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The use of complementary and alternative medicine among cancer patients in Hawaii

April Hamachi[1*†], Jobel Matriz[1†] and Jami Fukui[2]

Abstract

Complementary and alternative medicine (CAM) are medical products and practices that are not part of standard medical care. Various studies demonstrate benefits of CAM use in alleviating cancer related side effects. However, data involving the use of CAM therapies among cancer patients is limited. Hawaii has a unique and diverse population and trends in CAM use could reveal important aspects of cancer care.

We distributed questionnaires to various cancer treatment centers across Oahu. The questionnaires were optional and anonymous. We evaluated 126 questionnaires and analyzed CAM use. We collected participant data including: cancer type, treatments used (surgery, radiation, chemotherapy) and patient demographics (age, gender, ethnicity, income, religion).

We found that at least one CAM therapy is used by a majority of patients 72/126 (57.1%), while 54 (42.9%) do not use any CAM therapy. Among the CAM therapies, meditation and herbal supplements were most commonly used 26 (36.1%), followed by massage 25 (34.7%), yoga 18 (25%), CBD 17 (23.6%), THC 16 (22.2%), and acupuncture 14 (19.4%). Stress reduction was the most common symptom benefit noted for meditation, herbal supplement, massage, and yoga. Anxiety was another symptom benefit reported for meditation. THC and CBD are used for sleep, however, CBS was also used for pain reduction together with acupuncture. Among the patients who use CAM therapy ($n=72$), 80.6% are female ($n=58$) while only 8.3% are male ($n=6$). Furthermore only, 18.3% ($n=23$) of our respondents have spoken to a clinician about CAM.

We discovered that stress reduction is a symptom benefit associated with the most commonly used CAM therapies by cancer patients in Hawaii. Other symptom benefits involve anxiety, pain, and sleep. The modalities utilized were similar to nonpharmacologic therapies recommended by the NCCN guidelines for cancer survivorship, with the exception of herbal supplements. There is a lack of physician discussion regarding CAM use, which could impact the cancer burden in Hawaii.

Keywords CAM, Complementary, Alternative, Integrative medicine, Cancer symptom management

Background

Complementary and alternative medicine (CAM) is recognized by the National Cancer Institute (NCI) as "medical products and practices that are not part of standard medical care", and can be used by cancer patients for a variety of reasons [1]. Specifically, patients may use CAM to alleviate certain symptoms associated with their treatments. The NCI further describes CAM by defining complementary medicine as an adjunct therapy used alongside standard treatment and alternative medicine

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as a therapy used in place of standard treatment [1]. Previous research endorses the efficacy of complementary methods for cancer-related side effects and acknowledges the prevalence of use among cancer patients. Adjunct therapies such as yoga and mindful meditation can be used to reduce fatigue in patients with breast cancer [2, 3]. Acupuncture was found to reduce joint pain associated with aromatase inhibitors in breast cancer patients [4]. These results are a few examples in the growing body of research surrounding the concomitant use of CAM with standardized cancer treatment. This study seeks to identify additional therapies that individuals may use as an adjunct to current treatment addressing cancer related side effects.

Hawaii has a richly diverse population, historically composed of many immigrants, with nearly a quarter of its residents identifying as multiracial [5]. In a study from 2006, CAM use for patients by healthcare providers in Hawaii is significantly higher at 49.9% compared to the rest of the United States at about 25% [6]. Prevalence has likely grown since then as CAM has become widely acceptable over the years. Compared to the general population, approximately one-third of patients with a history of cancer have used CAM therapy [7]. Current literature demonstrates the vast range of CAM therapeutics used during cancer regimens, but there is a lack of research including ethnic minorities. Moreover, there is an absence of research that addresses CAM use for cancer related side effects among the Hawaii population. Our project aims to elucidate the prevalence, pattern of use, and proposed benefits of CAM among Hawaii residents with cancer.

Methods

Patients were surveyed from various cancer treatment centers in Oahu over an 8 week period starting in May 2023. Questionnaires were distributed to front desk staff and instructed to be offered to every patient with cancer who arrives for an appointment. Patients were given both the questionnaire and an informed consent sheet that described the purpose of the study. Every patient was made aware that completion of the questionnaire qualified as their consent for participation. Those who participated were not required to answer every question if they did not feel comfortable providing that information. Questionnaires were completed while patients waited for their appointments. Study staff collected questionnaires on a weekly basis.

The questionnaire was based on a previous study by Fukui J et al [8]. However, the questionnaire was modified in order to assess the characteristics of our patient population and assess the wide range of CAM therapies that these patients may use. This questionnaire was developed specifically for this study and exists as a pilot survey (supplemental file 1) In our study, we collected demographic information including age, gender, ethnicity, income, religion, cancer type and stage. Patients were also asked what types of treatments they have had or are currently receiving and any side effects they have experienced from those treatments. Finally, patients were asked about any complementary and alternative medicine (CAM) therapies that they are currently using. Each therapy listed (ie. yoga, meditation, herbal supplements, etc.) had additional sections inquiring about the frequency and reason for use. Additional information was collected and quantified regarding common side effects and which CAM therapies were used for those side effects. This allowed us to quantify data collection for statistical analysis. In total, 300 questionnaires were distributed. 130 questionnaires had been collected by the end of the 8 week period, for a 43.3% response rate, with 4 removed from data analysis because they did not meet the inclusion criteria of having a diagnosis of cancer. The remaining 126 questionnaires were included in the final analysis (Fig. 1). Any questions that were left blank were listed as "No response" and added to the results tables.

The primary objective was to assess the utilization of complementary and alternative medicine (CAM) within the cancer population. This study reviewed the types of CAM employed and the reasons for their use. The secondary objective was aimed to evaluate CAM modalities, reasons for usage, and the frequency of use among study participants. This analysis was stratified by various demographic factors and cancer history to provide a nuanced understanding of patterns. The stratification factors included, but were not limited to, the type of cancer, cancer stage, type of cancer treatment, side effects from cancer treatment, age, ethnicity, and gender. The data gathered was analyzed by calculating frequencies

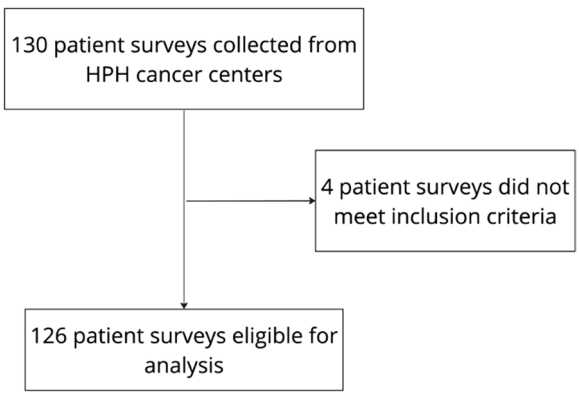

Fig. 1 Total surveys collected and final number of surveys analyzed based on inclusion criteria

and the proportion of data points was compared between groups.

Results

For the sociodemographic factors outlined in Table 1, a majority of our participants identified as female (n = 95, 75.4%) and identified as Asian (n = 57, 45.2%). We had a wide distribution of age ranges, with most between the ages of 60–69 years old (n = 33, 26.2%). Participants were asked about their estimated income, but most left this section blank with 67 (53.2%) having no response. The primary religion reported was Christian/Catholic (n = 50, 39.7%), but many also left this section blank (n = 52, 41.3%). Of the cancer types, 80 (63.5%) participants were diagnosed with breast cancer. At the time of questionnaire completion, 33 (26.2%) had stage 4 cancer and 31 (24.6%) had stage 1, which were the most commonly reported cancer stages. Of the treatment types that patients had received or are currently receiving, many reported surgery (n = 84, 66.7%) and chemotherapy (n = 82, 65.1%) followed by radiation (n = 63, 50%) and immunotherapy (n = 29, 23%). For this section, patients were allowed to select several treatment options.

Of the most commonly reported side effects, 81 (64.3%) reported fatigue, 61 (48.4%) reported hair loss, 57 (45.2%) had constipation and/or diarrhea, and 44 (34.9%) reported pain. 62 (49.2%) patients had reported that they experienced 1–5 side effects (Table 2).

Of those surveyed, 72 (57.1%) patients used at least one CAM therapy, while 54 (42.9%) patients reported no CAM use. The question that followed was "did you speak to your doctor/health professional about the use of any CAM therapies?" and patients were allowed to answer with "yes" or "no". Of those who reported that they have spoken to a clinician about CAM therapies, 21 (29.2%) reported CAM use compared to only 2 (3.8%) who reported no CAM use. A higher proportion of those who report that they had not spoken to a clinician about CAM therapies, report no CAM use (n = 40, 74.1%) compared to those who have reported CAM use (n = 39, 54.2%) (Table 3). Among the CAM therapies, 26 (36.1%) respondents used meditation and 26 (36.1%) used herbal supplements, followed by massage (n = 25, 34.7%), yoga (n = 18, 25.0%), CBD (n = 17, 23.6%) and THC (n = 16, 22.2%) (Fig. 2).

We assessed the perceived CAM benefit experienced by the patients who use CAM. Many participants selected several symptom benefits for each CAM therapy. We found that 13 out of 26 patients (50%) who used meditation reported benefits in both stress reduction and anxiety. Herbal supplement is also most commonly used for stress reduction 13/26 (50%). Massage is commonly used for pain and stress reduction 13/25

Table 1 Patient characteristics and clinical features

	n	%
Gender		
Female	95	75.4
Male	17	13.5
No response	14	11.1
Ethnicity		
White	20	15.9
Asian	57	45.2
Black	1	0.8
Pacific Islander	8	6.3
Mixed Hawaiian	19	15.1
Mixed (other)	5	4.0
No response	16	12.7
Age range		
20–29	1	0.8
30–39	10	7.9
40–49	15	11.9
50–59	25	19.8
60–69	33	26.2
70–79	30	23.8
80 +	1	0.8
No response	11	8.7
Income (US dollars)		
Below 20,000	8	6.3
20,000–49,999	14	11.1
50,000–99,999	15	11. 9
100,000–149,999	6	4.8
150,000 +	12	9.5
Retired	4	3.2
No response	67	53.2
Religion		
Christian/Catholic	50	39.7
Buddhist	10	7.9
Other	5	4.0
None	9	7.1
No response	52	41.3
Cancer type		
Breast	80	63.5
Endometrium	8	6.3
Colorectal	5	4.0
Other	30	23.8
No response	3	2.4
Cancer stage		
Stage 0–1	3	2.4
Stage 1	31	24.6
Stage 2	19	15.1
Stage 3	17	13.5
Stage 4	33	26.2
Stage unknown	7	5.6
No response	16	12.7

Table 1 (continued)

	n	%
Treatment type		
Surgery	84	66.7
Radiation	63	50.0
Chemotherapy	82	65.1
Immunotherapy	29	23.0

Table 2 Common side effects (SE) experienced by cancer patients, $n = 126$

Side effect	n	%
Fatigue	81	64.3
Hair loss	61	48.4
Constipation/diarrhea	57	45.2
Pain	44	34.9
Appetite loss	42	33.3
Memory/concentration	40	31.7
Nausea/vomiting	39	31.0
Sleep problems	32	25.4
Nerve problem	28	22.2
Depression/anxiety	25	19.8
Mouth/throat problem	22	17.5
Swelling	21	16.7
Fertility	15	11.9
Flu-like symptoms	13	10.3
Infection	8	6.3
Bleeding/bruising	7	5.6
Delirium/confusion	6	4.8
Number of SE	n	%
11–15	10	7.9
6–10	35	27.8
1–5	63	50.0
0	18	14.3

(52%), yoga for stress reduction 14/18 (77.8%), THC for sleep 12/16 (75%), CBD 14/17 (82.4%) and acupuncture 9/14 (64.3%) for pain reduction (Table 4).

Table 5 highlights the differences between the demographic factors of those who report CAM use (CAM users) compared to those who do not report any CAM use (non-CAM users). Among those who report CAM use, there is a higher proportion of females ($n = 58$, 80.6%) compared to males ($n = 6$, 8.3%). Contrasted with non-CAM users, females are only 68.5% ($n = 37$) of the group while males comprise 20.4% ($n = 11$). In both CAM and non-CAM users, those who identify as Asian are the majority of each group, but seemed to have a larger proportion of the non-CAM users ($n = 31$, 68.5%). Of the other CAM users, most of our other respondents identified as White ($n = 16$, 22.2%) and Mixed Hawaiian ($n = 12$, 16.7%). In the CAM group, most respondents were in the 60–69 age range ($n = 27$, 37.5%) whereas most of the respondents in the no CAM use group were in the 70–79 age range ($n = 20$, 37.0%). For income, this category primarily had no response in both groups. Similarly, the religion category had a large amount of no responses, but in both the CAM and non-CAM group many patients identified as Christian or Catholic ($n = 29$, 40.3% and $n = 21$, 38.9% respectively). For cancer type, there is a higher proportion of CAM users with breast cancer ($n = 52$, 72.2%) compared to non-CAM users ($n = 28$, 51.9%). However for cancer stage, there appears to not be a large difference between CAM users and non-CAM users for the most commonly reported stages. For CAM users, 23.6% are stage 1 ($n = 17$) and 25.0% are stage 4 ($n = 18$) compared to non-CAM users, which has 25.9% respondents with stage 1 ($n = 14$) and 27.8% in stage 4 ($n = 15$). Similar to our initial analysis of demographic factors, the CAM user group most commonly reported having received surgery ($n = 52$, 72.2%) for treatment of their cancers. Our second most commonly reported treatment was chemotherapy, which has the most respondents among the non-CAM users ($n = 35$, 64.8%).

Discussion

Complementary and alternative medicine has been increasing in popularity over the years and is progressively being used more by cancer patients [9]. In this study, we surveyed cancer patients receiving treatment from several outpatient cancer treatment centers across Oahu. We report a 72/126 (57.1%) prevalence of CAM use among cancer patients. Consistent with prior research, the use of CAM was predominantly observed among younger female patients [10, 11]. In our study, 58/72 (80.6%) of CAM users identified as female and 38/72 (52.8%) of our patients were less than 60 years of age.

In addition to gathering demographic data on CAM users, our surveys assessed the potential side effects that patients might have been experiencing and how they utilized CAM therapies to address those side effects. The five most common side effects reported were fatigue, hair loss, constipation/diarrhea, pain, and appetite loss. We found that various CAM modalities were employed to alleviate identified side effects, particularly pain and appetite loss. These findings suggest that patients may turn to CAM to alleviate burdensome side effects of cancer and its treatment, especially when limited therapeutic options are available. An additional study suggested that those with more treatment-related

Table 3 Complementary and alternative medicine (CAM) usage and clinician discussion, $n = 126$

CAM use	n	%				
Yes	72	57.1				
No	54	42.9				
	CAM use ($n = 72$)		No CAM use ($n = 54$)		Total ($n = 126$)	
Spoke with a clinician?	n	%	n	%	n	%
Yes	21	29.2	2	3.8	23	18.3
No	39	54.2	40	74.1	79	62.7
No response	12	16.7	12	22.2	24	19.0
Reasons[a]						
No prior knowledge about CAM	8					
Did not think it's necessary	7					
Did not think about it	4					
Plans to speak to provider	3					
Not using CAM	3					
Not interested	2					
Provider did not ask	2					
Not using a lot	1					
No response	75					

[a] For those who answered "no" to the question "spoke with a clinician?"

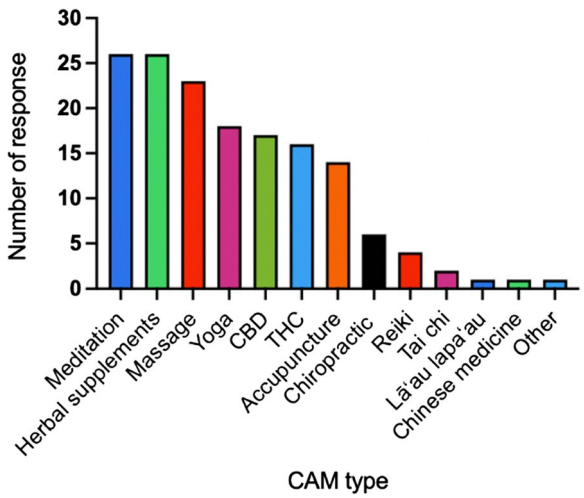

Fig. 2 Common complementary and alternative medicine (CAM) therapies used

side effects may be inclined to employ CAM therapies, but CAM-users also experienced more financial burden [10]. According to the United States Census Bureau, the 2022 median household income in Hawaii was $99,816 [11]. Of the participants in our study who reported their income ($n = 56$), 66% had an income equal to or below the median household income indicating that those who are either middle or lower income likely utilize more CAM therapies.

Patterns of CAM use tend to vary by geographical region. A Swedish study demonstrated that the most common post-diagnosis CAM therapies were vitamins, minerals, and health food preparations [12]. Similarly, a study in South Korea found that herbs, folk remedies, and dietary supplementation were the most recognized CAM modalities [13, 14]. In contrast, a study conducted in New York City identified prayer and spirituality as the most commonly used CAM subtype, followed by dietary and herbal medicine [11]. Our study revealed that meditation and herbal supplements were the two most commonly used CAM modalities among cancer patients in Hawaii. Furthermore, we also assessed the specific perceived symptom benefits associated with each CAM modality. We found that stress and anxiety reduction were the most commonly reported benefits of meditation, while herbal supplements were primarily used for stress reduction. Meanwhile, other studies showed that general well-being and nutritional support were the reported benefits of herbal supplements. Overall, the therapeutic modalities utilized were similar to nonpharmacologic therapies recommended by the NCCN guidelines for cancer survivorship, with the exception of herbal supplements [9].

In our study, only 23 out of 126 (18.3%) patients engaged in discussions with their clinicians regarding the use of CAM. This shows a lower clinician discussion compared to other studies and surveys. However, when separating respondents into those who use CAM

Table 4 Perceived benefit of complementary and alternative medicine (CAM) therapy

CAM type	n (% out of 72)	Most common symptom benefit	n (%)[a]
Meditation	26 (36.1%)	anxiety, stress reduction	13 (50.0%)
Herbal supplement	26 (36.1%)	stress reduction	13 (50.0%)
Massage	25 (34.7%)	pain, stress reduction	13 (52.0%)
Yoga	18 (25.0%)	stress reduction	14 (77.8%)
CBD	17 (23.6%)	sleep, pain reduction	14 (82.4%)
THC	16 (22.2%)	sleep	12 (75.0%)
Acupuncture	14 (19.4%)	pain reduction	9 (64.3%)
Other CAM	21 (29.2%)	varies	N/A
Total CAM users	72/126 (57.1%)		

[a] % out of total patients using each CAM therapy

compared to those who do not, approximately one-third of CAM users have spoken with their clinician about CAM therapies. These findings are similar to A 2008 survey conducted by the National Center for Complementary and Alternative Medicine and the AARP which found that fewer than one-third of patients discussed CAM with their physicians [15]. Another study involving cancer patients in Germany revealed that 62% of CAM users believed their oncologists might be aware of their CAM therapy [16]. This could point to potential geographical or population differences that can be explored in future research. Furthermore, we also explored the reasons behind patients' reluctance or decision not to discuss CAM with their healthcare providers. The most common reasons cited by participants were their own lack of knowledge about CAM and the perception that discussing CAM with their providers was unnecessary. These findings underscore a gap in patient-provider communication and highlight the need for clinicians to initiate conversations about CAM and actively inquire about its use during consultations. This gap in communication is also concerning given the popularity of certain CAM modalities. Herbal supplements were found to be the most frequently utilized CAM therapy which can potentially interact with other treatment modalities. A study showed that among patients using CAM supplements, 37.2% had a likely risk of interactions with their medications [17].

The main strengths of this study lie in its focus on ethnic minorities and various CAM therapies that align with indigenous practices such as la'au lapa'au and reiki. Certain practices, such as la'au lapa'au—a traditional Hawaiian healing method, are not extensively studied in the context of oncology care [18]. However, the results indicate that many patients are actively engaging with a range of therapies and reporting subjective benefits. This study highlights potential research avenues to enhance cancer care, particularly regarding complementary and alternative medicine (CAM) therapies that are prevalent in Hawaii.

However, this study has limitations, including a small sample size and challenges in generalizing certain findings. The optional nature of the questionnaires resulted in missing data, particularly regarding income and religion, with 67/126 (53.2%) and 52/126 (41.3%) of participants not responding in those sections, respectively. This absence limited our discussion about these factors in relation to CAM use. Additionally, most questionnaires were collected from an oncology clinic specializing in breast cancer, leading to an over-representation of breast cancer patients and a predominance of female respondents, which may have skewed the results. The questionnaire was developed for this study and was not derived from prior survey-based CAM research, which could limit validity.

Conclusions

In summary, our study provides unique insight regarding patterns of CAM use among cancer patients in Hawaii. CAM therapies offer multiple symptom benefits which may help mitigate the burdensome side effects of cancer and its treatment, particularly when conventional therapeutic options are limited. There is also a lack of physician discussion regarding CAM use, which could impact the cancer burden in Hawaii.

While the use of CAM is on the rise, data on its patterns among cancer patients remains limited, especially in the United States. Given Hawaii's diverse population and high rates of CAM utilization, this study offers valuable insights into the prevalence and perceived benefits of these therapies.

Abbreviations

CAM Complementary and alternative medicine
NCI National Cancer Institute
NCCN National Comprehensive Cancer Network
NHPI Native Hawaiian and Pacific Islanders
THC Tetrahydrocannabinol

Table 5 Patient demographic factors associated with complementary and alternative medicine (CAM) use

	CAM use (*n*= 72)		No CAM use (*n* = 54)	
	n	%	n	%
Gender				
Female	58	80.6	37	68.5
Male	6	8.3	11	20.4
No response	8	11.1	6	11.1
Ethnicity				
White	16	22.2	4	7.4
Asian	26	36.1	31	68.5
Black	1	1.4	0	0
Pacific Islander	5	6.9	3	5.5
Mixed Hawaiian	12	16.7	7	13.0
Mixed (other)	3	4.2	2	3.7
No response	7	9.7	9	16.7
Age range				
20–29	1	1.4	0	0
30–39	8	11.1	2	3.7
40–49	12	16.7	3	5.6
50–59	17	23.6	8	14.8
60–69	27	37.5	6	11.1
70–79	10	13.9	20	37.0
80 +	1	1.4	0	0
No response	6	8.3	5	9.3
Income (US dollars)				
Below 20,000	3	4.2	5	9.3
20,000–49,999	7	9.7	7	13.0
50,000–99,999	11	15.3	4	7.4
100,000–149,999	3	4.2	3	5.6
150,000 +	9	12.5	3	5.6
Retired	2	2.8	2	3.7
No response	37	51.4	30	55.6
Religion				
Christian/Catholic	29	40.3	21	38.9
Buddhist	2	2.8	8	14.8
Other	3	4.2	2	3.7
None	8	11.1	1	1.9
No response	30	41.7	22	40.7
Cancer type				
Breast	52	72.2	28	51.9
Endometrium	4	5.6	4	7.4
Colorectal	1	1.4	4	7.4
Other	14	19.4	16	29.6
No response	1	1.4	2	3.7
Cancer stage				
Stage 0–1	2	2.8	1	1.9
Stage 1	17	23.6	14	25.9
Stage 2	13	18.1	6	11.1
Stage 3	11	15.3	6	11.1
Stage 4	18	25.0	15	27.8
Stage unknown	4	5.6	3	5.6
No response	7	9.7	9	16.7
Treatment type				
Surgery	52	72.2	32	59.2
Radiation	41	56.9	22	40.7
Chemotherapy	47	65.3	35	64.8
Immunotherapy	21	29.2	8	14.8

CBD Cannabidiol
AARP American Association of Retired Persons

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12906-025-04912-z.

Supplementary Material 1.

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Authors' contributions
A.H., J.M., and J.F. all contributed equally to the manuscript.

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Data availability
All data generated or analysed during this study are included in this manuscript or supplementary information files.
Any additional information can be obtained by emailing the corresponding author upon reasonable request.

Declarations

Ethics approval and consent to participate
This study was approved by the University of Hawaii Office of Research Compliance, Biomedical Institutional Review Board. Ethics approval and waiver of documentation of consent was approved by the University of Hawaii Human Research Program. Participants were informed that filling out the survey was considered documentation of consent to participate in the study.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

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