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NURSES' PERSPECTIVES ON MEDICAL PLURALISM: KNOWLEDGE, ATTITUDES, AND SAFETY INTERVENTIONS IN A MULTICULTURAL CONTEXT—A MIXED METHODS PILOT STUDY

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Abstract

Medical pluralism, the simultaneous use of conventional medicine and complementary and alternative medicine (CAM), is widely practiced by patients from multicultural backgrounds. However, nondisclosure of CAM use to healthcare providers poses safety risks. Nurses play a crucial role in ensuring patient safety, yet little is known about their knowledge, awareness, attitudes, and interventions regarding medical pluralism. 3This mixed method pilot study assessed the knowledge, awareness, attitudes, and safety interventions of medical-surgical and telemetry nurses regarding patient engagement in medical pluralism. A sequential explanatory mixed-method design was employed. The study surveyed 150 nurses from two affiliated medical centers in Hawaii, followed by in-depth interviews with 15 participants. The survey assessed nurses' knowledge, awareness, attitudes, and safety interventions regarding medical pluralism, while interviews explored workplace factors influencing nursing practice. Data were analyzed using descriptive and inferential statistics, along with thematic analysis of qualitative responses. Majority of nurses had low-to-moderate knowledge of CAM and medical pluralism, with most learning about CAM informally rather than through formal education. Nurses' awareness of patients' CAM use was largely dependent on patient disclosure rather than proactive assessment. Although many nurses expressed positive attitudes toward integrating holistic approaches, workplace environments often lacked clear policies or guidelines for managing medical pluralism. Safety interventions primarily involved interprofessional collaboration rather than independent nursing actions. The study highlights the need for enhanced nursing education and organizational policies to support nurses in addressing medical pluralism safely and effectively. Strengthening nurses' knowledge and promoting proactive assessment strategies can improve patient safety and facilitate informed healthcare decisions. Future research should explore the impact of structured educational interventions on nurses' competency in medical pluralism, as well as the development of standardized guidelines to enhance patient safety in diverse healthcare settings.

Keywords: medical pluralism, nursing practice, complementary and alternative medicine, mixed-methods research, patient safety

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Research Highlights

What is the current knowledge?

- Many patients fail to inform their healthcare providers about their use of complementary and alternative medicine (CAM), which can lead to safety concerns.
- Nurses typically have limited formal education on CAM but generally maintain a favorable view of holistic therapies.
- In clinical environments, there is often a lack of clear institutional policies or structured guidelines for addressing medical pluralism.

What is new in this study?

- This mixed-methods research focuses on the experiences of nurses regarding patient engagement in medical pluralism in a diverse and multicultural setting (Hawaii). It emphasizes how local culture impacts patient use of CAM.
- The findings indicate that nurses mainly rely on patients' self-disclosure and their own curiosity to gain knowledge about CAM rather than on formal training or hospital guidelines. Patients' willingness to explore CAM and integrative health can sometimes shift the typical nurse-led dynamic, encouraging nurses to independently learn about CAM and incorporate it into their practice.
- Although nurses recognize the importance of comprehensive CAM assessments, they often neglect them because of time constraints and limited intake forms, highlighting a disconnect between what is ideal and what actually occurs in practice.
- An organizational position that is neutral or unclear regarding CAM can lead to a reliance on collaborative interventions (such as obtaining physician approval), which may hinder more proactive and independent nursing actions.
- The study shows how enhancing nursing education and providing clear organizational policies can lead to more proactive CAM assessments and safer patient care.

INTRODUCTION

Medical pluralism is not a term commonly used by clinicians. It is a concept rooted in medical anthropology that refers to the coexistence of multiple healthcare paradigms within a single individual or population. It is commonly observed among indigenous and immigrant communities, where traditional healing practices persist alongside Western medicine (Belliard & Ramirez-Johnson, 2005). Historically, groups such as Native Americans and Native Hawaiians developed healing systems before the introduction of allopathic medicine, while immigrants bring traditional healthcare practices that may differ significantly from conventional medicine (Belliard & Ramirez-Johnson, 2005). As these populations integrate into mainstream healthcare systems, many continue to use traditional healing methods alongside biomedicine. Green et al. (2006) illustrated this phenomenon in a qualitative study of Chinese migrant women, who reported combining various health practices to navigate barriers in the local healthcare system. Similar patterns of medical pluralism have been widely documented among immigrant populations in the United States (Dela Cruz & Galang, 2008; Felicilda-Reynaldo & Choi, 2018; Felicilda-Reynaldo et al., 2020; Gardiner et al., 2013; Malika et al., 2017; Wade et al., 2007).

Beyond indigenous and immigrant communities, growing interest in holistic health has led to increased CAM use across broader populations, particularly in affluent countries such as the United States, where biomedical services are widely accessible (Cant & Sharma, 2014). CAM is frequently used for health promotion, illness prevention, and as an adjunct to chronic disease management (Harris et al., 2012). In some instances, medical pluralism is organized within integrative medicine, where healthcare providers coordinate complementary and alternative medicine (CAM) use alongside Western medicine to assess their effectiveness and potential risks (National Health Center for Complementary and Integrative Health, 2021). However, despite the rise of integrative medicine, many people pursue CAM on their own, often without professional guidance or informing their healthcare providers (Chang & Chang, 2015; Thomson et al., 2015). The rates of nondisclosure can reach as high as 77%, which raises concerns about possible interactions between herbs and drugs, contraindications, and the overall effectiveness of treatments (Robinson & McGrail, 2004).

For this study, medical pluralism refers to the concurrent use of CAM alongside Western medicine without disclosure to a healthcare provider. This definition encompasses the multicultural aspects of medical pluralism, including immigrants who continue to practice traditional healing while utilizing local healthcare services, as well as the general population's use of CAM as a self-care approach without professional oversight. With the rising popularity of CAM and the potential risks involved, it is crucial to investigate how healthcare professionals, especially nurses, respond to patient engagement in medical pluralism.

Safety Concerns About Medical Pluralism

Concerns regarding medical pluralism largely arise from the safety risks linked to patient engagement in CAM without adequate oversight. Allopathic healthcare providers are especially worried about the unproven effectiveness of many CAM therapies, particularly dietary and herbal supplements, and the potential unforeseen interactions with prescription and over-the-counter medications (McCuistion et al., 2021). The widespread issue of nondisclosure intensifies these risks, as patients who fail to inform their healthcare providers may face adverse reactions or diminished effectiveness of their prescribed treatments (Davis et al., 2012; Robinson & McGrail, 2004). This is particularly concerning for elderly patients, who are more susceptible to changes in pharmacokinetics and pharmacodynamics (Sultan et al., 2015). While some systematic reviews indicate that certain herbal and dietary supplements may be effective and well-tolerated, caution is warranted, especially for pediatric and pregnant populations (Izzo et al., 2016). Furthermore, the inconsistent regulation of CAM products raises alarms about variations in potency, contamination, and misleading therapeutic claims (Bertisch et al., 2009). Although mind-body therapies are widely utilized and reported to enhance patient satisfaction, more randomized controlled trials are needed to assess their clinical efficacy and safety (Bertisch et al., 2009). In light of these concerns, promoting patient disclosure and incorporating evidence-based strategies to address medical pluralism are essential for ensuring safe and effective healthcare.

Nurses' Role in Patient Medical Pluralism

There is still limited research on the role of nurses in patient engagement within the context of medical pluralism. Chang and Chang (2015) discovered that about half of the nurses surveyed, with percentages ranging from 47.3% to 67.7%, felt uneasy discussing CAM therapies with their patients. Their scoping literature review also indicated that nurses possess limited knowledge of CAM, which contributes to their discomfort in addressing patients' use of alternative therapies.

Similarly, Balouchi et al. (2018), in a systematic review of studies regarding nurses' knowledge, attitudes, and use of CAM, found that nurses generally had low levels of CAM knowledge, even though they expressed positive attitudes towards its use. The study further emphasized that nurses who had undergone formal CAM education were more likely to feel confident in discussing and recommending CAM therapies to patients. However, the absence of standardized CAM education and training across nursing programs led to inconsistencies in knowledge and clinical practice. Other research examining nurses' roles in managing patient medical pluralism revealed that nurses often reluctant to document CAM use in medical records, sometimes selectively recording certain types of CAM therapies while ignoring others (Hall et al., 2017). For example, a participant in the Hall et al. (2017) study noted that the more controversial the CAM therapy, such as herbal medicine, the less likely it was to be documented. These inconsistencies in documentation create significant safety risks, as the lack of accurate records regarding patient CAM use can result in harmful drug interactions or other adverse effects.

Spencer et al. (2016) identified several key factors that predict which nurses are more likely to assess patients for CAM use or refer them to CAM therapies. Nurses who assessed CAM use tended to be those who felt somewhat or very comfortable discussing CAM with their patients, had personal experience with massage therapy, and had received formal education on CAM. Likewise, nurses who were more inclined to refer patients for CAM therapies were also those who felt at ease discussing CAM therapies were also those who felt at ease discussing CAM and had undergone formal education in this area (Spencer et al., 2016). Research examining the role of nurses in ensuring patient safety regarding CAM consistently points to a lack of CAM knowledge as a significant barrier to intervention. The study by Spencer et al. (2016) demonstrated that receiving formal education on CAM therapies notably increased the likelihood of nurses actively assessing and incorporating CAM into their practice. Findings from Balouchi et al. (2018) further support this, showing that nurses with formal CAM education not only feel confident in discussing CAM use but also show a greater willingness to integrate CAM into patient care. However, the lack of structured policies and training programs remains a significant gap. The limited research on how nurses respond upon learning about patient CAM use underscores the need for further investigation into medical pluralism and the role of nurses in ensuring patient safety.

Gaps in Literature

Despite extensive research on the use of CAM among patients, there is still a significant gap in understanding how nurses engage with patients in the context of medical pluralism from a clinical standpoint. While earlier studies have looked into nurses' general knowledge and attitudes toward CAM, there has been limited exploration of their awareness regarding patient medical pluralism, their implementation of safety measures, and the workplace factors that affect their ability to effectively address these concerns. Furthermore, research on how nurses actively assess and manage CAM use, especially in multicultural healthcare environments where medical pluralism is prevalent, is scarce. The increasing diversity of healthcare populations and the rising use of CAM highlight the necessity to evaluate how well-equipped nurses are to handle these complexities and provide safe, informed care to patients.

Hawaii offers a distinctive setting for exploring medical pluralism due to its diverse cultural landscape and the historical blending of indigenous and immigrant health practices. The state's diverse patient demographics create an opportunity to examine how nurses handle medical pluralism in their clinical roles and whether work environments effectively support them in addressing CAM usage. This study aimed to address a gap in the existing literature by assessing the knowledge, awareness, attitudes, and safety interventions of medical-surgical and telemetry nurses

concerning patient involvement in medical pluralism. Furthermore, it sought to investigate how workplace policies and educational resources influences nursing practices in this context. By employing a mixed-methods approach, this research offers a thorough analysis of nurses' perceptions and management of CAM use among their patients. The results could help in developing focused educational initiatives, institutional policies, and clinical guidelines that empower nurses to ensure patient safety and encourage informed choices regarding medical pluralism.

Theoretical Framework

This study is based on Fishbein and Ajzen's (1975) theory of reasoned action (TRA), which posits that individual beliefs and societal norms play a crucial role in shaping behavioral intentions and actions. In nursing practice, TRA offers insights into how nurses develop attitudes toward patient engagement in medical pluralism and make decision about intervention strategies. Nurses who view medical pluralism as beneficial or socially accepted—whether by their colleagues, leadership, or professional standards—are more likely to incorporate it into their practice (Trail-Mahan et al., 2013). On the other hand, concerns regarding the safety and effectiveness of CAM, along with workplace environments that do not prioritize holistic care, may deter nurses from educating patients or advocating for the integration of CAM. Knowledge and experience, which are critical components of TRA, significantly influences nurses' attitudes; those with personal or professional experience in CAM tend to have a more favorable view (Trail-Mahan et al., 2013), whereas limited exposure or lack of workplace support can lead to skepticism. Accordingly, TRA provides a useful lens for evaluating how nurses' knowledge levels, workplace norms, and subjective attitudes align with their actual behaviors, such as whether they assess patients' CAM use or encourage disclosure.

By adopting TRA, this study highlights the importance of both individual (knowledge, beliefs) and contextual factors (organizational norms and guidelines) that shape nurses' engagement with medical pluralism. The mixed-methods design allows the researchers to capture these dynamics both quantitatively (e.g., measuring knowledge, awareness, and attitudes in surveys) and qualitatively (e.g., exploring how nurses describe their environment and patient interactions).

METHODS

Study Aim, Design, and Setting

This study assessed the knowledge, awareness, attitudes, and safety interventions of medical-surgical and telemetry nurses regarding patient engagement in medical pluralism. A sequential, explanatory mixed-methods research design was employed, consisting of a quantitative survey followed by qualitative one-on-one interviews. The study was conducted in two affiliated medical centers located in Oahu, Hawaii, chosen due to its diverse patient population and high prevalence of medical pluralism.

Participants and Sampling

A convenience sample of 150 medical-surgical and telemetry nurses was recruited from the two medical centers. Eligible participants were licensed nurses providing direct patient care in medical-surgical or telemetry units. Participation in the study was voluntary, and all participants provided informed consent.

Data Collection Procedures

The study was conducted in two phases. In the first phase, a six-page pen-and-paper survey was distributed to 150 nurses to collect demographic data, assess knowledge of complementary and alternative medicine (CAM) and medical pluralism, evaluate awareness of patient CAM use, examine attitudes toward patient CAM engagement, and explore the safety interventions nurses used in clinical practice. The survey was developed by the primary investigator (PI)/first author using previously validated instruments on CAM knowledge and patient safety interventions.

In the second phase, a subset of 15 nurses from the original sample participated in semi-structured one-on-one interviews to gain deeper insight into the factors influencing their knowledge, attitudes, and use of safety interventions regarding medical pluralism. A semi-structured interview guide with seven primary questions was used, allowing for follow-up questions as needed. Each interview lasted between 45 and 60 minutes and was audio-recorded and transcribed for analysis. Data saturation was achieved after interviewing 11 participants, with no new themes emerging. However, all scheduled interviews were completed (n = 15) to ensure comprehensive data collection.

Data Analysis

Survey data were verified for accuracy and entered into SPSS version 22 for statistical analysis. Descriptive statistics, including means, standard deviations, frequencies, and percentages, were used to summarize participant demographics, knowledge, awareness, and attitudes. Inferential statistics were applied to examine relationships and differences between variables. T-tests and one-way ANOVA were used to compare nurses' knowledge, awareness, and interventions based on demographic characteristics, with Tukey HSD tests conducted for post hoc analysis. Pearson correlation coefficients were calculated to assess associations between knowledge, awareness, attitudes, and interventions. A p-value of $<.05$ was considered statistically significant. For the qualitative data, thematic analysis was performed on interview transcripts using an inductive coding approach to identify key themes related to nurses' experiences and perceptions.

Reliability and Validity

To ensure the reliability and validity of the study instruments, multiple steps were taken to enhance the accuracy and consistency of data collection. The primary investigator developed the survey and the semi-structured interview guide based on existing literature on nurses' CAM knowledge and patient safety interventions. Before distribution, a panel of experts in nursing, CAM, and patient safety reviewed the survey for content validation to ensure its relevance and comprehensiveness in assessing nurses' knowledge, attitudes, awareness, and interventions regarding medical pluralism. The research team then conducted pilot testing with a small sample of nurses who were not included in the final study to evaluate the clarity, readability, and consistency of the survey

questions. Based on their feedback, modifications were made to improve item comprehension and reduce potential misinterpretations. Furthermore, the researchers evaluated the internal consistency reliability by applying Cronbach's alpha to essential survey items that measured CAM knowledge, awareness, and attitudes. A Cronbach's value of 0.70 or above was deemed acceptable for indicating internal reliability.

To enhance the qualitative component, the researchers focused on strengthening reliability through intercoder agreement and member checking. Thematic analysis was performed using an inductive coding approach, where two independent researchers (the first and second authors) coded the transcripts separately to ensure consistency in identifying themes. Any differences in coding were discussed and resolved until a consensus was achieved. To further bolster trustworthiness, the researchers implemented a member-checking process, allowing participants to review key themes and interpretations to ensure that the findings accurately represented their experiences and perspectives. Additionally, the researcher kept an audit trail to document analytical decisions, promoting transparency and reproducibility in the qualitative analysis process.

To reduce potential response bias in both surveys and interviews, participants were guaranteed confidentiality and anonymity in their responses, which helped minimize the influence of social desirability on their answers. The validity of the study was further enhanced through triangulation, integrating both quantitative and qualitative findings to provide a more comprehensive understanding of nurses' experience with patient engagement in medical pluralism.

Ethical Considerations

The Research and Institutional Review Committee (RIRC) at the affiliated medical center approved the study (#RA-2018-301). Further approval was also secured from the university's IRB where the principal investigator was employed. The nurses were provided with an informed consent document that detailed the study's purpose, procedures, potential risks and benefits, confidentiality measures, and their right to withdraw at any time without facing any penalties. For the survey, implied consent was obtained when nurses completed and submitted the questionnaire. For the interviews, written informed consent was obtained before participation, with explicit permission for audio recording and transcription.

RESULTS

Participants

A total of 150 nurses from two affiliated medical centers completed the survey; however, only 148 responses with minimal missing data were analyzed. The majority of participants were female (n =125, 84.5%), of Asian descent (n =103, 69.6%), and held a Bachelor of Science in Nursing degree (n = 121, 81.8%). Participants were primarily employed in medical-surgical units (n = 87, 58.8%), with 54 nurses (36.5%) working in telemetry, and seven nurses (4.7%) indicating that they worked in both specialties. The mean age of participants was 36.17 years (SD = 8.84), and the average length of practice was approximately 10 years (M = 123.11 months; SD = 98.06, range = 4 to 516 months). Table 1 provides a summary of the demographic characteristics of survey participants.

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Table 1

Demographic Characteristics of Participants

Variables	Overall (*n* = 148)		Medical Center 1 (*n* = 41)		Medical Center 2 (*n* = 107)	
	n	%	*n*	%	*n*	%
Gender[a]						
Male	20	13.5	5	12.2	15	14.0
Female	125	84.5	36	87.8	89	83.2
Race[b]						
Black/African	2	1.4	1	2.4	1	.9
Hispanic	2	1.4	0	0.0	2	1.9
Native Hawaiian	10	6.8	2	4.9	8	7.5
White	12	8.1	3	7.3	9	8.4
Mixed	17	11.5	5	12.2	12	11.2
Asian	103	69.6	30	73.2	73	68.2
Education[c]						
ASN/DPN	10	6.8	0	0.0	10	9.3
BSN	121	81.8	36	87.8	85	79.4
MSN	12	8.1	4	9.8	8	7.5
Masters Degree in Other Field	3	2.0	1	2.4	2	1.9
Nursing Specialty						
Medical-Surgical	87	58.8	16	39.0	71	66.4
Cardiac/Telemetry	54	36.5	25	61.0	29	27.1
Both	7	4.7	0	0.0	7	6.5
	Mean (*SD*)	Range	Mean (*SD*)	Range	Mean (*SD*)	Range
Age (Years)	36.17 (8.84)	23.00 - 60.00	36.88 (7.96)	23.00 (56.00)	35.86 (9.22)	24.00 (60.00)
Length of Practice (Months)	123.11 (98.06)	4.00 - 516.00	122.05 (83.66)	24.00 (348.00)	123.52 (103.51)	4.00 (516.00)

Note. [a]Missing data = 3; [b]Missing data = 2; [c]Missing data = 2.

Survey Findings

Knowledge, Awareness, and Use of Complementary and Alternative Therapies and Medical Pluralism

Most participants indicated being only slightly knowledgeable (*n* = 59, 39.9%) or somewhat knowledgeable (*n* = 56, 37.8%) about CAM. Few nurses (9%) reported being moderately aware of their patients' CAM use, while 44% reported slight awareness, and 37% reported being somewhat aware. Regarding their level of awareness of patient engagement in medical pluralism, 23% of participants were not at all aware, 65% were slightly aware, 41% were somewhat aware, and only 6% were moderately or extremely aware. Table 2 presents the detailed findings on nurses' perceived knowledge and awareness of CAM and medical pluralism.

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Table 2

Perceived Knowledge About and Awareness of CAM

Variable	Categories	Overall (*n* = 148)		Medical Center 1 (*n* = 41)		Medical Center 2 (*n* = 107)	
		n (%)	Mean (*SD*)	*n* (%)	Mean (*SD*)	*n* (%)	Mean (*SD*)
Perceived Knowledge of CAM	Not at all knowledgeable	13 (8.8)	2.56 (0.83)	2 (4.9)	2.61 (0.77)	11 (10.3)	2.54 (0.86)
	Slightly knowledgeable	59 (39.9)		17 (41.5)		42 (39.3)	
	Somewhat knowledgeable	56 (37.8)		17 (41.5)		39 (36.4)	
	Moderately knowledgeable	20 (13.5)		5 (12.2)		15 (14.0)	
	Extremely knowledgeable	0 (0.0)		0 (0.0)		0 (0.0)	
Level of Awareness of Patient's Use of CAM	Not all aware	16 (10.8)	2.43 (0.80)	4 (9.8)	2.39 (0.70)	12 (11.2)	2.45 (0.84)
	Slightly aware	65 (43.9)		18 (43.9)		47 (43.9)	
	Somewhat aware	54 (36.5)		18 (43.9)		36 (33.6)	
	Moderately aware	13 (8.8)		1 (2.4)		12 (11.2)	
	Extremely aware	0 (0.0)		0 (0.0)		0 (0.0)	
Level of Awareness of Patient's Use of CAM without the Knowledge of their Healthcare Providers	Not all aware	34 (23.0)	2.17 (0.88)	8 (19.5)	2.27 (0.87)	26 (24.3)	2.13 (0.88)
	Slightly aware	65 (43.9)		16 (39.0)		49 (45.8)	
	Somewhat aware	41 (27.7)		16 (39.0)		25 (23.4)	
	Moderately aware	6 (4.1)		0 (0.0)		6 (5.6)	
	Extremely aware	2 (1.4)		1 (2.4)		1 (0.9)	

Note. CAM= Complementary and Alternative Medicine

Nurses learned about CAM primarily from family and friends (*n* = 71, 41%), from their nursing curriculum (*n* = 63, 42.6%), and through reading medical or nursing journals (*n* = 46, 31.1%; see Table 3). The primary ways that nurses became aware of patients' undisclosed use of CAM were through conversations with patients (*n* = 117, 79.1%), hearing stories from family and friends (*n* = 47, 31.8%), and findings during nursing assessments (*n* = 38, 25.7%; see Table 4).

Table 3

How Did Nurses Learn About CAM? (n = *148)*

Variable	Overall (*n* = 148)		Medical Center 1 (*n* = 41)		Medical Center 2 (*n* = 107)	
	n	%	*n*	%	n	%
Training and seminars	30	20.3	8	19.5	22	20.6
Included in nursing curriculum	63	42.6	17	41.5	46	43.0
Readings from medical/ nursing journals	46	31.1	15	36.6	31	29.0
Endorsed to patients in workplace	41	27.7	10	24.4	31	29.0
Family and friends	71	48.0	23	56.1	48	44.9
Cultural/ religious practices	30	20.3	14	34.1	16	15.0
Personal use of CAM	39	26.4	11	26.8	28	26.2
TV and social media	2	1.4	2	4.9	0	0.0
Not applicable	8	5.4	1	2.4	7	6.5

Note. Multiple answers provided. CAM= Complementary and Alternative Medicine

Almost half of the nurses (*n* = 70, 47.3%) indicated that they had personally used CAM without informing their healthcare provider. Of these, 57% (*n* = 40) used CAM both for health promotion and disease prevention, while 35.7% (*n* = 25) used it exclusively for health promotion and disease prevention. The top reasons for undisclosed CAM use included stress relief (*n* = 47, 67.1%), belief in holistic health (*n* = 44, 62.9%), and perception of CAM as a natural and safer alternative (*n* = 38, 54.3%). In contrast, among the 78 nurses who did not engage in undisclosed CAM use, the top reasons were uncertainty about CAM safety and efficacy (*n* = 41, 52.6%), satisfaction with conventional medicine (*n* = 27, 34.6%), and the practice of informing their healthcare providers about CAM use (*n* = 13, 16.7%; see Table 5).

Table 4

Factors That Made Nurses Aware of Patients' Engagement in CAM Without Disclosure to Healthcare Provider (*n = 148)*

Variable	Overall (*n* = 148)		Medical Center 1 (*n* = 41)		Medical Center 2 (*n* = 107)	
	n	%	n	%	n	%
Conversation with patients	117	79.1	32	78.0	85	79.4
Conversation with healthcare providers	25	16.9	4	9.8	21	19.6
Engagement in patient community	14	9.5	6	14.6	8	7.5
Included in nursing assessment	38	25.7	6	14.6	32	29.9
Training and seminars	13	8.8	2	4.9	11	10.3
Included in nursing curriculum	17	11.5	4	9.8	13	12.1
Readings from medical/ nursing journals	19	12.8	3	7.3	16	15.0
Readings from non-medical/ nursing books/ magazines/ websites	21	14.2	5	12.2	16	15.0
Stories from family and friends	47	31.8	13	31.7	34	31.8
Not applicable	12	8.1	3	7.3	9	8.4

Note. Multiple answers provided. CAM= Complementary and Alternative Medicine

Table 5 presents the use of CAM among nurses without the knowledge of healthcare providers.

Table 5

Nurses' CAM Use Without the Knowledge of Healthcare Provider (n = *148)*

Variable		Overall (*n* = 148)		Medical Center 1 (*n* = 41)		Medical Center 2 (*n* = 107)	
		Yes *n* (%)	No *n* (%)	Yes *n* (%)	No *n* (%)	Yes *n* (%)	No *n* (%)
		70 (47.3)	78 (52.7)	19 (46.3)	22 (53.7)	51 (47.7)	56 (52.3)
Nurses' purpose of using CAM without the knowledge of their healthcare provider [a]		*n* (%)		*n* (%)		*n* (%)	
	Health promotion/ Disease prevention	25 (35.7)		5 (26.3)		20 (39.2)	
	Treatment of illness	5 (7.1)		1 (5.3)		4 (7.8)	
	Both	40 (57.1)		13 (68.4)		27 (52.9)	
Nurses' reasons for using CAM without the knowledge of their healthcare provider[b]	Recommended by family and friends	37 (52.9)		7 (36.8)		30 (58.8)	
	Dissatisfied with conventional medicine or belief that conventional medicine is not enough	15 (21.4)		2 (10.5)		13 (25.5)	
	Holistic orientation toward health	44 (62.9)		6 (31.6)		38 (74.5)	
	For stress relief	47 (67.1)		10 (52.6)		37 (72.5)	
	Natural remedies, therefore safer	38 (54.3)		12 (63.2)		26 (51.0)	
	Greater control over health decisions	13 (18.6)		3 (15.8)		10 (19.6)	
Nurses' reasons for not using CAM without the knowledge of their healthcare provider[c]	Not sure if it is safe and effective		41 (52.6)		14 (63.6)		27
	Satisfied with conventional medicine		27 (34.6)		7 (31.8)		20 (35.7)
	More expensive than conventional medicine		4 (5.1)		0 (0.0)		4 (7.1)
	Longer time to see an effect		3 (3.8)		1 (4.5)		2 (3.6)
	I use CAM with knowledge of my other healthcare providers		13 (16.7)		3 (13.6)		10 (17.9)
	Not covered by insurance		1 (1.3)		0 (0.0)		1 (1.8)
	Not sure which MD to consult		1 (1.3)		0 (0.0)		1 (1.8)
	No medical needs at the moment		3 (3.8)		1 (4.5)		2 (3.6)
	Personal choice/preference		2 (2.6)		1 (4.5)		1 (1.8)

Note. [a] *n* for overall was 70; *n* for Medical Center 1 was 19; *n* for Medical Center 2 was 51.
[b]Multiple answers by nurses who answered that they were using CAM without the knowledge of their healthcare provider
[b]Multiple answers by nurses who answered that they were not using CAM without the knowledge of their healthcare provider

Attitudes Toward Medical Pluralism

Survey items related to nurses' attitudes toward medical pluralism were categorized into two key areas: attitudes toward patient disclosure of medical pluralism engagement and attitudes toward healthcare providers' and nurses' roles in patient medical pluralism engagement. Cronbach's alpha values for these measures were 0.69 and 0.81, respectively, indicating acceptable internal consistency (see Table 6).

Participants strongly agreed (M = 4.26, SD = 0.80) that any use of CAM alongside conventional medicine should be disclosed to healthcare providers. They also agreed that patients should consult with healthcare providers before using CAM (M = 3.84, SD = 0.85) and recognized that medical pluralism might pose unknown risks (M = 3.80, SD = 0.77). Nurses expressed moderate agreement that undisclosed CAM use might hinder the accurate determination of treatment effectiveness (M = 3.64, SD = 0.83). However, they were neutral regarding the need to supervise patient CAM use (M = 3.32, SD = 0.95).

Regarding the roles of healthcare providers and nurses in medical pluralism, nurses agreed that they play a key role in assessing and ensuring safety (M = 3.57, SD = 0.89) but were neutral about whether it is solely the healthcare provider's responsibility to determine and monitor CAM use (M = 3.36, SD = 0.98).

Perceptions of Work Environment and Patient Safety Interventions

Cronbach's alpha for instruments assessing nurses' perception of their work environment was 0.89 and 0.90, respectively, demonstrating high reliability. Nurses provided neutral responses to statements regarding the integration of medical pluralism in workplace policies and training programs. The highest mean score (M = 2.96, SD = 0.95) was given to the statement that integrative health is included in cultural competence training, while the lowest (M = 2.72, SD = 0.94) was given to whether CAM therapies are included in such training (see Table 7).

Regarding patient safety interventions, nurses most frequently reported inquiring about herbal, dietary, or homeopathic supplements when reviewing medication records (M = 3.19, SD = 1.14). They were also likely to remind patients to disclose CAM use to their healthcare provider (M = 2.98, SD = 1.12) and advocate for patients' right to use CAM (M = 2.97, SD = 1.08). The least frequently used intervention was inquiring about CAM therapies other than herbal or dietary supplements when completing a patient's medical or treatment history (M = 2.68, SD = 1.11; see Tables 8–10).

Comparisons Between Participants and Associations Between Variables

There were no significant differences in participants' perceived knowledge of CAM, awareness of patient CAM use, or awareness of patient engagement in medical pluralism based on demographic characteristics such as hospital, gender, level of education, or nursing specialty. However, several statistically significant findings emerged (see Tables 11 and 12):

- A weak negative correlation was found between nurses' age and their attitudes toward the role of healthcare providers and nurses in patient medical pluralism (r = -0.17, p = 0.045), as well as their perception of the workplace environment related to medical pluralism (r = -0.19, p = 0.024).

- Nurses working in medical-surgical units were more likely to agree that patients should disclose medical pluralism engagement than those in telemetry ($t = 2.11$, $p = 0.037$).
- A moderate positive correlation was found between nurses' perceived knowledge of CAM and their awareness of patient CAM use ($r = 0.58$, $p<0.001$), as well as their awareness of patient medical pluralism engagement ($r = 0.48$, $p<0.001$).
- A moderate positive correlation existed between nurses' awareness of patient CAM use and their awareness of patient medical pluralism engagement ($r = 0.57$, $p<0.001$).
- A moderate positive correlation was also found between nurses' attitudes toward patient disclosure of medical pluralism and their attitudes toward the role of healthcare providers and nurses ($r = 0.45$, $p<0.001$).
- A weak to moderate positive association was found between nurses' use of safety interventions and their perceptions of their workplace environment ($r = 0.43$, $p<0.001$).

Table 6

*Nurses' Attitudes Toward Medical Pluralism (*n *= 148)*

Scale Item	Overall (n = 148)		Medical Center 1 (n = 41)		Medical Center 2 (n = 107)	
	Mean	*SD*	Mean	*SD*	Mean	*SD*
Patients should disclose any health practice of combining CAM with conventional medicine to their primary and/or specialty healthcare provider.	4.26	0.80	4.27	0.87	4.25	0.78
It is important for patients to consult with their conventional health care professional first before using CAM therapies.	3.84	0.85	3.98	0.79	3.79	0.87
There is a need to supervise patient use of CAM.	3.32	0.95	3.41	0.95	3.28	0.95
Undisclosed combinations of CAM and conventional medicine can prevent correct determination of effectiveness of prescribed conventional treatments.	3.64	0.83	3.51	1.00	3.682	0.75
Combining CAM therapies and conventional medicine may involve unknown risk factors for users.	3.80	0.77	3.63	0.86	3.86	0.73
It is the healthcare provider's role to determine if patients engage in CAM use without disclosure or guidance.	3.36	0.98	3.44	0.78	3.33	1.04
It is the healthcare provider's role to ensure patient safety regarding use of CAM therapies without disclosure or guidance.	3.51	0.90	3.51	0.84	3.51	0.93
Nurses have an important role in determining if patients engage in CAM use without disclosure or guidance.	3.64	0.84	3.68	0.72	3.63	0.89
Nurses have an important role in ensuring patient safety regarding use of CAM therapies without disclosure or guidance.	3.57	0.89	3.51	0.84	3.60	0.91
Overall	54.28	6.80	53.66	8.16	54.51	6.23

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Table 7

Nurses' Perception of Their Work Environment as Related to Medical Pluralism (n = 148)

Scale Items	Overall (*n* = 148)				Medical Center 1 (*n* = 41)				Medical Center 2 (*n* = 107)			
	Strongly disagree/ Disagree *n* (%)	Neutral *n* (%)	Strongly agree/ Agree *n* (%)	Mean (SD)	Strongly disagree/ Disagree *n* (%)	Neutral *n* (%)	Strongly agree/ Agree *n* (%)	Mean (SD)	Strongly disagree/ Disagree *n* (%)	Neutral *n* (%)	Strongly agree/ Agree *n* (%)	Mean (SD)
My work has procedures in place to ensure that nurses can assess patients' use of CAM.	55 (37.2)	56 (37.8)	37 (25.0)	2.84 (0.95)	13 (31.7)	23 (56.1)	5 (12.2)	2.73 (0.78)	42 (39.3)	33 (30.8)	32 (29.9)	2.89 (1.01)
Cultural competence training is provided to nurses.	59 (39.9)	55 (37.2)	37 (25.0)	2.80 (1.02)	13 (31.7)	20 (48.8)	8 (19.5)	2.80 (0.84)	46 (43.0)	32 (29.9)	29 (27.1)	2.80 (1.09)
CAM therapies are included in cultural competence training of nurses.	64 (43.2)	55 (37.2)	29 (19.6)	2.72 (0.94)	13 (31.7)	21 (51.2)	7 (17.1)	2.80 (0.78)	51 (47.7)	34 (31.8)	22 (20.6)	2.69 (0.99)
Integrative health is included in cultural competence training of nurses.	48 (32.4)	58 (39.2)	42 (28.4)	2.96 (0.95)	10 (24.4)	21 (51.2)	10 (24.4)	2.95 (0.80)	38 (35.5)	37 (34.6)	32 (29.9)	2.96 (1.00)
Cultural practices that involve CAM use without guidance/disclosure to conventional healthcare provider is included in the cultural competence training of nurses.	48 (32.4)	72 (48.6)	28 (18.9)	2.86 (0.86)	11 (26.8)	23 (56.1)	7 (17.1)	2.85 (0.76)	37 (34.6)	49 (45.8)	21 (19.6)	2.87 (0.90)
Overall				14.20 (3.95)				14.15 (3.24)				14.22 (4.21)

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Table 8

Interventions Nurses Used to Ensure Patient Safety Related to Medical Pluralism (Overall; n = 148)

Scale Item	Never *n* (%)	Rarely *n* (%)	Occasionally/ Sometimes *n* (%)	Often *n* (%)	Always *n* (%)	Mean (SD)
Including inquiries about herbal/dietary/homeopathic supplements when reviewing patient's medication record	10 (6.8)	31 (20.9)	51 (34.5)	33 (22.3)	23 (15.5)	3.19 (1.14)
Including inquiries regarding other CAM therapies (including mind-body therapies) used when completing patient medical/treatment history	19 (12.8)	54 (36.5)	42 (28.4)	22 (14.9)	11 (7.4)	2.68 (1.11)
Engaging patients in conversation regarding use of CAM therapies as a health practice	13 (8.8)	53 (35.8)	58 (39.2)	14 (9.5)	10 (6.8)	2.70 (0.99)
Reminding patients regarding the need to disclose any use of CAM to their healthcare provider	13 (8.8)	38 (25.7)	53 (35.8)	27 (18.2)	17 (11.5)	2.98 (1.12)
Encouraging patient to ask healthcare providers regarding use of herbs/supplements/CAM along with prescribed conventional therapies.	14 (9.5)	37 (25.0)	51 (34.5)	32 (21.6)	14 (9.5)	2.97 (1.11)
Advocating for patients regarding their choice of engagement in CAM use to healthcare providers	12 (8.1)	38 (25.7)	55 (37.2)	29 (19.6)	14 (9.5)	2.97 (1.08)
Overall						17.47 (5.38)

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Table 9

Interventions Nurses Used to Ensure Patient Safety Related to Medical Pluralism (Medical Center 1; n = *41)*

Scale Item	Never *n* (%)	Rarely *n* (%)	Occasionally/ Sometimes *n* (%)	Often *n* (%)	Always *n* (%)	Mean (SD)
Including inquiries about herbal/dietary/homeopathic supplements when reviewing patient's medication record	4 (9.8)	9 (22.0)	13 (31.7)	10 (24.4)	5 (12.2)	3.07 (1.17)
Including inquiries regarding other CAM therapies (including mind-body therapies) used when completing patient medical/treatment history	5 (12.2)	12 (29.3)	17 (41.5)	7 (17.1)	0 (0.0)	2.63 (0.92)
Engaging patients in conversation regarding use of CAM therapies as a health practice	4 (9.8)	16 (39.0)	14 (34.1)	5 (12.2)	2 (4.9)	2.63 (0.99)
Reminding patients regarding the need to disclose any use of CAM to their healthcare provider	3 (7.3)	9 (22.0)	14 (34.1)	10 (24.4)	5 (12.2)	3.12 (1.12)
Encouraging patient to ask healthcare providers regarding use of herbs/supplements/CAM along with prescribed conventional therapies.	5 (12.2)	11 (26.8)	15 (36.6)	8 (19.5)	2 (4.9)	2.78 (1.06)
Advocating for patients regarding their choice of engagement in CAM use to healthcare providers	5 (12.2)	13 (31.7)	16 (39.0)	6 (14.6)	1 (2.4)	2.63 (0.97)
Overall						16.88 (4.80)

Table 10

Interventions Nurses Used to Ensure Patient Safety Related to Medical Pluralism (Medical Center 2; n = *107)*

Scale Item	Never *n* (%)	Rarely *n* (%)	Occasionally/ Sometimes *n* (%)	Often *n* (%)	Always *n* (%)	Mean (SD)
Including inquiries about herbal/dietary/homeopathic supplements when reviewing patient's medication record	6 (5.6)	22 (20.6)	38 (35.5)	23 (21.5)	18 (16.8)	3.23 (1.13)
Including inquiries regarding other CAM therapies (including mind-body therapies) used when completing patient medical/treatment history	14 (13.1)	42 (39.3)	25 (3.4)	15 (14.0)	11 (10.3)	2.69 (1.18)
Engaging patients in conversation regarding use of CAM therapies as a health practice	9 (8.4)	37 (34.6)	44 (41.1)	9 (8.4)	8 (7.5)	2.72 (1.00)
Reminding patients regarding the need to disclose any use of CAM to their healthcare provider	10 (9.3)	29 (27.1)	39 (36.4)	17 (15.9)	12 (11.2)	2.93 (1.12)
Encouraging patient to ask healthcare providers regarding use of herbs/supplements/CAM along with prescribed conventional therapies.	9 (8.4)	26 (24.3)	36 (33.6)	24 (22.4)	12 (11.2)	3.04 (1.12)
Advocating for patients regarding their choice of engagement in CAM use to healthcare providers	7 (6.5)	25 (23.4)	39 (36.4)	23 (21.5)	13 (12.1)	3.09 (1.09)
Overall						17.70 (5.59)

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Table 11

Associations Between Key Variables

Variables	Perceived Level of Knowledge of CAM		Level of Awareness of Patient's Use of CAM		Level of Awareness of Patient's Use of CAM without the Knowledge of their Healthcare Providers		Attitudes toward patient disclosure of medical pluralism		Attitudes toward healthcare and nurses' roles to patient medical pluralism		Nurses' work environment as related to medical pluralism concepts	
	r	*p*	*r*	*p*	*r*	*p*	*r*	*p*	*r*	*p*	*r*	*p*
Level of Awareness of Patient's Use of CAM	0.58	<.001***	-	-	-	-	-	-	-	-	-	-
Level of Awareness of Patient's Use of CAM without the Knowledge of their Healthcare Providers	0.48	<.001***	0.57	<.001***	-	-	-	-	-	-	-	-
Attitudes toward patient disclosure of medical pluralism	0.04	.666	0.02	.784	0.16	.053	-	-	-	-	-	-
Attitudes toward healthcare and nurses' roles to patient medical pluralism	0.06	.478	0.14	.090	0.10	.217	0.45	<.001***	-	-	-	-
Nurses' work environment as related to medical pluralism concepts	0.20	.013*	0.33	<.001***	0.22	.008**	0.29	<.001***	0.36	<.001***	-	-
Nurses' use of safety interventions regarding medical pluralism engagement of patients	0.33	<.001***	0.37	<.001***	0.31	<.001***	0.33	<.001***	0.29	<.001***	0.43	<.001***

Note. *Significant at .05 level, **Significant at .01 level, ***Significant at .001 level

Qualitative Findings

Fifteen nurses who completed the survey participated in in-depth interviews, providing insights into their knowledge, awareness, attitudes, and safety interventions regarding patient engagement in medical pluralism. Thematic analysis of the interviews resulted in five major themes: limited knowledge of CAM and medical pluralism, patient disclosure of medical pluralism, positive attitudes toward holistic therapies, a neutral workplace environment, and interdependent safety interventions. Figure 1 illustrates the connection between themes and subthemes that emerged from the participant interviews.

Overall Low Knowledge of CAM and Medical Pluralism

The majority of participants reported low to moderate knowledge of CAM therapies and medical pluralism. They attributed this to the lack of CAM content in their nursing curriculum and the absence or minimal availability of in-service training or continuing education. Nurses who personally engaged in CAM, such as aromatherapy, massage, or alternative pain management, were more likely to report a higher level of knowledge and awareness of medical pluralism. Some participants shared that patient conversations introduced them to different CAM therapies, prompting them to conduct personal research to expand their understanding.

One participant reflected on their experience with alternative pain treatments, stating, “I've had surgery, and I don't like taking pills. My doctor shared with me about myotherapy… I did my own research, [but] I stopped because it’s not covered by insurance.” Another nurse recalled the limited exposure to CAM during their formal education, explaining, “[CAM therapies] were covered in nursing school, probably just one lesson…I haven’t had any in-service on the topic.” Similarly, another participant described how a patient introduced them to aromatherapy, which later led to personal use, sharing:

> One of my patients brought an aromatherapy diffuser and I noticed it smelled good…We talked about it [and I] made my own research and found [essential oil company]. I use lavender essential oil at home to relieve my stress and help me sleep.

These experiences highlight how nurses often gain CAM knowledge informally, through personal experiences or patient interactions, rather than structured education or institutional training.

Patients Inform Nurses About Engagement in Medical Pluralism

Interestingly, the patients themselves assist nurses in becoming more aware of CAM and medical pluralism engagement. Nurses typically became aware through various patient interactions, including situations when patients brought their CAM therapies to the hospital (e.g., aromatherapy diffusers), when family or friends performed massages on patients, when patients inquired about continuing their dietary or herbal supplements during hospitalization, or when patients directly requested integrative health services. One nurse explained how aromatherapy was introduced by a patient, stating:

> A family member brought a diffuser for my patient. I came into the room, and it smelled good so I asked about it. The patient told me about aromatherapy and how it helps her through her sickness. I was a bit concerned because [patient] was in a semi-private room with another patient.

At the larger medical center, integrative health services such as reiki, healing touch, and aromatherapy massage were provided by holistic nurses and community volunteers. However, these services were not widely accessible throughout the hospital, resulting in nurses typically learning about them only through specific patient requests. One participant shared:

> I learned about the integrative health [services] because a patient requested it. I had no idea how to order it...my patient was previously admitted in a unit wherein integrative health was available, and I had to ask about how to order the [integrative health services].

Although patient requests introduced nurses to the existence of integrative health services, nurses generally did not increase their personal knowledge about these therapies, as they typically stepped back when holistic nurses administered the treatments.

Additionally, medical-surgical nurses who had experience floating to oncology units or caring for oncology patients demonstrated higher levels of awareness regarding patient CAM use and medical pluralism engagement. Participants attributed this increased awareness to oncology patients openly discussing their CAM therapies used for symptom management, spiritual comfort, and overall quality-of-life improvement. One nurse explained, "I work in med-surg oncology. My patients always have some type of CAM…they use it for their nausea or to find healing…They're always willing to try anything, especially those in advanced stages. I guess, why not try?"

Positive Attitude Toward Inclusion of Holistic Therapies in Practice

Almost all participants indicated having positive attitudes toward patients using CAM or engaging in medical pluralism. Nurses described hearing consistently positive feedback from patients regarding their use of CAM therapies or integrative health services. Participants noted that patients frequently reported beneficial experiences with therapies such as reiki and healing touch, and emphasized that patients appeared more receptive to nursing care after receiving these therapies. One nurse stated, "Patients are more open to the nursing care I give after they receive the healing touch." Another added, "These [integrative therapies] help patients get through the hump of hospitalization."

Participants also recognized that CAM therapies were often rooted in patients' cultural practices, citing examples such as family members providing traditional lomilomi massage. Nurses expressed respect for patients' cultural healing traditions and acknowledged the importance of honoring these practices in their clinical care. One participant highlighted the cultural significance by sharing, "It's a cultural thing here in Hawaii. My patients and their families inform me about their dietary supplements or herbal therapies. I respect that, as long as the doctor has okayed them for use."

Overall, nurses expressed positive attitudes toward their patients' CAM use and medical pluralism engagement, often influenced by positive patient testimonials regarding these therapies. Nevertheless, they consistently emphasized encouraging patients to disclose their CAM use to healthcare providers to ensure patient safety, particularly regarding potential interactions with conventional medical treatments.

Interdependent Safety Interventions

The primary safety intervention used by all participants was obtaining approval or specific orders from healthcare providers for patients' concurrent use of dietary or herbal supplements after

reviewing their medication records. Alternatively, if a patient indicated taking dietary or herbal supplements at home, nurses often encouraged them to discontinue use while hospitalized to avoid potential interactions with prescribed treatments. One nurse shared, "If I am aware of patients taking supplements, I usually inform the healthcare providers." Another nurse offered the following statement, "I've had patients bring their supplements to the hospital…I tell them not to use them while they're undergoing treatment as it may interact with what we give them here. I also inform their physician about it."

Participants acknowledged that their initial nursing assessment does not fully capture patients' medical pluralism engagement. They explained that assessment questions related to patients' medication history typically asked broadly about "what they take at home," without explicitly prompting patients to differentiate between prescription medications, over-the-counter medications, or herbal supplements. As a result, patients usually responded by listing only their prescription medications, causing dietary supplements and other non-prescription therapies to go undocumented, especially when patients were less forthcoming. One participant attributed this nondisclosure partly to patients "probably thinking these [supplements] are daily routines, not really treatment such as prescriptions." One nurse explained further, stating, "We're in a hurry and if it's not there in the list of questions, it will not be asked."

Participants also noted that they typically did not assess patients' use of other types of CAM therapies. Several nurses felt that assessment of broader CAM practices was "more applicable in the outpatient setting." A few participants mentioned that the nursing assessment intake question that could potentially address CAM therapies by including a question such as, "Do you have any spiritual needs or routines that you would like us to address?" However, nurses noted that patients generally answered "no" to this question, limiting its usefulness in identifying CAM engagement.
Some participants further emphasized that assessing CAM use or medical pluralism engagement was not a significant focus within acute care nursing and therefore not prioritized in routine assessments or interventions. One participant summarized this viewpoint clearly: "Patients come to us in poor condition…we stabilize them here, so CAM therapies are not as high in priority in our care."

Neutral Work Environment

Participants felt that their hospital environment, including nurse supervisors and healthcare providers, had a neutral attitude toward patient CAM use. Some nurses expressed that CAM was "neither encouraged nor discouraged" within their workplace. One participant clarified further, saying, "I've never really heard them [doctors, nurse supervisors] say that patients should or should not use CAM [here in the hospital]."

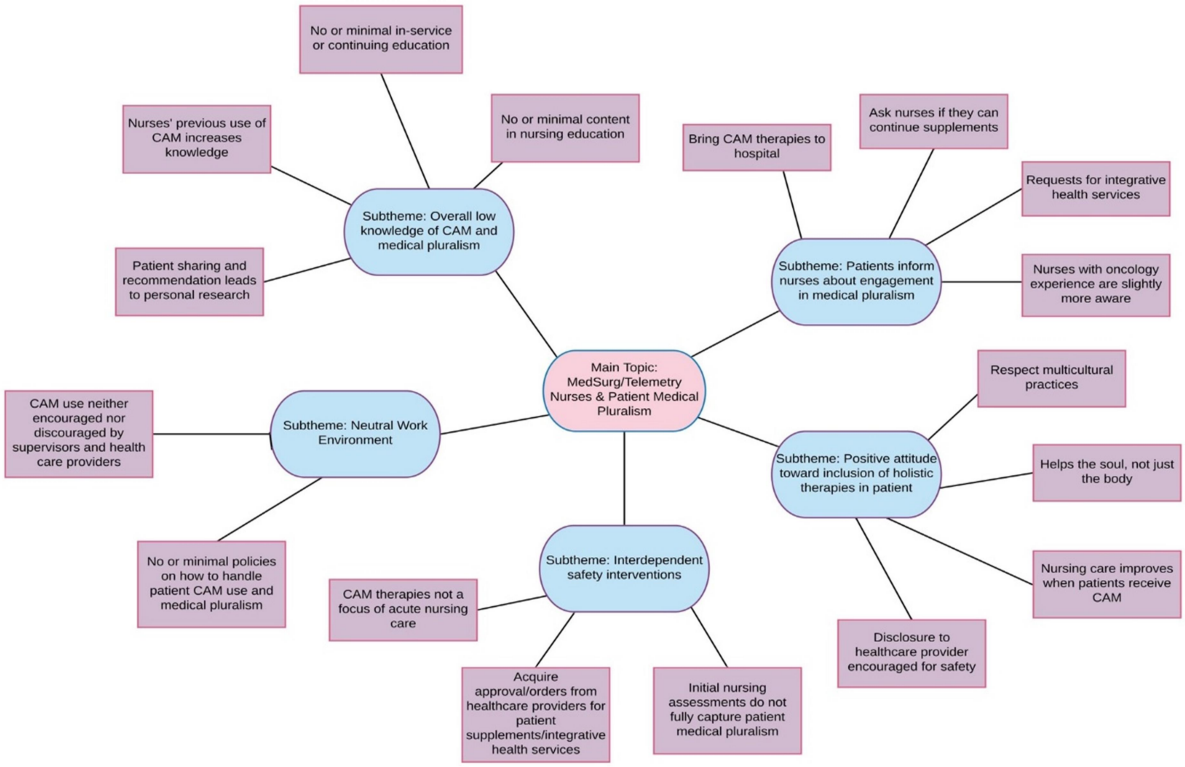
When asked if they were aware of any hospital policies related to patient CAM use or medical pluralism engagement, participants indicated that they were not aware of any specific guidelines. One nurse admitted, "I'm not aware of policies related to CAM… now I'm going to have to look it up since you asked." Despite this absence of formal policies, some nurses proactively informed healthcare providers when patients brought dietary or herbal supplements into the hospital, aiming to ensure that supplements would not negatively interact with prescribed medications. Participants also acknowledged uncertainty about how to manage other types of CAM use by patients due to the lack of guidance. One nurse expressed this uncertainty, stating, "I'm not really sure what I would

do if patients use CAM therapies at their hospital bed…but I would inform their doctor about it… just for safety."

Most participants suggested that educational sessions on CAM therapies and medical pluralism would benefit their practice, but they recognized that nursing administration might face practical barriers, such as timing and staff availability. A nurse elaborated, "Education [on CAM] would be great and I would probably attend. But it has to be practical information…something I can use in my care for patients. But there's always that barrier of when will this education be held."

Figure 1

Concept Map of Themes and Subthemes from Interviews



DISCUSSION

To the authors' knowledge, this study is the first to assess nurses' knowledge, awareness, attitudes, perceptions of the workplace environment, and use of safety interventions in relation to patients' engagement in medical pluralism. By using a mixed-methods approach, we provided insight into how nurses' familiarity with CAM therapies, clinical environment, and workplace culture shape their actions when patients use complementary and alternative medicine alongside conventional care. In interpreting our findings, we draw upon Fishbein and Ajzen's (1975) TRA to highlight how nurses' beliefs, attitudes, and perceived norms influence their behavior in promoting patient safety.

Low to Moderate Knowledge of CAM and Effects on Safety Interventions

Participants in our study indicated that they had low to moderate levels of knowledge regarding CAM therapies, mirroring what has been reported in several previous studies (Balouchi et al., 2018; Chang & Chang, 2015; Shorofi & Arbon, 2010). Many nurses attributed their limited understanding of CAM to insufficient coverage in prelicensure nursing education or minimal in-service training at their hospital. Balouchi et al. (2018) stated that nursing education programs should strengthen CAM content to boost nurses' confidence and clinical decision-making.

Our findings show that as nurses increase their knowledge of CAM, they also increase their awareness of patient engagement in both CAM and medical pluralism. Nurses who have personal knowledge of CAM were more likely to address patient's engagement in medical pluralism and intervene appropriately to ensure patient safety, thus supporting key concepts from the TRA. These nurses used the following safety interventions: assessment of CAM use, patient teaching with a discussion of risks and benefits, encouragement of disclosure to healthcare providers, and advocacy for patient use of CAM therapies.

Chang and Chang (2015) indicated that nurses did not feel comfortable discussing CAM therapies with patients due to insufficient knowledge. Interestingly, some nurses noted that patient openness about CAM sometimes reversed the usual dynamic: patients themselves initiated discussions about medical pluralism and integrative health, prompting nurses to research CAM for their personal use or to enhance patient care. This finding illustrates how direct patient engagement can increase nurses' CAM awareness and encourage a more proactive safety assessment.

Many participants emphasized that upon learning about a patient's CAM use, their first step was typically to collaborate with other healthcare professionals (interdependent interventions) rather than implement independent nursing interventions. The most commonly used safety intervention by nurses was to assess patient use of dietary/herbal supplements when reviewing the medication record. When they discover that patients are taking dietary/herbal supplements, nurses' subsequent action is usually to clarify with healthcare providers whether patients can safely continue supplements during treatment. However, qualitative findings reveal assessing dietary/herbal supplement use was a "hit or miss" in actual practice. They admitted that this assessment would be completed, depending on how intake forms were worded. If "herbal/dietary supplements" were not explicitly listed, it was easy to overlook that assessment question. Such omissions highlight a discrepancy between what nurses know they should do—to thoroughly assess for CAM use—and what happens under time pressures. Implementing clear hospital policies and standardized assessment prompts could reduce these inconsistencies.

Positive Attitudes Toward CAM and Medical Pluralism

Despite the relative lack of formal knowledge, majority of the participants demonstrated positive attitudes toward patient use of CAM and integrative health practices. These attitudes align with findings from Balouchi et al. (2018), Chang and Chang (2015), and Shorofi and Arbon (2010). Many nurses in our interviews shared that patient engagement in medical pluralism, particularly when offered as integrative health services, appeared to help patients cope during hospitalization and even improved patients' acceptance of nursing care. In line with TRA concepts, nurses who perceive CAM as beneficial and socially supported are more inclined to integrate it into their clinical practice. Several participants noted that patients' openness about their CAM experiences often motivated them to learn more, aligning with the TRA concept that attitudes and social norms

shape nurses' intentions and behaviors. Nurses were also more accepting of patient engagement in medical pluralism if patients ensured they were using CAM safely, such as disclosing their CAM use and medical pluralism engagement with their healthcare providers.

Nurses encountered barriers to having deeper conversations with patients regarding CAM use and medical pluralism, including time constraints, heavy workloads, and the need to adhere to a tight assessment schedule. These barriers mirror the findings of Hall et al. (2017), where nurses recognized the importance of talking about CAM but struggled to fit that into their workflows. Still, nurses in our study consistently agreed that they play a critical role in determining engagement in medical pluralism and ensuring patient safety.

Workplace Environment and Lack of Formal Guidance

The study also revealed the "neutral" stance that the medical centers took toward CAM, a theme that resonates with TRA's emphasis on social norms. Although the hospitals in our study did not actively discourage medical pluralism, nurses mentioned few if any policies, procedures, or training sessions to guide best practices. Participants provided neutral or uncertain survey responses regarding the inclusion of CAM or medical pluralism in cultural competence training, and some interviewees reported they had never read or heard of formal policies addressing patient engagement in CAM.

In the absence of explicit guidelines or policies, most nurses defaulted to interdependent interventions: seeking healthcare provider approval or advising patients to discontinue unapproved supplements. While these measures can be protective against drug interactions, they do not address other prevalent CAM practices, such as aromatherapy, mind-body techniques, or spiritual healing approaches. Nurses who lacked knowledge in CAM were less likely to assess or document them in the patient record. In line with TRA, an individual's behavior is influenced by social norms or societal approval. Thus, the perceived lack of education or policies in the workplace could signal to nurses that patient medical pluralism engagement is not a prioritized or important part of nursing care for patients in the hospital setting. This may further explain nurses' lower frequency of applying related safety interventions.

Limitations

The population in Hawaii is unique in its multicultural diversity, potentially increasing the likelihood and acceptance of medical pluralism. Furthermore, nurse participants in this study may have more extensive experiences addressing situations related to CAM use or medical pluralism within an acute care setting compared to nurses working elsewhere in the United States.

CONCLUSION

In summary, nurses exhibit positive attitudes toward patient engagement in medical pluralism but lack comprehensive CAM knowledge and formal guidance for safe intervention. Grounded in Fishbein and Ajzen's TRA, our findings suggest bolstering nursing education and organizational policies to support effective assessment and safe integration of CAM in practice. Addressing these gaps will help nurses fulfill their holistic care role, enhance patient safety, and promote culturally congruent healthcare.

Recommendations

For decades, there has been growing interest in CAM therapies and medical pluralism engagement (Cant & Sharma, 2014). In some regions of the world, such as Hawaii, with its unique cultural diversity, CAM therapies and medical pluralism engagement may already be deeply embedded within the local population's healing culture. The nursing profession prides itself on providing holistic care to patients. Nevertheless, CAM therapies are still not fully integrated into nursing curricula, nor are nurse leaders in healthcare facilities consistently training or guiding nurses on managing situations involving patient CAM use or medical pluralism engagement. Thus, these aspects of nursing practice, education, and administration should be addressed appropriately.

There is also a need to improve current assessment tools to ensure nurses ask the right questions to address patient CAM use and medical pluralism engagement. If nurses explicitly ask about CAM therapies during initial patient assessments, patients may feel more comfortable openly sharing about their practices. Conducting a thorough assessment can facilitate the safe integration of medical pluralism practices into patient treatment plans.

Future research should explore how structured educational interventions, such as in-service trainings or simulation exercises, can improve nurses' competencies in assessing CAM use. Researchers could also investigate the development and evaluation of standardized guidelines or policies that address patient medical pluralism in various healthcare settings. Additional studies might evaluate whether in-depth, nurse-led CAM assessments translate into better patient outcomes, such as improved treatment adherence and fewer adverse events. Replicating this study in other settings could help identify how cultural context influences nurses' understanding and management of patient medical pluralism.

List of Abbreviations

CAM- complementary and alternative medicine
RIRC- Research and Institutional Review Committee
TRA – Theory of reasoned action

Declarations

Ethical Issues
The affiliated medical centers' Research and Institutional Review Committee (RIRC) approved the study (#RA-2018-301). The university's institutional review board (IRB) subsequently approved the study.

Availability of Data and Materials
All data relevant to this study are presented within the article. Since no additional datasets were created or analyzed during this study, data sharing is not applicable.

Competing Interests
The author declares that he has no known financial interests or personal relationships that could potentially influence the work presented in this paper.

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This work is the sole authorship of the authors, who independently designed the protocol, conducted the quantitative and qualitative data collection, analyzed and interpreted the results, and reviewed and approved the final manuscript.

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