

## Use of National Consumer Survey Data to Explore Perceptions of Complementary and Alternative Medicine

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### Abstract

**Background:** Although Complementary and Alternative Medicine (CAM) has been the standard of therapy in Asia for centuries, it started receiving more attention in the U.S. in the last three decades.

**Objectives:** The primary study objective was to explore individuals' perspectives of CAM. A secondary objective was to describe individuals' perceptions of pharmacists' roles in facilitating their use of these services and products.

**Methods:** Data were obtained from the 2015 and 2016 National Consumer Surveys on the Medication Experience and Pharmacist Roles. Data were collected from adults residing in the United States via on-line, self-administered surveys coordinated by Qualtrics Panels between April 28 and June 22, 2015 (n = 26,173) and between March 14 and 30, 2016 (n = 10,500). This study focused on written comments made in the surveys with Content Conventional Analysis applied to the text. Four researchers were trained to conduct coding to assess inter-judge reliability. The four judges had a high level of agreement which was greater than 0.95 for category type.

**Results:** Out of a total of 36,673 respondents, 80% (29,426) submitted written comments at the end of the survey. Of these, 2,178 comments were about medications or health and 170 (8%) comments specifically about CAM, of which 136 (6%) were usable for analysis. Conventional Content Analysis revealed five themes: 1) The role of pharmaceutical and insurance companies in CAM; 2) Overuse of medications; 3) Physicians can play a role in creating a balance between prescription use and CAM; 4) Individuals believe that CAM is more effective than Western medicines and prefer it; 5) Individuals want pharmacists to have a better understanding of CAM. The results of this study reveal individuals' opinions regarding how they want CAM to be considered in their interactions with their healthcare team.

**Conclusion:** Emergent themes suggest that individuals are interested in receiving more professionals' healthcare to become more knowledgeable about CAM.

**Keywords:** Complementary alternative medicine, health care consumer, pharmacy, pharmacist

### INTRODUCTION

The popularity and usage of Complementary and Alternative Medicine (CAM) has been increasing in the United States. According to the National Health Institute Survey (NHIS), CAM has been used by 38% adults who reside in the United States.<sup>1</sup> Furthermore, NHIS data showed that individuals residing in the United States spent \$33.9 billion on CAM products and services.<sup>1</sup> Use of CAM by children was shown to be more likely if their parents are familiar with it and use it themselves.<sup>2</sup>

CAM has been defined by National Institutes of Health as “a group of diverse medical and health care systems, practices, and products that are not presently considered to be part of conventional medicine.”<sup>1</sup> CAM has been classified into five categories by the National Center for Complementary and Alternative Medicine (NCCAM) which are:<sup>3</sup>

- 1) “alternative medical systems, or complete systems of therapy and practice,”
- 2) “mind-body interventions, or techniques designed to facilitate the mind's effect on bodily functions and symptoms,”
- 3) “biologically-based systems, including herbalism,”
- 4) “manipulative and body-based methods, such as chiropractic and massage therapy”,
- 5) and “energy therapies.”

Frequently, CAM has been used as an umbrella term that encompasses a variety of practices and treatments including traditional Chinese medicine, acupuncture, and yoga, that are not part of traditional Western medicine and its practice.<sup>3</sup>

The usage of CAM is particularly common in individuals suffering from chronic conditions such as cancer, rheumatologic, and cardiovascular diseases.<sup>4</sup> CAM usage varies from vitamins and herbal remedies to physical treatments, meditation, or prayers. Among those diagnosed with cancer, studies have reported 30% to 91% use CAM as part of their treatment.<sup>4-7</sup> Additionally, individuals diagnosed with cancer who use conventional medicine simultaneously may not always inform their primary care physician or pharmacist of the concomitant use of CAM.<sup>7</sup>

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Dietary Supplements (DS) are part of CAM. DS are widely sold in U.S. pharmacies and grocery stores. DS are regulated under the Dietary Supplement Health and Education Act (DSHEA).<sup>8</sup> The FDA regulates both the DS products and dietary ingredients; however, other CAM therapies are not regulated by the FDA.<sup>9</sup> Furthermore, DSHEA does not require FDA to review evidence of the efficacy or safety of DS, nor does it require prospective testing to ensure safety. Consequently, manufacturers do not have to prove that their products are effective or safe.<sup>8,9</sup> However, 75% of pharmacists recommended DS should undergo increased regulation in a study by Kwan and colleagues.<sup>10</sup>

There exists a need for health professionals to step up and serve as subject matter experts for these loosely regulated therapeutic methods and agents to ensure their safe and optimal use. Individuals who partake in CAM need clinical experts who are dependable, accessible, and trustworthy to rely on for accurate medical knowledge and recommendations. Pharmacists are qualified for and adequately fit this role, possessing the necessary clinical expertise and resources to help individuals practice safe and effective use of CAM and other therapeutic remedies. Pharmacists are one of the most accessible and trustworthy healthcare professionals to whom individuals regularly go to for CAM advice.<sup>10</sup> Indeed, pharmacists are aware of their role as educators about both CAM and conventional medicines, and 30% of individuals reportedly rely on pharmacists for herbal advice.<sup>11</sup> Furthermore, pharmacists are readily accessible to individuals and can provide them with general information about CAM, especially regarding potential interactions with conventional therapy.<sup>10</sup> A study that surveyed pharmacists nationwide found that pharmacists are more likely to endorse those herbal products that were studied through clinical trials to show evidence of their safety and efficacy.<sup>12</sup>

More than a third of the adults in the US are utilizing Complementary and Alternative Medicine (CAM) in diverse chronic disease conditions. Pharmacists are considered experts in this area and could provide information and educate individuals on the optimal and safe use of CAM. The current study sheds light on consumer perspectives on CAM and potential pharmacists' roles.<sup>13</sup> The outcomes of the study suggest that consumers have a positive perspective towards CAM and are more likely to use it in combination with other medications without informing their healthcare provider.<sup>13</sup> Furthermore, this group of consumers wanted pharmacists and physicians to educate patients about CAM and recommend them in combination with other medications.<sup>13</sup> Pharmacy schools should prepare students to meet consumers' needs. Providing more courses and workshops to students will ensure they are more confident and knowledgeable about CAM.

Several studies have investigated the attitudes and opinions of pharmacists and pharmacy students towards the use of CAM.<sup>14-16</sup> Some studies pointed out that many pharmacists rate their

overall knowledge of CAM as inadequate and are not confident in answering individuals' questions.<sup>14,17</sup> Furthermore, a study investigating the preparedness of pharmacists to address individuals' needs when they are taking medications simultaneously with CAM revealed that pharmacists are not ready to meet the needs of individuals who use CAM and medications simultaneously.<sup>18</sup>

Nationwide, approximately 70% of pharmacy schools provide some form of CAM training in the Pharm.D. curriculum as an elective and 13% of the pharmacy schools include it as required course work.<sup>19</sup> Special elective courses provide in-depth knowledge about CAM; however, these elective courses might concentrate on natural products rather than the full range of CAM practices.<sup>16</sup> The authors noted in their findings from a focus group study of pharmacists and pharmacy students, the most frequently pointed out concern was the need for more courses that will provide training on CAM that would meet individuals' needs.<sup>16</sup>

To help understand CAM from individuals' viewpoints, the primary objective of this study was to explore individuals' perspectives of CAM in their own words. A secondary objective was to describe individuals' perceptions of pharmacists' roles in facilitating their use of these services and products; again, in their own words.

## METHODS

### Definitions

Western Medicine Model = A system in which medical doctors and other healthcare professionals (such as nurses, pharmacists, and therapists) treat symptoms and diseases using drugs, radiation, or surgery. Also called allopathic medicine, biomedicine, conventional medicine, mainstream medicine, and orthodox medicine.<sup>20,21</sup>

Complementary and Alternative Medicine = "A group of diverse medical and health care systems, practices, and products that are not presently considered to be part of conventional medicine."<sup>1</sup>

### Sample and Data Collection

Data were obtained from the 2015 and 2016 National Consumer Surveys on the Medication Experience and Pharmacist Roles (Schommer and Brown, Principal Investigators). Data were collected from adults residing in the United States via on-line, self-administered surveys coordinated by Qualtrics Panels between April 28 and June 22, 2015 (n = 26,173) and between March 14 and 30, 2016 (n = 10,500).

Both surveys asked questions about respondents' medication experiences in the main part of the surveys. The survey also included a series of 21 statements about medication beliefs, including but not limited to:

- My life would be impossible without medicines.
- Medicines are a burden.
- Doctors prescribe too many medicines.
- Medicines do more harm than good.
- I know how to prevent further problems with my health.

The surveys differed slightly in how they finished. The 2015 survey finished with questions about respondent demographics and opinions regarding advertising of medications. The 2016 survey finished with questions about health-risk behaviors and respondent demographics. Then, at the very end of each survey, the following ending question was asked: “Thank you for completing this survey. If you have any comments about medicines, pharmacists, or health, please write them in the space provided.” Written responses to that ending question served as the data source for the findings presented in this report.

Self-reported use of CAM on a daily basis by the 37,673 respondents to the 2015 and 2016 National Consumer Surveys on the Medication Experience and Pharmacists Roles that we used for this study was quite similar (35%). Of the 36,673 respondents, 80% (29,426) submitted written comments at the end of the survey. Most of the comments were about the survey (such as, “enjoyed the survey” or “thanks for this opportunity”). However, 2,178 of the comments were specifically about medicines, pharmacists, or health. Out of those, 136 were usable comments that were specifically about CAM.

### Data Analysis

Descriptive statistics were used for the quantitative data analysis, while Conventional Content Analysis was applied to the qualitative part of the analysis.<sup>22</sup> The reason for selecting Conventional Content Analysis was that whenever “a phenomenon, or emotional reactions experienced” by the participants have to be explained then Conventional Analysis should be used for data analysis.<sup>22</sup> Furthermore, if there is not enough research information on a phenomenon, the researcher should use Conventional Analysis.<sup>22</sup> A key characteristic of Conventional Analysis is not using preconceived categories. On the contrary, Conventional Analysis enables the categories and names for categories to arise from the data.<sup>22</sup> This method has been described in the qualitative analysis as inductive category development.<sup>22</sup>

During the initial step in the inductive coding process, the participant’s “exact words” that depict important concepts must be selected for each line or paragraph.<sup>22</sup> This process enables the labels for codes to arise. Usually, these codes are representative insights of the main ideas and are taken straight from the interview.<sup>22</sup> Inductive coding occurred line by line, which facilitated the development of initial codes.<sup>23</sup> All the codes were grouped into categories based on the similarities that facilitated the emergence of themes.

In the quantitative part, descriptive statistics (frequencies, mean, median, mode, range) were computed for identifying and resolving outliers, missing data, and other errors. After data cleaning was completed, descriptive statistics were used for describing study variables. All investigators agreed upon categories and operational definitions of each are presented in Table 1.

**Table 1.** Categories, % of all Comments, and Operational Definitions

Category Name	%	Operational Definition
1. Medication Use	21%	Utilization of medications (prescription and non-prescription) that includes their effects, safety, use patterns, and specificity to individual needs.
2. Health Care System	17%	Organizations and actions whose primary intent is to promote, restore or maintain health including access issues, financing, insurance, and institutions.
3. Pharmacist	17%	A person (pharmacist) who is professionally qualified to prepare, dispense, and monitor medicinal drugs and works in the science or practice of pharmacy.
4. Pharma	16%	Pharmaceutical companies or industry including direct-to-consumer advertising and other Pharma-sponsored activities.
5. Health Care Provider (non-pharmacist)	11%	A person (non-pharmacist) who helps in identifying or preventing or treating illness or disability as part of his or her job or licensure.
6. CAM	8%	Any of various systems of healing or treating disease (as natural remedies, homeopathy, or faith healing) not included in the traditional medical curricula of the United States which focuses on medications and medical procedures.
7. Medication Cost	6%	Costs associated with medication use including costs to individuals, communities, and society overall.
8. Other	4%	Any comment that does not fit into one of the other eight categories.
9. Caregiver (non-professional)	1%	A person (non-professional) who provides direct care (as for children, elderly people, or the chronically ill). Typically a family member or relative.

Development of these operational definitions was guided by the analyzed text, researcher experiences, and publicly available definitions.

One additional colleague (PR) reviewed the codes, and proposed categories, and consolidated an initial list of coding categories for subsequent content analysis of the comments. This list was reviewed, modified, and operationalized by four researchers (AC, BG, LH, JS) who met in person for this purpose.

In the second phase of analysis, once all the written comments were categorized, some of the emerging categories were further analyzed by two researchers (AC, JS). AC read the corpus of comments belonging to a specific category. An inductive analysis was performed using a qualitative software Dedoose (California, US).<sup>24</sup> Dedoose facilitates hierarchical coding and analysis of great amounts of text across multiple responses. Using an inductive approach, where the participant's "exact words" that depict important concepts were selected for each line.<sup>22</sup> This inductive process enables the labels for codes to arise.<sup>22</sup> AC labeled each comment with a code. Then, the emerging codes and categories were inter-related based on frequency and purpose into major themes.<sup>22,24</sup> Two researchers (AC, JS) compared codes, arbitrated differences, and clarified themes with discussions until agreement was reached.

Four researchers (AC, BG, LH, JS) were trained to conduct coding for a relatively small number of comments ( $n = 17$ ) to assess inter-judge reliability. The researchers were trained on the rules and procedures for coding. For example, each researcher (AC, BG, LH, JS) scored the category type (1 through 11) and sentiment (positive, negative, or neutral valence) for each comment. Inter-judge reliabilities were then calculated by using the Perrault and Leigh reliability index (I), as follows:  $I = \left\{ \left[ \frac{F}{N} - \frac{1}{k} \right] \left[ \frac{k}{k-1} \right] \right\}^{\frac{1}{2}}$  where F = the observed frequency of agreement between judges, N = the total number of judgments, and k = the number of categories.<sup>25</sup>

The four judges had a high level of agreement which was greater than 0.95 for category type and respondent sentiment (negative, neutral, or positive valence).<sup>25</sup> Furthermore, the reliability scores were well above the recommended level of 0.90 for all the six researchers who were involved in the inductive process of coding. To ensure rigor and consistency of the data analysis, random comments were selected and coded by three judges.

## RESULTS

For each of the 21 questions, respondents who wrote a comment about CAM at the end of the survey were significantly different in their level of agreement (1 = very strongly disagree to 7 = very strongly agree) with each of these items compared with the other respondents. These two groups of respondents are indeed different in medication use and medication beliefs. A complete summary of the descriptive findings may be obtained from the corresponding author.

Without any prompting, 170 (8 %) out of the 2,178 comments related to CAM as the topic about which respective respondents wanted to make a comment. Of these, 136

comments were further analyzed that emerged into five themes that are presented from the most to the less frequent.

### Theme 1: The role of pharmaceutical and insurance companies in CAM

Most of the comments under this theme targeted pharmaceutical companies for not paying attention to CAM and not initiating more research on this subject. Additionally, respondents expressed a desire to have CAM covered under their medical or prescription drug benefit. Representative comments include:

*"I only use natural things to take care of my body...all prescription drugs start with something natural and get put full of junk so they can patent it. Drug companies are all about making money, nothing more."*

*"Also, I feel that there needs to be more research done on natural supplements but, of course, that would mean a cut in pharmaceutical profits."*

*"I believe most human bodies are not made to use chemicals. If it can be done naturally it would be better. But then Pharmaceutical Companies could not make as much money. I have found I am off my arthritis medication using a homemade remedy that I have added and have no pain. But it cannot be FDA approved since it is not a chemical."*

*"Herbal remedies and Professional herbalist doctors should be more plentiful and more accepted by Medicare, instead of Medicare being just as guilty of pharmaceutical pushing as the pharmaceutical companies themselves."*

### Theme 2: Overuse of medications

The second theme revealed individuals' views regarding the overuse of medications. Respondents expressed their opinion that people in the U.S. have too much faith in medicines, including both Prescription and Over the Counter (OTC) medicines. Representative comments included:

*"I believe that people take way too many prescriptions to mask problems rather than being taught how to change their lifestyle, food consumption, and exercise benefits. We are a very obese and sick people!!!"*

*"Some people depend on medicine too much. Some people medicalize everything. We are still debating health care in the US."*

*"Medicine should take a more preventative and proactive approach. They should not give a pill for everything."*

### Theme 3: Physicians can play a role in creating a balance between prescription use and CAM

Respondents pointed out a problematic issue: in their opinion, physicians should look for CAM rather than prescribing numerous prescriptions. In respondents' views, there should be



a balance between prescription medications and CAM. In the quotes below, respondents presented their opinion about this problematic issue.

*"I strongly agree that we need medications that are prescribed by a doctor. If you are hurt or have chronic illness, but for daily health and wellbeing, I prefer herbal or natural remedies."*

*"As someone who used to take prescribed medications daily for many years, as well as having multiple family members on medications that I believe some they do need and some they do not, I just wish that other alternatives would be offered prior to an immediate prescription being written, especially when the prescriptions are highly addictive."*

*"I think physicians should balance more of the herbal remedies into their prescriptions."*

*"There needs to be a balance between Western medicine and natural medicine."*

*"I think healthcare providers need to spend more time educating patients on alternatives to medications whenever possible. It seems once a certain drug is prescribed, another is necessary to alleviate side effects from the originally prescribed medication not always, but quite a bit more than necessary."*

#### **Theme 4: Individuals believe that CAM is more effective than Western medicines and prefer it**

Respondents expressed their preference for CAM over conventional medicines. Some believed that herbal supplements could be more helpful than Western medicines. Additionally, comments outlined different approaches such as lifestyle modifications including diet, exercise, or yoga that could be used as first line instead of Western medicines. The following quotes illustrate respondents' preference for CAM:

*"A lifestyle/ change often accomplishes as much or more of the desired health effects as a prescription, without the side effects of taking drugs. It would be nice if people were told this by medical professionals. It would lower the cost of healthcare if we would return to eating the way we did before the 1900s."*

*"Diet, nutrition and lifestyle needs more emphasis than drugs. Healthy, unprocessed foods should be less expensive than processed foods. We should find coupons for healthy foods."*

*"I think it is important to try all remedies before taking medications, such as watching diet, blood sugar, exercise, etc."*

#### **Theme 5: Individuals want pharmacists to have a better understanding of CAM**

Some comments highlighted that pharmacists might not have an adequate understanding of CAM. Furthermore, individuals suggested that pharmacists should be more actively involved in recommending CAM. These comments are represented in the following excerpts.

*"I would like health care professionals and pharmacists to have a broader understanding of nutrition and historical/holistic treatments and remedies."*

*"If my pharmacist told me about relevant alternative treatments (in addition to my prescriptions) that might help with my medical issues, I'd be ecstatic."*

*"I think that pharmacists should always have an answer to any medicine question asked. I think that less medicine should be used to fix problems and more herbal-remedies should be recommended instead."*

#### **DISCUSSION**

Out of 2,178 comments written by participants in an online national survey about medication experience, 136 comments (6%) expressed an opinion about CAM that was analyzable. The results showed that respondents had a positive perception towards using CAM over conventional Western medicine and they would like more information from their healthcare providers, which align with findings from previously reported research.<sup>26</sup> However, research also shows that patients are less likely to inform their healthcare providers about their utilization of dietary supplements, non-prescription medications, or herbal medicine.<sup>27</sup> Thus, we propose that it is important for pharmacists to be more prepared to provide consultation to patients using CAM about proper use, side effects, and interactions with other remedies.<sup>28</sup>

In 2000, Chang et al. reported that pharmacists were less informed about the side effects associated with herbal medicine use but were better informed about their indications and potential uses.<sup>13</sup> We suggest that these findings highlight the need to provide more information about herbal medicine during their initial training and through continuing education. This would help equip pharmacists with confidence to help patients using herbal medicine. Furthermore, pharmacists should be aware of reliable online resources that can instantly give them access to information requested by patients using herbal medicine.

The above-mentioned perceptions that some individuals have about CAM cannot be separated from the U.S. population's overall view of medications. Findings from the National Consumer survey on Medication experience revealed that a large segment of the U.S. population have a predominantly negative view of medication use.<sup>29</sup> Other studies show that a portion of the U.S. population view medications as a life-saver,

offering essential benefits and playing an essential role in their health.<sup>30,31</sup> On the other side, some individuals consider medications as a burden, harmful and are not comfortable using them in addition to constantly reminding them of their sickness.<sup>31</sup> This segment of individuals may consider CAM as their safe and effective option to deal with their health conditions.

To investigate this notion further, we used data from the 2015 and 2016 National Consumer Surveys on the Medication Experience and Pharmacist Roles to look for evidence that the segment of individuals who provided comments about CAM are different than other respondents. Descriptive statistics confirmed this notion. For example, those who wrote a comment about CAM used an average of less than one prescription and less than one over-the-counter medication on a daily basis compared to other respondents who used an average of more than two prescription medications and more than one over-the-counter medication on a daily basis. Not surprisingly, the CAM group reported using over two herbals daily compared to the other respondents who used an average of less than one herbal daily.

Respondents who commented about CAM reported that they are seeking more information and wanted their healthcare providers like pharmacists and physicians to be more knowledgeable and even recommend more CAM combined with regular medications. This call by this group of individuals should be taken seriously to close health care gaps and to provide patient-centered care that is tailored to individuals' preferences. Since individuals typically hold a positive perspective of pharmacists,<sup>32-34</sup> there is an opportunity in providing more education to pharmacy students and pharmacists in the CAM area in order to meet the individuals' needs.

### Limitations

The study results should be considered in the light of its methodological limitations. Although some qualitative methodologists might question the reasons for using open-ended questions in a survey, as there is no opportunity to probe for further clarification, member checking cannot be done if the respondents are anonymous, nor can follow up interviews or focus groups. However, the qualitative part of the survey facilitated the study to gain insight into consumer's understandings and experiences of CAM and other healthcare services in the US.

Furthermore, this study had a relatively small sample size. Nevertheless, the analyzed comments were voluntarily shared by participants and provide new insights that are actionable. Not only does the current study contribute to understanding individuals' perspectives on their medication experience in general and CAM in particular, but also provides recommendations for educators, healthcare providers, decision makers and public health officials regarding how to meet the

demands created from the increased use of CAM in the United States.

### Future Studies

According to the National Health Institute Survey, 38% of U.S. adults are using CAM.<sup>1</sup> Similar self-reported use of CAM was found according to the 2015 and 2016 National Consumer Surveys on the Medication Experience and Pharmacists Roles used in this study. Such a level of use suggests that further research is warranted. Findings from this study, especially the themes that were identified, could provide guidance in designing future studies. It would be of great benefit for future research projects to deeply explore how individuals use CAM and for what specific conditions. Future research could help tailor interventions for facilitating communication between health providers like pharmacists and physicians with their patients regarding CAM.

### CONCLUSIONS

The findings of this study suggest that some consumers are interested in receiving more information about CAM products and services from healthcare professionals. Furthermore, based on the data analysis the consumers would like pharmacists and other healthcare professionals to be more knowledgeable about CAM. Pharmacists' could help counsel individuals and help guide them in choosing CAM within a predominantly western model healthcare system.

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