DOI: https://doi.org/10.11144/Javeriana.umed65.umap

Use of Alternative Medicine in Cancer Patients in the City of Neiva (Colombia)

Uso de medicina alternativa en pacientes oncológicos en la ciudad de Neiva (Colombia)

Received: 29 january 2024 | Accepted: 22 april 2024

Nicolás Martínez-Ramos[a]
Facultad de Ciencias, Pontificia Universidad Javeriana, Bogotá, Colombia
ORCID: https://orcid.org/0000-0002-4461-9660
Carolina Mariño
Universidad de Valencia, Valencia, España
ORCID: https://orcid.org/0000-0002-5704-8465
Laura Camila Olaya-SanMiguel
La Unidad Ocológica Surcolombiana, Neiva, Colombia
ORCID: https://orcid.org/0000-0001-8052-6122
Raúl Murillo
Facultad de Medicina, Pontificia Universidad Javeriana, Bogotá. Centro Javeriano de Oncología, Hospital Universitario San Ignacio, Bogotá, Colombia
ORCID: https://orcid.org/0000-0001-7187-9946

[a] **Corresponding author:**
martineznicolas@javeriana.edu.co

ABSTRACT

Objective: To determine the frequency of use of complementary and alternative medicine (CAM) in cancer patients in the city of Neiva (Colombia), and to characterize the CAM practices employed by patients. **Materials and Methods:** A descriptive study was conducted in which patients from a health center in Neiva were surveyed. Adult patients with any type of cancer, in all clinical stages, and undergoing active treatment were included. A multivariate analysis was conducted to identify associations between the use of CAM and sociodemographic-clinical variables. **Results:** A total of 526 patients were included, of which 57.2% (301) reported using CAM. The main reason for use was palliative care, although a significant number of patients used CAM for curative purposes. The most commonly used CAM was herbal medicine, with anamu being the most frequently used product. Significant associations were found between CAM use and variables such as sex, age, and occupation. **Conclusions:** A high proportion of cancer patients undergoing active treatment use CAM. It is necessary to incorporate this information into patient care and develop services to guide these practices.

Keywords
cancer; Colombia; complementary therapies; integrative oncology; surveys and questionnaires.

RESUMEN

Objetivo: Determinar la frecuencia de uso de medicina alternativa y complementaria (MAC) en pacientes oncológicos en la ciudad de Neiva (Colombia) así como caracterizar las prácticas de MAC empleadas por los pacientes. **Materiales y métodos:** Estudio descriptivo en el que se encuestaron a pacientes en un centro de salud de Neiva. Se incluyeron pacientes adultos con cualquier tipo de cáncer, en todos los estadios

clínicos y que se encontraran en tratamiento activo. Mediante un análisis multivariado se buscó identificar asociaciones entre el empleo de MAC y variables sociodemográficas-clínicas. **Resultados:** Se incluyeron 526 pacientes, de los cuales el 57,2% (301) reportaron ser usuarios de MAC. La principal razón fue la intención paliativa; pero un número significativo las utiliza con fin curativo. Las MAC más frecuentes fueron las de tipo de herbal, de las cuales el anamú fue el producto al cual más recurrieron los pacientes. Se encontraron asociaciones significativas entre MAC sexo, edad y ocupación. **Conclusiones:** Una elevada proporción de pacientes oncológicos en tratamiento activo emplea MAC. Es necesario incorporar esta información en el cuidado del paciente y desarrollar servicios que orienten este tipo de prácticas.

Palabras clave
cáncer; Colombia; terapias complementarias; oncología integrativa; encuestas y cuestionarios.

Introduction

Complementary and alternative medicine (CAM) is defined as a group of medical and health care systems involving practices and products that are not considered part of conventional medicine. It can be classified into mind-body therapies, energy therapies, alternative medical systems, and biologically based therapies (1).

The use of CAM has increased among cancer patients, who justify its use by the perceived improvement in quality of life and reduction of side effects from conventional treatments (2). Globally, between 9.8% and 76% of cancer patients report using CAM (3); meanwhile, in Colombia, the range is between 51.7% and 73.5% (4,5). Most of these differences are attributable to the course of the disease, the appearance of side effects, and patients' cultural backgrounds (6).

The main reasons patients use CAM include its "natural" character and perceived safety (2). However, certain foods can interact with medications used in conventional treatment. For example, St. John's wort and garlic may reduce the effectiveness of some chemotherapeutics (7,8), while turmeric improves antitumor activity (9), and agraz (Vaccinium meridionale) has shown potent antioxidant and cytotoxic effects on breast cancer cells (10).

As their primary source of information about CAM, patients often refer to individuals outside the healthcare team and avoid communicating its use to their treating physicians (11,12). Moreover, it has been found that patients who use CAM perceive a greater risk of death or recurrence (13), making CAM a common practice in their treatment regimens. Notably, the city of Neiva, located in the department of Huila (Colombia), reported 2,035 new cases of cancer (excluding non-melanoma skin cancer) by 2016, with an incidence rate similar to that of the rest of the country (14). Additionally, in this city, 76.29% of cancer cases were reported to be in advanced stages in 2011 (15), which is higher than the national average up until 2022 (16).

Given the above, this study aimed to determine the frequency of CAM use and to characterize CAM practices among cancer patients in Neiva.

Methodology

A descriptive study was conducted. The methodology follows that described in Murillo et al. (5), and the specific results for the city of Neiva are presented in this article. The study was approved by the Ethics Committees of San Ignacio Hospital/ Pontificia Universidad Javeriana (Bogotá) and the Surcolombian Oncology Unit (Neiva). All participants provided informed consent. A survey was administered, consisting of sociodemographic data, clinical characteristics, frequency, and reasons for CAM use.

The sample size was defined as 525 subjects (although one more was collected, totaling 526 patients), based on an expected prevalence of CAM use of 70%, with a 95% confidence interval, a precision of 5%, and a design effect of 2 (17). Patients were randomly selected from September 2021 to March 2023 at the Surcolombian Oncology Unit in Neiva. Inclusion criteria included adults over 18 years of age with a histopathological diagnosis of cancer, undergoing active treatment, or having received radiotherapy or surgery within the last 4 months,

in any clinical stage, and with any type of cancer. Patients unable to complete the survey due to physical or mental condition were excluded. Data were recorded on the RedCap platform (18).

Data were analyzed using absolute and relative frequencies with Python® and R® statistical packages (19,20). Frequency of use was reported as a percentage, and sociodemographic and clinical characteristics between CAM users and non-users were compared using the chi-square test (χ^2), with a significance level of 0.05. Significant variables were included in a logistic regression model, where the outcome variable was CAM use.

Results

A total of 526 patients were surveyed, of whom 57.2% (301) reported using CAM. The median age was 60 years. Most participants were women, individuals of low socioeconomic status, and patients diagnosed with localized solid tumors. Significant associations were found between CAM use and variables such as age, sex, religion, occupation, education level, and cancer stage (Table 1).

Table 1.
CAM use and sociodemographic variables

Variable		Total		CAM		No CAM		*p-Value*
		n	%	n	%	n	%	
Sociodemographic characteristics								
Age	<60	242	46.0	167	55.5	75	33.3	<0.001
	≥60	284	53.9	134	44.5	150	66.7	
Sex	Female	347	66.0	221	73.4	126	56.0	<0.001
	Male	179	34.0	80	26.6	99	44.0	
Religion	Catholic	468	89.0	260	86.4	208	92.4	0.002
	Other	58	11	266	13.6	318	7.6	
Marital Status	Single	128	24.3	73	24.3	55	24.4	0.625
	Married - Common-lawe	318	60.5	186	61.8	132	58.7	
	Divorced - Widowed	80	15.2	42	13.9	38	16.9	
Socioeconomic level	Low	438	83.3	253	84.0	185	82.2	0.661
	Medium	88	16.7	48	16.0	40	17.8	
Occupation	(Unemployed/Studen)	66	12.5	18	5.9	48	21.3	<0.001
	(Employed/Independt)	142	27.0	99	33.0	43	19.1	
	(Household/Retired)	318	60.5	184	61.1	134	59.6	
Education	None - Primary	244	46.4	125	41.5	119	52.9	0.029
	High School	150	28.5	91	30.2	59	26.2	
	Post-secondary Education	132	25.1	85	28.3	47	20.9	
Health Affiliation	Contributory	201	38.2	105	34.9	96	42.7	0.186
	Subsidized	288	54.8	173	57.5	115	51.1	
	Other	37	7.0	23	7.6	14	6.2	
Clinics characteristics								
Cancer Status	Localized	249	47.3	160	30.4	89	16.9	<0.001
	Lymph Nodes Involved	74	14.1	41	7.8	33	6.27	
	Metastasis	181	34.4	83	15.8	98	18.6	
	Unknown	22	4.18	17	3.23	5	6.27	
Type of Cancer	Solid Tumor	494	93.9	285	94.7	209	92.9	0.504
	Hematologic Neoplasm	32	6.1	16	5.3	16	7.1	
Treatments Received	Chemotherapy	516	98.1	294	97.7	222	98.7	0.528
	Radiotherapy	16	3.0	10	3.3	6	2.7	0.860

Note 1: The age variable was categorized according to the median of the data.
Note 2: The underlined figures indicate that the null hypothesis of "The variables are independent" is rejected in the chi-square (χ^2) test.

The use of CAM substantially increased after diagnosis, rising from 17% to 57% (Figure 1).

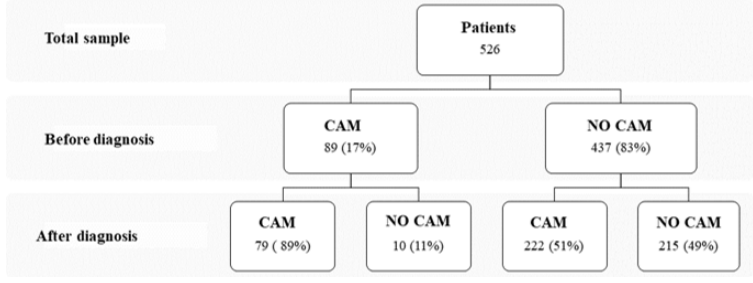

Figure 1.
History of complementary and alternative medicine use

Most patients used CAM based on herbs (n = 191), followed by vitamins (n = 164), and natural-origin special foods (n = 145). The most frequent combinations were CAM based on vitamins and herbs (65%) and CAM based on herbs and special foods (51%) (Figure 2).

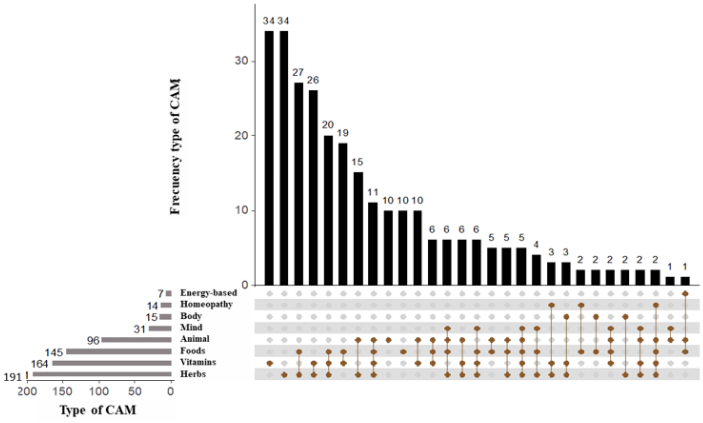

Figure 2.
Types of complementary and alternative medicine used

Regarding the reasons for using CAM, most patients reported using this type of medicine for both curative purposes (to cure the disease and avoid future complications) and palliative purposes (improving mood and alleviating treatment side effects). Many patients expressed the desire to try all possible options (Figure 3).

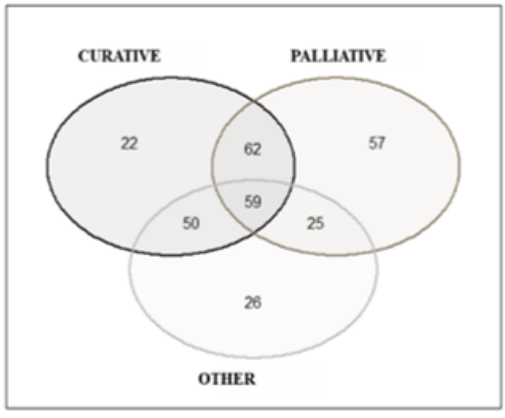

Figure 3.
Main reasons for using complementary and alternative medicine

The most commonly used CAM products included anamu, snake-based products (meat, soups, or capsules), and soursop (leaves or fruit). Figure 4 shows the distribution of responses on this topic.

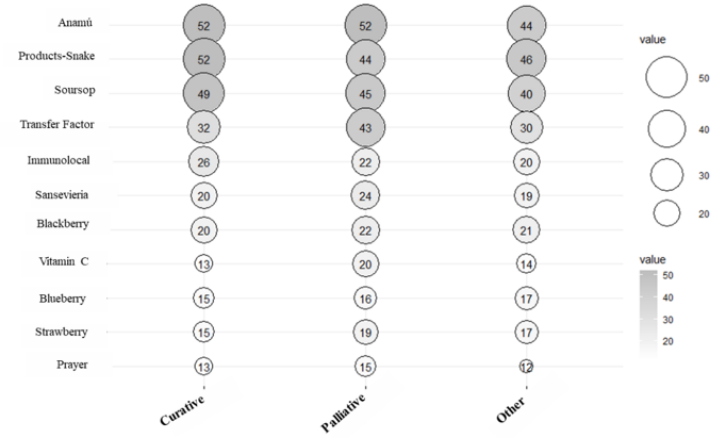

Figure 4.
Most frequently used complementary and alternative medicine products

For the logistic regression model, variables such as age (categorized), sex, religion, education level, occupation, and cancer stage were included. After removing non-significant variables, the final model is presented in Table 2. The model had a good fit, as indicated by the Hosmer-Lemeshow test ($\chi^2 = 3.59$; $p = 0.61$). No outliers or influential observations were identified, and residuals followed an approximately normal distribution.

Table 2.
Final logistic regression model

Variable	OR	IC	*p-value*
Age			0.012
≥60	1.00	---	
<60	1.66	1.12-2.48	
Sex			0.005
Male	1.00	---	
Female	1.77	1.19-2.64	
Ocupation			<0.001
Unemployed/Student	1.00	---	
Employed/Independent	4.14	2.10-8.43	
Household/Retired	2.64	1.46-4.95	

OR: *odds ratio*; IC: confidence interval 95%.

Discussion

This study is the first to report on the frequency of CAM use in the city of Neiva. A prevalence of 57.2% was found, which is higher than

that documented for the rest of Colombia (51.7%) (5) and higher than that found in other Latin American (21-23) and European countries (24,25). However, a study conducted in Bogotá with a predominantly subsidized population reported a higher prevalence (4).

One of the main findings of this study was the increase in CAM use after the cancer diagnosis, which aligns with previous studies (13,26). This result may be related to patients' perceptions of CAM, as there is a widespread belief that this type of medicine can cure the disease, prevent its progression, and offer better control over treatment (13,27).

In agreement with previous reports, women and younger patients were more likely to use CAM, which was also significant in the multivariate model (24,28-30). This could be explained by a more favorable attitude towards CAM in this population. On the other hand, a significant association with occupation was found, which could be related to patients' beliefs about existing barriers to accessing formal healthcare (31), as patients may prefer CAM that is more easily accessible rather than seeking formal healthcare services.

Contrary to other studies, most CAM users were patients with low educational and socioeconomic status (13,24,29,32). This result may be associated with the high consumption of herbal products and natural foods, which are economically accessible. This finding partially differs from national data, where herbal products are the most common type of CAM used by cancer patients, but other types such as special diets and vitamins are used with similar frequency (5).

Additionally, frequent consumption of snake-based products (meat, venom, and capsules) was observed, which differs from previous reports in the country (5). These products are more commonly accepted and used in Asian countries (33) and represent a cultural specificity in Neiva.

The antineoplastic activity of various herbal products and snake-derived products has been the subject of multiple studies, finding cytotoxic biological activity in vitro (34). However, only a limited number of products have progressed to clinical trials. No studies were found analyzing the potential interaction of these products with conventional oncological treatments.

Most patients reported using CAM for palliative purposes, although a significant proportion of cancer patients explore all possible options, as seen in previous studies (24,29). Consequently, patients generally do not use CAM as a replacement for conventional treatment, but its combined use warrants careful monitoring and constant communication with the healthcare team.

Conclusions

This study had several limitations. Conducting the study in a single institution limits the external validity of the results; however, the oncology center where the study was conducted attends to a significant proportion of cancer cases in the city of Neiva and the department of Huila. Therefore, the results should be understood in the context of the study population's characteristics, particularly regarding educational level and socioeconomic status. Additionally, the guided survey may have influenced the results differently than if it had been self-reported (35). Beyond the described limitations, the study highlights the need for more research on CAM, particularly the development of clinical studies that support the therapeutic potential or drug interactions of the most commonly used products by patients in this region.

The high frequency of CAM use indicates the need to strengthen integrative medicine services. We believe that the study's contribution is relevant to this objective. It is also crucial to inform patients about the potential side effects of CAM.

Funding

This work was funded by the Pontificia Universidad Javeriana, the Ministry of Science, Technology, and Innovation, the Ministry of National Education, the Ministry of Industry, Commerce, and Tourism, and

Icetex through the 2nd Scientific Ecosystem-Colombian Scientific Call 792-2017, Program "Generation of Therapeutic Alternatives in Cancer from Plants through Translational Research and Development Processes Articulated in Sustainable Environmental and Economically Viable Value Systems" (Contract FP44842-221-2018).

Conflicts of interest

The authors declare no conflicts of interest.

Acknowledgments

We thank the Pontificia Universidad Javeriana, the Ministry of Science, Technology, and Innovation, the Ministry of National Education, the Ministry of Industry, Commerce, and Tourism, and Icetex for their support through the 2nd Scientific Ecosystem-Colombian Scientific Call 792-2017, Program "Generation of Therapeutic Alternatives in Cancer from Plants through Translational Research and Development Processes Articulated in Sustainable Environmental and Economically Viable Value Systems" (Contract FP44842-221-2018).

References

1. NCCIH: Centro Nacional de Salud Complementaria e Integrativa. Salud complementaria, alternativa o integral: ¿qué hay detrás de estos nombres? [Internet]. 2023. Available from: https://www.nccih.nih.gov/health/espanol/salud-complementaria-alternativa-o-integral-que-significan-estos-terminos

2. Kristoffersen AE, Nilsen JV, Stub T, Nordberg JH, Wider B, Mora DC, et al. Use of complementary and alternative medicine in the context of cancer; prevalence, reasons for use, disclosure, information received, risks and benefits reported by people with cancer in Norway. BMC Complement Med Ther. 2022;22(1). https://doi.org/10.1186/s12906-022-03606-0

3. Harris PE, Cooper K, Relton C, Thomas KJ. Prevalence of complementary and alternative medicine (CAM) use by the general population: a systematic review and update. Int J Clin Pract. 2012;66. https://doi.org/10.1111/j.1742-1241.2012.02945.x

4. Sánchez R, Venegas M. Aproximaciones complementarias y alternativas al cuidado de la salud en el Instituto Nacional de Cancerología: estudio de prevalencia. Rev Colomb Cancerol. 2010;14(3):135-43. https://doi.org/10.35509/issn.0123-9015

5. Murillo R, Pinto-Martínez N, Serrano N, Uribe C, Navarro E, Duque J, et al. Use of complementary and alternative medicine by cancer patients in Colombia. BMC Complement Med Ther. 2023;23:321. https://doi.org/10.1186/s12906-023-04144-z

6. García-Padilla P, Reyes CO, Medina P, Deaza GF, Morales OL, Murillo R. Perspectivas de pacientes y profesionales en torno al uso de medicinas alternativas y complementarias para el cuidado del cáncer: un estudio exploratorio. Univ Med. 2021;62(1). https://doi.org/10.11144/Javeriana.umed62-1.pppu

7. Sparreboom A, Cox MC, Acharya MR, Figg WD. Herbal remedies in the United States: potential adverse interactions with anticancer agents. J Clin Oncol. 2004;22(12):2489-503. https://doi.org/10.1200/JCO.2004.08.182

8. Mathijssen R, Verweij J, de Brujin P, Loos W, Sparreboom A. Effects of St. John's wort on irinotecan metabolism. J Natl Cancer Inst.

2002;94(16):1247-9. https://doi.org/10.1093/jnci/94.16.1247

9. Li M, Zhang Z, Hill DL, Wang H, Zhang R. Curcumin, a dietary component, has anticancer, chemosensitization, and radiosensitization effects by down-regulating the MDM2 oncogene through the PI3K/mTOR/ETS2 pathway. Cancer Res. 2007;67(5):1988-96. https://doi.org/10.1158/0008-5472.CAN-06-3066

10. Hoshyar R, Mahboob Z, Zarban A. The antioxidant and chemical properties of Berberis vulgaris and its cytotoxic effect on human breast carcinoma cells. Cytotechnology. 2016;68(4):1207-13. https://doi.org/10.1007/s10616-015-9880-y

11. Adams M, Jewell A. The use of complementary and alternative medicine by cancer patients. Int Sem Surg Oncol. 2007;4:10. https://doi.org/10.1186/1477-7800-4-10

12. García-Padilla P, García-Padilla D, Ramírez-Castro MF, Pulido-Rincón P, Murillo R. Patient-doctor interactions around alternative and complementary medicine in the context of oncology care in a Latin American country. Complement Ther Med. 2023;78:1-8. https://doi.org/10.1016/j.ctim.2023.102986

13. Spadacio C, de Barros NF. Use of complementary and alternative medicine by cancer patients: systematic review. Rev Saúde Pública. 2008;42(1):1-7. https://doi.org/10.1590/s0034-89102008000100023

14. Pardo C, Cendales R. Incidencia, mortalidad y prevalencia de cáncer en Colombia, 2012-2016 [Internet]. Vol. 1. Bogotá: Instituto Nacional de Cancerología; 2022. Available from: https://www.cancer.gov.co/recursos_user/files/libros/archivos/LIBRO_DIGITAL_1_INCIDENCIA/_MORTALIDAD_Y_PREVALENCIA_INC.pdf.pdf

15. Pardo C, Guzmán J, Rodríguez O. Cáncer en la Unidad de Cancerología de Huila, 2006-2008. Rev Colomb Cancerol. 2013;17(2):62-8. https://doi.org/10.35509/issn.0123-9015

16. Fondo Colombiano de Enfermedades de Alto Costo Cuenta de Alto Costo (CAC). Situación del cáncer en la población adulta atendida en el SGSSS de Colombia 2022 [Internet]. Bogotá; 2023. Available from: https://cuentadealtocosto.org/publicaciones/situacion-del-cancer-en-la-poblacion-adulta-atendida-en-el-sgsss-de-colombia-2022/

17. Zapata-Ossa H de J, Cubides-Munévar AM, López MC, Pinzón-Gómez EM, Filigrana-Villegas PA, Cassiani-Miranda CA. Muestreo por conglomerados en encuestas poblacionales. Rev Salúd Pública [Internet]. 2011;13(1):141-51. Available from: http://www.redalyc.org/articulo.oa?id=42219906012

18. Harris PA, Taylor R, Minor BL, Elliott V, Fernandez M, O'Neal L, et al. The REDCap consortium: building an international community of software platform partners. J Biomed Inform. 2019;95:103-208. https://doi.org/10.1016/j.jbi.2019.103208

19. Van Rossum G, Drake Jr FL. Python reference manual. Amsterdam: Centrum voor Wiskunde en Informatica Amsterdam; 1995.

20. R Core Team. R: a language and environment for statistical computing [Internet]. Vienna, Austria: R Foundation for Statistical Computing; 2023. Available from: https://www.R-project.org

21. López G, Salas CA, Cádiz F, Barriga C, González P, Acevedo S, et al. Complementary and integrative

medicine use in individuals seeking conventional medical oncology care in Chile: prevalence and patient characteristics. J Glob Oncol. 2019;5. https://doi.org/10.1200/JGO.18.00190.

22. Santiváñez-Acosta R, Valenzuela-Oré F, Angulo-Bazán Y. Uso de terapias de medicina alternativa y complementaria en la provincia de Coronel Portillo, Ucayali, Perú. Rev Peru Med Exp Salud Publica. 2020;37(3):510-15. https://doi.org/10.17843/rpmesp.2020.373.4939.

23. Idoyaga A, Luxardo N. Medicinas no convencionales en cáncer. Medicina (B Aires) [Internet]. 2005;65(5):390-4. Available from: http://www.scielo.org.ar/pdf/medba/v65n5/v65n5a02.pdf

24. Källman M, Bergström S, Carlsson T, Järås J, Holgersson G, Nordberg JH, et al. Use of CAM among cancer patients. BMC Complement Med Ther. 2023;23:51. https://doi.org/10.1186/s12906-023-03876-2

25. Molassiotis A, Fernadez-Ortega P, Pud D, Ozden G, Scott JA, Panteli V, et al. Use of complementary and alternative medicine in cancer patients: a European survey. Ann Oncol. 2005;16(4):655-63. https://doi.org/10.1093/annonc/mdi110

26. Juanbeltz R, Pérez-Fernández MD, Bianka T, Cruz S, Sarobe MT. Complementary medicine use in cancer patients receiving intravenous antineoplastic treatment. Farm Hospit. 2017;41(5):589-600. https://doi.org/10.7399/fh.10805

27. Helyer L, Chin S, Chui B, Fitzgerald B, Verma S, Rakovitch E, et al. The use of complementary and alternative medicines among patients with locally advanced breast cancer: a descriptive study. BMC Cancer. 2006;6(39):1-8. https://doi.org/10.1186/1471-2407-6-39

28. Marshik PL, Kharat AA, Jakeman B, Borrego ME, Dodd MA, Bachyrycz AM, et al. Complementary and alternative medicine and therapy use in a diverse New Mexican population. J Altern Complement Med. 2016;22(1):45-51. https://doi.org/10.1089/acm.2014.0378

29. Wode K, Henriksson R, Sharp L, Stoltenberg A, Nordberg JH. Cancer patients' use of complementary and alternative medicine in Sweden: a cross-sectional study. BMC Complement Med Ther. 2019;19. https://doi.org/10.1186/s12906-019-2452-5

30. Kim JS, Kwon JH, Rha SY, Lee SC, Chang YJ, Kwon IS, et al. Status of using complementary and alternative medicine among patients with cancer in Korea: an online survey of online cancer support groups (KCSG PC21-20). Cancer Res Treat. 2023;55(2):442-51. https://doi.org/10.4143/crt.2022.1483

31. Hvidberg L, Nielsen C, Fischer A, Vedsted P. Barriers to healthcare seeking, beliefs about cancer and the role of socio-economic position: a Danish population-based study. Prev Med. 2015;71:107-13. http://dx.doi.org/10.1016/j.ypmed.2014.12.0070

32. Dufter SA, Hübner J, Ahmadi E, Zomorodbakhsch B. Traits of cancer patients and CAM usage. J Cancer Res Clin Oncol. 2021;147:3685-92. https://doi.org/10.1007/s00432-021-03605-7

33. Li L, Jianzhong H, Yao L. Snake venoms in cancer therapy: past, present and future. Toxins. 2018;10(9):1-8. https://doi.org/10.3390/toxins10090346

34. Pérez-Peinado C, Defaus S, Andreu D. Hitchhiking with nature: snake venom peptides to fight cancer and superbugs. Toxins. 2020;12(4):1-23. https://doi.org/10.3390/toxins12040255

35. Asiimwe JB, Nagendrappa PB, Atukunda EC, Kamatenesi MM, Nambozi G, Tolo CU, et al. Prevalence of the use of herbal medicines among patients with cancer: a systematic review and meta-analysis. J Evid Based Complement Altern Med: eCAM. 2021;2021:1-19. https://doi.org/10.1155/2021/9963038