Short Communication

Demographics and Sociocultural Factors and Attitudes Affecting Patients' Usage of Complementary Medicine in a South Indian Cancer Hospital

Krishna Om Sanaka[1], Mohamed T. Siddiqui[2], Senthil Rajappa[3], Craig Hadley[4]

From, [1]Research student, [4]PhD, Department of Anthropology, Emory University, Atlanta, GA 30322, USA, [2]MD, Department of Gastroenterology, Hepatology and Human Nutrition, Digestive Disease and Surgery Institute, Cleveland Clinic, Cleveland, OH 44195, USA, [3]MD, Department of Medical Oncology, Basavatarakam Indo-American Cancer Hospital and Research Institute, Hyderabad 500034, Telangana, India.

ABSTRACT

Background: Complementary and alternative medicine (CAM) is widely used by cancer patients and is embedded in Indian culture. **Objectives:** We investigated the usage patterns and attitudes towards CAM in South Indian cancer patients as they were understudied. **Methods:** We interviewed consecutive patients undergoing outpatient cancer treatment at a specialized charity hospital in a large South Indian city and obtained information. **Results:** A total of 101 patients (mean age 55.4 ± 13.1 years and female gender 73.3%) were enrolled, and CAM use was reported by 51 (50.5%) patients. CAM users were more likely to be uninsured (49% vs. 30%), illiterate, or college-educated (29.4% vs. 12%), and less likely to use tobacco (3.9% vs. 20%) or alcohol (2% vs. 12%) ($p < 0.05$ for all). Most users expressed satisfaction with CAM (25% very satisfied and 66.7% somewhat satisfied), and CAM non-users expressed not knowing about these methods (58%) or not believing in their efficacy (46%). Around 57% of CAM users did not discuss their usage with their physicians. **Conclusions:** Overall, CAM usage was common and influenced by social factors in South Indian patients. Therefore, physicians should take the initiative to inquire about patients' use of CAM, which has potential implications for treatment.

Key words: complementary medicine, cancer, patient survey, Ayurvedic medicine

Complementary and alternative medicine (CAM) use is common among cancer patients across the world [1-4]. While India has the third highest incidence of cancer in the world and CAM usage has historically been embedded in its culture, there is a relative lack of literature investigating the usage patterns and attitudes towards CAM use among Indian cancer patients, especially in a South Indian context [5, 6]. Previous studies investigating CAM usage in India have shown mixed findings. While some have drawn associations between CAM usage and sociodemographic factors such as low socioeconomic status, religion and substance use, others have found no such significant relationships [6, 7].

Moreover, while multiple Indian studies have confirmed high satisfaction rates with CAM use across a range of conditions including cancer, others have found the opposite [6, 8-12]. Evidently, the demographics of cancer patients who are CAM users and their attitudes towards their chosen treatment methods are unclear. Therefore, our objective was to investigate the demographics and attitudes of South Indian cancer patients using CAM.

MATERIALS AND METHODS

This study was approved by the local ethics committees of all the authors' institutions, and informed consent was obtained from each patient before their participation in the study. Our sample comprised of consecutively presenting patients for the chemotherapy at Basavatarakam Indo-American Cancer Hospital and Research Institute in Hyderabad, Telangana, India, from May 1st 2023 to May 31st 2023. Eligible participants included adult cancer patients (aged 18 years and older) undergoing chemotherapy at the hospital, with the ability to comprehend and complete an interview. Patients were excluded if they had cognitive impairments that precluded informed consent or interview completion or if they had already participated in a prior phase of this study.

Questionnaire items included patients' demographics, clinical variables, and usage of and attitudes regarding CAM, which we defined as homeopathy, exercise, yoga, ayurveda, meditation, homeopathy, and Unani. We performed Chi-square test to study the categorical variables such as patient demographics and other pertinent clinical factors and analyzed

Correspondence to: Krishna Sanaka, Department of Anthropology, Emory University, 1557 Dickey Drive, Atlanta, GA 30322, USA.

Email: krishnasanaka@gmail.com

the differences between CAM users and non-users. We reported two-sided p-values for each statistical analysis and a value of less than 0.05 was considered statistically significant. All statistical analysis were performed by utilizing SPSS version 25 (IBM Corp., Armonk, NY, USA).

RESULTS

A total of 101 patients (median age 58 years with interquartile range 47 to 63, 73.3% female) were prospectively enrolled for this study, of whom 51 (50.5%) reported CAM use. Hindu patients made up 92.2% of the sample, and urban patients were more common (60.8%). The demographic and clinical variables are presented in **Table 1**.

CAM use was more prevalent at both ends of educational spectrum. CAM users were more likely to be self-payers as opposed to using insurance and were less likely to be smokers and alcohol users ($p < 0.05$ for all). There were no statistically significant differences between CAM users and non-users in terms of age, sex, religion, caste, marital status, income, occupation, and dietary habits (**Table 1**).

Table 1: Demographic Data Summary for CAM Users and Non-Users

Variable		CAM Users (n = 51)	CAM Non-Users (n = 50)	P-Value
Age in Years Mean (SD)		55.9 (12.5)	54.9 (13.6)	0.69
Sex	Female	38 (74.5%)	36 (72%)	0.77
	Male	13 (25.5%)	14 (28%)	
Religion	Hindu	47 (92.2%)	42 (84%)	0.11
	Muslim	4 (7.8%)	4 (8%)	
	Christian	0 (0%)	4 (8%)	
Caste	Forward	22 (44.9%)	22 (44.9%)	0.34
	OBC	20 (40.9%)	19 (38.8%)	
	SC	3 (6.1%)	5 (10.2%)	
	ST	3 (6.1%)	0 (0%)	
	Other	1 (2%)	3 (6.1%)	
Marital Status	Single	1 (2%)	2 (4%)	0.47
	Married	46 (90.2%)	42 (84%)	
	Widowed	3 (5.9%)	6 (12%)	
	Other	1 (2%)	0 (0%)	
Income	No Income	10 (20%)	9 (19.6%)	0.75
	Sufficient Income	19 (38%)	22 (47.8%)	
	Partial Sufficient	13 (26%)	10 (21.7%)	
	Insufficient	8 (16%)	5 (10.9%)	
Occupation	Employed	14 (28%)	13 (26.0%)	0.88
	Unemployed	36 (72%)	37 (74.0%)	
	Missing Info	1 (NA)		
Education	None	15 (29.4%)	6 (12%)	0.03
	Primary	6 (11.8%)	10 (20%)	
	Secondary	9 (17.6%)	18 (36%)	
	Tertiary	21 (41.2%)	16 (32%)	
Insurance	Self-Pay	25 (49%)	15 (30%)	0.04
	Private	3 (5.9%)	10 (20%)	
	Government	23 (45.1%)	25 (50%)	
Residence	Rural	20 (39.2%)	23 (46%)	0.49
	Urban	31 (60.8%)	27 (54%)	
Vegetarian	Yes	18 (35.3%)	2 (44%)	0.37
	No	33 (64.7%)	28 (56%)	
Paan	Yes	5 (9.8%)	9 (18%)	0.23
	No	46 (90.2%)	41 (82%)	
Tobacco	Yes	2 (3.9%)	10 (20%)	0.01
	No	49 (96.1%)	40 (80%)	
Alcohol	Yes	1 (2.0%)	6 (12%)	0.04
	No	50 (98.0%)	44 (88%)	
Cancer Category	Breast	25 (49.0%)	20 (40%)	0.94
	UG	10 (19.6%)	10 (20%)	
	Hematologic	4 (7.8%)	4 (8%)	
	Digestive	5 (9.8%)	6 (12%)	
	Lung	4 (7.8%)	6 (12%)	
	Other	3 (5.9%)	4 (8%)	
Cancer Stage	I	3 (5.9%)	(6%)	0.45
	II	12 (23.5%)	12 (24%)	
	III	17 (33.3%)	10 (20%)	
	IV	19 (37.3%)	25 (50%)	
Chemo	Yes	51 (100%)	48 (96%)	0.14
Radiation	Yes	15 (29.4%)	18 (36%)	0.48
Surgery	Yes	15 (29.4%)	14 (28%)	0.87

CAM = Complementary and Alternative Medicine, OBC = Other Backwards Caste, SC = Scheduled Caste, SD = Standard Deviation, ST = Scheduled Tribe, UG = Urogynecological. P-Values from Chi-Squared Test. Categorical variables are expressed as n (%).

Among CAM users, home remedies were the most common therapy of choice (48.0%), being closely followed by exercise (40.0%) and yoga (36.0%) (**Table 2**). Satisfaction rates were

uniformly high across CAM users who employed exercise, yoga, ayurveda, meditation, and homeopathy (overall satisfaction rate of 100%) while they were lowest among Unani users (overall satisfaction rate of 50%). Family, friends, and oneself were the most common avenues through which patients learned about CAM (70.0%), and traditional medical practitioners were the least common (6.0%). We found that the lack of knowledge regarding these methods (n = 29, 58.0%) was the primary reason for CAM non-use, followed by a lack of belief in their efficacy (23, 46.0%). Interestingly, only 43.1% (n = 22) CAM users reported discussing their usage of complementary methods with their healthcare providers.

Table 2: Attitudes and Patterns of CAM Usage

Variable		Number	Percentage
Type of CAM	Home Remedies	24	48%
	Exercise	20	40%
	Yoga	18	36%
	Ayurveda	11	22%
	Meditation	9	18%
	Homeopathy	2	4%
	Unani	2	4%
Source of Information	Family/Friends/Self	35	70%
	Advertisement	11	22%
	Doctor/Medical Professional	10	20%
	Traditional Medicine Practitioners	3	6%
Expected Benefits from CAM	Help Fight Cancer	24	49%
	Improve Quality of Life	19	38.8%
	Increase Immunity	14	28.6%
	Avoid Recurrence of Cancer	10	20.4%
	Cope with the Side Effects of Cancer	7	14.3%
	Other	1	2%
Satisfaction from Using CAM	Very Satisfied	17	34%
	Somewhat Satisfied	30	60%
	Disappointed	3	6%
Satisfaction by CAM Sub-Type			
Satisfaction from Using Home Remedies	Very Satisfied	6	25%
	Somewhat Satisfied	16	66.7%
	Disappointed	2	8.3%
Satisfaction from Performing Exercise	Very Satisfied	6	30%
	Somewhat Satisfied	14	70%
	Disappointed	0	0%
	Very Satisfied	9	52.9%
Satisfaction from Performing Yoga	Somewhat Satisfied	8	47.1%
	Disappointed	0	0%
Satisfaction from Practicing Ayurveda	Very Satisfied	3	30%
	Somewhat Satisfied	7	70%
	Disappointed	0	0%
Satisfaction from Practicing Meditation	Very Satisfied	3	33.3%
	Somewhat Satisfied	6	66.7%
	Disappointed	0	0%
Satisfaction from Practicing Homeopathy	Very Satisfied	1	50%
	Somewhat Satisfied	1	50%
	Disappointed	0	0%
Satisfaction from Practicing Unani	Very Satisfied	0	0%
	Somewhat Satisfied	1	50%
	Disappointed	1	50%

CAM = Complementary and Alternative Medicine.

DISCUSSION

In this study of a sample of South Indian cancer patients, we investigated the demographics, clinical characteristics, and attitudes of CAM users. A study of CAM in 1171 North Indian cancer patients corroborated our findings that low socioeconomic status or income were related to CAM usage [9]. Another study of 72,262 individuals (45 years and older) from the cross-sectional 2017-2018 Longitudinal Ageing Study in India also found that older age and smoking are associated with CAM use [10]. A third study conducted simultaneously in an urban university hospital and a rural hospital found that CAM use was significantly higher in the tribal population (p < 0.001)[11].A possible explanation for this association is provided by another North Indian study of 300 cancer patients, which found that the cost of CAM therapies was often within reach for those who were socioeconomically disadvantaged, contributing to their relative popularity among this segment of the population [12].

Despite these benefits, other studies caution against an overly positive view of CAM use in cancer patients, with a study showing that up of 85.0% of 1208 North Indian cancer patients using CAM as a sole method of treatment and with another study of 825 North Indian cancer patients showing a significant correlation between CAM usage and a delay in seeking allopathic cancer treatment [13,14]. Yet another North Indian study of 533 leukemia patients showed that in a context where patients sought CAM therapies after allopathic treatments, satisfaction rates with the former were below 50% [9]. Therefore, as shown by a South Indian study of 279 cancer patients, CAM usage may lead to the highest satisfaction rates

and outcomes when combined with standard allopathic treatment, as in our study [15].

Studies from other countries show geographic differences in factors affecting of CAM usage among cancer patients. A study of 603 cancer patients in the United States shows that cancer may affect CAM usage differently than other diseases, given that patients reported lower CAM usage rates for modalities such as dietary supplements after cancer diagnosis (71% to 59%), and then overall returns to pre-diagnosis usage rates after the completion of treatment (69%) [1]. An Italian study demonstrated a similar rate of CAM usage (48.9%) to our study (50.5%) but contradicted our study in that solely higher education level, as opposed to a low education level, was associated with CAM usage (completion of high school or college degree 74.2% vs. 50.2% for CAM users and non-users, respectively) [4]. Moreover, a study of 100 Bosnian cancer patients shows a high satisfaction rate with CAM usage (90.3%) in line with that of the present study (94.0%) [2]. These findings contrast with those of two Turkish studies, which both show relatively mediocre satisfaction rates among CAM using cancer patients of around 60% [3, 16]. Clearly, CAM usage is highly context dependent, even when viewed within the subset of cancer patients.

The cross-sectional design of our study limits our ability to observe changes over time, as we lack follow-up data that could provide insight into how CAM usage and attitudes toward it evolve. Without longitudinal data, it is challenging to establish causal relationships or determine if CAM usage is influenced directly by the timing of a cancer diagnosis. Moreover, we do not have information regarding when cancer patients began using CAM, which may help determine the influence of cancer diagnosis itself on CAM usage. Although we were able to obtain very comprehensive data utilizing our detailed survey-questionnaire and collected information encompassing numerous variables and data points, our study was limited by relatively smaller sample size which limited our statistical power to detect some of the association. An alarming finding in our study is the relative lack of patient disclosure regarding CAM usage to providers. Importantly, CAM use may interfere with certain oncological treatments (17, 18). Therefore, especially given the lack of health literacy in India, a gap in physician-patient communication may be greatly detrimental (19).

CONCLUSIONS

In conclusion, CAM usage was relatively common and influenced by social factors such as education and substance abuse in a sample of South Indian cancer patients, a group that has been understudied despite increasing rates of disease. Satisfaction rates with CAM usage concomitant to standard allopathic therapy was generally high among most treatment types, although CAM usage appeared to be most limited by a lack of knowledge about these methods. Healthcare teams should be aware of the widespread usage of CAM among cancer patients. Further education about CAM usage could improve overall wellbeing and satisfaction in cancer patients. Follow-up studies in similar populations are necessary to better understand the long-term outcomes of CAM usage among cancer patients and to guide effective integration of CAM education within healthcare settings.

REFERENCES

1. Luo Q, Asher GN. Complementary and Alternative Medicine Use at a Comprehensive Cancer Center. *Integr Cancer Ther* 2017;16(1):104-109.
2. Marijanović I, Bevanda Glibo D, Lasić T, *et al.* The Use of Complementary and Alternative Medicine among Cancer Patients Undergoing Conventional Treatment: A Single-Centre Experience. *Psychiatr Danub* 2021; 33(Suppl 13):304-307.
3. Malak AT, Karayurt O, Demir E, *et al*. Complementary and alternative medicine in cancer patients - analysis of influencing factors in Turkey. *Asian Pac J Cancer Prev* 2009; 10(6):1083-7.
4. Berretta M, Della Pepa C, Tralongo P, *et al.* Use of Complementary and Alternative Medicine (CAM) in cancer patients: An Italian multicenter survey. *Oncotarget* 2017; 8(15):24401-24414.
5. Sathishkumar K, Chaturvedi M, Das P, *et al.* Cancer incidence estimates for 2022 & projection for 2025: Result from National Cancer Registry Programme, India. *Indian J Med Res* 2022; 156(4&5):598-607.
6. Roy V, Gupta M, Ghosh RK. Perception, attitude and usage of complementary and alternative medicine among doctors and patients in a tertiary care hospital in India. *Indian J Pharmacol* 2015; 47(2):137-42.
7. Krupa NC, Thippeswamy HM, Chandrashekar BR. Patterns of Usage of Complementary and Alternative Medicine Among Adults Visiting Health Care Centers in Mysuru, India: A Questionnaire-Based Survey. *Holist Nurs Pract* 2021; 35(4):199-205.
8. Nailwal D, B VR, Gupta A. Patterns and predictors of complementary and alternative medicine use in people presenting with the non-communicable disease in an urban health facility, North India. *J Public Health Res* 2021; 10(1):2109.
9. Gupta M, Shafiq N, Kumari S, *et al*. Patterns and perceptions of complementary and alternative medicine (CAM) among leukaemia patients visiting haematology clinic of a north Indian tertiary care hospital. *Pharmacoepidemiol Drug Saf* 2002; 11(8):671-6.
10. Pengpid S, Peltzer K. Utilization of complementary and traditional medicine practitioners among middle-aged and older adults in India: results of a national survey in 2017-2018. BMC Complement Med Ther. 2021; 21(1):26210.
11. Ray J, Chakrabarty D, Paul R, *et al*. Prevalence of the use of complementary and alternative medicine in an eastern Indian population with emphasis on tribal/ethnic minority groups. J Taibah Univ Med Sci. 2018; 13(4):384-389.
12. Chartterjee AK, Ganguly S, Pal SK, *et al.* Attitudes of patients to alternative medicine for cancer treatment. *Asian Pac J Cancer Prev* 2005; 6(2):125-9.
13. Kumar D, Goel NK, Pandey AK, *et al.* Complementary and alternative medicine use among the cancer patients in Northern India. *South Asian J Cancer* 2016; 5(1):8-11.
14. Broom A, Nayar K, Tovey P, *et al.* Indian Cancer Patients' use of Traditional, Complementary and Alternative Medicine (TCAM)

and delays in presentation to Hospital. *Oman Med J* 2009; 24(2):99-102.

15. Sarada K, Puthiyedath R, Philip A*, et al.* Prevalence of the use of traditional complementary and alternative medicine amongst cancer patients in a tertiary care center in Kerala, India. *J Ayurveda Integr Med* 2021; 12(2):359-364.

16. Aydin Avci I, Koç Z, Sağlam Z. Use of complementary and alternative medicine by patients with cancer in northern Turkey: analysis of cost and satisfaction. *J Clin Nurs* 2012; 21(5-6):677-88.

17. Drozdoff L, Klein E, Kalder M, *et al.* Potential Interactions of Biologically Based Complementary Medicine in Gynecological Oncology. Integr Cancer Ther. 2019; 18:1534735419846392.

18. Foley H, Steel A, Cramer H, *et al.* Disclosure of complementary medicine use to medical providers: a systematic review and meta-analysis. Sci Rep. 2019; 9(1):1573.

19. Mathias EG, Dhyani VS, Krishnan JB, *et al.* Community based health literacy interventions in India: A scoping review. Clinical epidemiology and global health. 2023; 22:101310.