1.02; 2.38]	0.04
	Daily	78 (7.5)	44 (9.5)	34 (5.9)	1.67 [1.05; 2.65]	0.03
E-cigarette n (%)	Yearly	77 (7.4)	42 (9.0)	35 (6.1)	1.53 [0.96; 2.44]	0.08
	Monthly	64 (6.1)	34 (7.3)	30 (5.2)	1.43 [0.86; 2.38]	0.2
	Weekly	56 (5.4)	29 (6.2)	27 (4.7)	1.35 [0.79; 2.31]	0.3
Cannabidiol n (%)	Yearly	137 (13.2)	94 (20.2)	43 (7.5)	3.14 [2.14; 4.61]	<0.001
	Monthly	70 (6.7)	53 (11.4)	17 (3.0)	4.23 [2.41; 7.41]	<0.001
	Weekly	48 (4.6)	37 (8.0)	11 (1.9)	4.44 [2.24; 8.81]	<0.001
	Daily	28 (2.7)	22 (4.3)	6 (1.0)	4.72 [1.90; 11.7]	<0.001
Cannabis n (%)	Yearly	45 (4.3)	27 (5.8)	18 (3.1)	1.91 [1.04; 3.51]	0.045
	Monthly	29 (2.8)	18 (3.9)	11 (1.9)	2.06 [0.97; 4.42]	0.06
	Weekly	21 (2.0)	13 (2.8)	8 (1.4)	2.04 [0.84; 4.96]	0.1
Daily	14 (1.3)	9 (1.9)	5 (0.9)	2.25 [0.75; 6.76]	0.2	

2. Methods

Design: Nationwide online cross-sectional study + questionnaires distributed thanks to 12 cancer patient associations
 Data collection with REDCap™ electronic data capture tools

Primary objective: Comparison of the prevalence of PSU in individuals experiencing pain vs no pain, during and after cancer
 PSU: Use of alcohol, tobacco, e-cigarettes, cannabidiol (CBD), and cannabis (at least yearly, monthly, weekly, or daily)

Secondary objectives: To explore the relationships between PSU and
 - Pain characteristics (BPI-SF, DN4), - HRQoL (QLQ-C30),
 - Anxiety and depression (HADS), - Deprivation (EPICES),
 - Individual characteristics.

Population: Inclusion criteria: ≥18 years, self-declared as currently or previously managed for a cancer
 Exclusion criteria: not speaking French, residing outside of France, caregivers for cancer patients

Pain = scores ≥4/10
BPI-SF item "pain at its worst in the last 24 hours"

Ethical approval
 CPP IdF VII, 2022-A02460-43, 12/12/2022

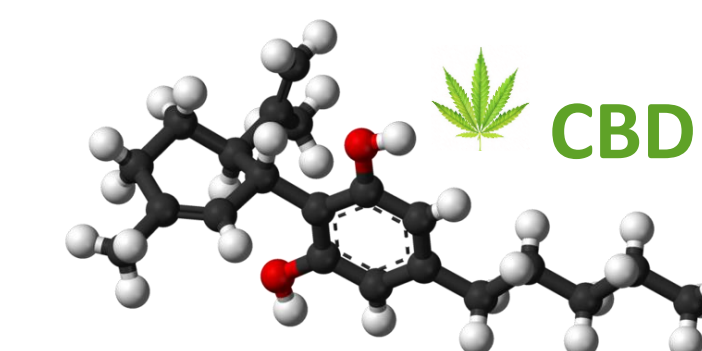
ClinicalTrials.gov
 NCT05684939

Table 3: Multivariate analyses of monthly psychoactive substance use and pain status in all individuals (odds ratios with 95% CI)

	Model A.	Alcohol	Tobacco	E-cigarette	Cannabidiol	Cannabis
Painful		1.01 (0.50; 2.04)	2.85 (1.22; 6.64)*	1.99 (0.63; 6.29)	3.76 (1.13; 12.44)*	1.04 (0.12; 8.98)
Chronic pain		0.82 (0.40; 1.67)	0.57 (0.25; 1.31)	0.75 (0.24; 2.37)	1.06 (0.34; 3.27)	2.73 (0.32; 23.17)
Gender (female)		0.56 (0.38; 0.84)**	0.47 (0.27; 0.83)**	0.89 (0.38; 2.11)	1.33 (0.53; 3.32)	0.18 (0.07; 0.47)***
Age (years)						
[18-44]		1.01 (0.71; 1.44)	1.10 (0.66; 1.83)	1.05 (0.55; 1.99)	1.50 (0.81; 2.80)	2.75 (1.19; 6.34)*
[66-100]		0.97 (0.71; 1.40)	0.24 (0.10; 0.54)**	0.25 (0.07; 0.84)*	0.73 (0.32; 1.64)	0.12 (0.02; 0.99)*
BMI groups						
Underweight		0.50 (0.28; 0.88)*	1.92 (0.90; 4.10)	1.72 (0.72; 4.11)	3.02 (1.26; 7.22)*	2.00 (0.55; 7.31)
Overweight		1.16 (0.85; 1.58)	0.69 (0.42; 1.15)	0.33 (0.15; 0.71)**	1.18 (0.63; 2.21)	0.55 (0.21; 1.46)
Obesity		0.69 (0.47; 0.99)*	0.86 (0.48; 1.56)	0.43 (0.18; 1.04)	1.84 (0.94; 3.60)	0.53 (0.15; 1.92)
Cancer patients		0.68 (0.53; 0.88)**	1.37 (0.90; 2.07)	1.19 (0.70; 2.02)	0.82 (0.49; 1.38)	1.33 (0.61; 2.88)
Model B.						
Painful		1.11 (0.54; 2.32)	3.16 (1.32; 7.57)*	2.38 (0.71; 7.94)	3.42 (1.00; 11.68)*	1.23 (0.14; 11.10)
Chronic pain		0.90 (0.43; 1.86)	0.49 (0.21; 1.15)	0.56 (0.17; 1.85)	1.08 (0.34; 3.41)	1.91 (0.22; 16.59)
Gender (female)		0.60 (0.40; 0.90)*	0.45 (0.25; 0.79)**	0.75 (0.31; 1.80)	1.30 (0.52; 3.27)	0.17 (0.06; 0.44)***
Age (years)						
[18-44]		1.07 (0.75; 1.54)	1.04 (0.62; 1.75)	0.95 (0.49; 1.82)	1.46 (0.78; 2.74)	2.35 (1.01; 5.50)*
[66-100]		0.92 (0.63; 1.33)	0.24 (0.11; 0.56)**	0.26 (0.08; 0.88)*	0.74 (0.32; 1.66)	0.13 (0.02; 1.10)
BMI						
Underweight		0.55 (0.31; 0.98)*	1.87 (0.87; 4.0)	1.75 (0.72; 4.28)	2.96 (1.22; 7.18)*	1.71 (0.46; 6.45)
Overweight		1.23 (0.90; 1.69)	0.69 (0.42; 1.16)	0.31 (0.14; 0.69)**	1.20 (0.64; 2.25)	0.56 (0.21; 1.51)
Obesity		0.77 (0.53; 1.13)	0.80 (0.44; 1.45)	0.36 (0.14; 0.89)*	1.97 (0.99; 3.90)	0.41 (0.11; 1.52)
Cancer patients		0.71 (0.54; 0.93)*	1.41 (0.92; 2.17)	1.21 (0.70; 2.10)	0.84 (0.49; 1.41)	1.30 (0.58; 2.90)
Anxiety						
Suggestive scores		0.95 (0.68; 1.33)	1.33 (0.79; 2.23)	1.58 (0.79; 3.17)	0.94 (0.48; 1.84)	4.69 (1.67; 13.20)**
Indicative scores		0.95 (0.65; 1.38)	1.20 (0.68; 2.12)	1.70 (0.82; 3.55)	1.42 (0.73; 2.79)	2.38 (0.72; 7.86)
Depression						
Suggestive scores		0.98 (0.67; 1.45)	1.27 (0.72; 2.24)	0.77 (0.33; 1.80)	1.23 (0.64; 2.35)	1.02 (0.37; 2.80)
Indicative scores		0.84 (0.54; 1.31)	1.16 (0.60; 2.24)	1.99 (0.90; 4.40)	0.50 (0.21; 1.20)	0.84 (0.25; 2.82)
Global health status		1.00 (0.99; 1.01)	0.99 (0.98; 1.00)	0.98 (0.96; 0.999)*	1.00 (0.99; 1.02)	1.00 (0.97; 1.02)
Deprivation		0.45 (0.33; 0.63)***	1.51 (0.94; 2.43)	2.37 (1.31; 4.30)**	1.07 (0.60; 1.91)	1.94 (0.82; 4.56)



Pain
 Younger
 Males



Pain
 Underweight

4. Conclusions

Strong relationship between pain and the use of tobacco and cannabidiol

Importance for physicians to prioritize smoking cessation and in the context of pain

Be careful to the use of cannabidiol during and after cancer (self-medication?)