Knowledge and Attitude of People towards using Complementary and alternative medicine in Riyadh city - A questionnaire study

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ABSTRACT
The practice of CAM use is influenced by psychosocial, cultural and religious factor; it becomes essential to explore the prevalence and perception on a regular basis. Therefore, aim of this survey was to assess the knowledge and attitude of consumers towards Alternative Complementary Medicine in Riyadh city. A cross sectional questionnaire based survey was carried out in Riyadh city from Dec. 2019 to April 2020 on the residents above 18 years. Details of type of CAM practiced and its source of information and questions on the perceptions of participants regarding use of CAM like Is it safe to use alternative medicine, Less expensive/ more effective than modern medicine were asked. The responses of perceptions were on 3 point likert scale-Agreed, neutral and disagreed. Chi-square test was applied to find association different types of CAMs and perceptions with demographic variables. A value of p<0.05 was considered statistically significant. A total of (n=381) subjects responded to the CAMs questionnaire. Most of the study subjects reported social media (51%) as the main source of information for the CAMs and used herbal medicine (72.70%). Females and participants between 51-60 years showed significantly higher use of CAMs (p<0.05). Almost 40.70% and 54.4% of the study participants agreed that the CAMs is safe and less expensive than modern medicine, respectively. Researches in the area of CAM by focusing each practice separately should be encouraged so that sufficient evidence exists to use or refute any CAM practice and physicians must advise patients to consult the respective experts and work in an integrated approach for the well-fare of the patients and the society.

INTRODUCTION
Complementary and alternative medicine (CAM), consists of a extensive array of methods like traditional therapies, herbal medicine, etc., which has achieved its fame universally in recent years (Gözüm et al., 2003). CAM has been described by World Health Organization (WHO) as the cumulative acquaintance, skills, and customs based on the theories, values, and familiarities aboriginal to various cultures used in the preservation of health (WHO, 2020). The CAM practices of the consumers are by and large interconnected to their religious values. The common practices in Saudi Arabia are habitually Holy Quran therapy, with honey, black seed, and myrrh (Al-Faris, 2007; Al-Faris et al., 2008) other than Alhijama (cupping) since it is a component of the prophetic medicine. Of late, the current practices like acupuncture were also launched in the Saudi community by
entrenched private clinics (AlBedah et al., 2011; Sayed et al., 2014). Contradictory to Saudi Arabia, the frequently used CAM practices in the Western world (MO, 2010; Mansour et al., 2015) are relaxation technique, (MacLennan et al., 1996) chiropractic, massage and homeopathy (Eisenberg et al., 1993; Goldbeck-Wood et al., 1996). The mistrust of some patients for conventional medicine, belief it has more side-effects and dissatisfaction with previously used conventional medicine that they had used previously had made them shift to CAM (Jaiswal et al., 2015; El-Gendi et al., 2005). The augmented employment of CAM has formed a mounting interest concerning CAMs which have been investigated in several nations (Muttappallymyalil et al., 2013; Naja et al., 2011). The use of CAM ranges between 9 and 70% of the residents, even though adequate scientific support for its use is deficient (Ernst, 2000). Researchers have certified the application of CAM in patients with arthritis, cancer, diabetes (Ernst, 2000). The extensive use of CAM makes it imperative for the medical professionals to obtain knowledge about the CAM (Ahmad et al., 2016). WHO has also promoted the amalgamation of CAM into the conventional medical system to enhance the quality of care as element of its universal approach for health for all (Shaar et al., 2010). A CAM was established in the country with the objectives to incorporate a reference centre for all issues related to CAM, to control CAM practices inside the health-care facilities and to use evidence based CAM (AlBedah et al., 2011).

According to a bibliometric analysis of 2015 among Arab countries, Saudi Arabia (SA) is in top position of scientific research yield in integrative and complementary medicine (Zyoud et al., 2015) and as the practice of CAM use is influenced by psychosocial, cultural and religious factor; (Jazieh et al., 2012) it becomes essential to explore the prevalence and perception on a regular basis. Therefore, aim of this survey was to assess the knowledge and attitude of consumers towards Alternative Complementary Medicine in Riyadh city.

MATERIALS AND METHODS

A cross sectional survey was carried out in Riyadh city from Dec. 2019 to April 2020 after receiving approval from the Institutional Ethical Committee. The survey was carried on the residents above 18 years of Riyadh city. Riyadh has a population around 6.9 million and by using the Rassoft sample size calculator, the minimum sample size estimated was 377 participants. (http://www.raosoft.com). A total of 381 participants were included in survey. There are several municipal districts in Riyadh city, out of which 3 were selected randomly from the lottery method and from each of these 127 individuals were randomly surveyed from the public areas including hospitals, malls and coffee shops. The study proforma comprising of informed consent details of demographic and self-administered, closed-ended questionnaire was distributed by a single investigator who informed the purpose of the study and willing participants were asked to fill and return the survey form with-in 5-10 minutes.

Questionnaire was developed by referencing previous study (Mansour et al., 2015) and the Expert committee. After preparing the questionnaire in English it was translated in the regional language and back translated in English and the final questionnaire was prepared in regional language. A pilot study was carried out on 30 participants to check the feasibility and reliability. The Cronbach’s alpha and split-half reliability values obtained were 0.84 and 0.81, respectively. The participants and results of the pilot study were not the part of main study.

Firstly participants were enquired of demographic details, followed by information on type of CAM practiced and it’s source. In the end, questionnaire had six questions on the perceptions of participants regarding use of CAM like is it safe to use alternative medicine, Less expensive/ more effective than modern medicine. The responses of these six questions were on 3 point likert scale-Agreed, neutral and disagreed.

Statistical analysis

All the recorded data was analyzed using Statistical Package for Social Sciences (IBM-SPSS version 25, Armonk, NY). Descriptive statistics of frequency distribution and percentages were calculated for the categorical variables. Chi-square test was applied to find an association different types of CAMs and demographic variables. Similar test was also applied to elicit an association between Perception of CAMs and demographic variables. A value of p=0.05 was considered statistically significant.

A total of (n=381) subjects responded to the CAMs questionnaire. Majority of the study participants were in age range of 31-40 years (36%), male (58.5%) and Saudi nationals (91.3%). More than half of the study participants were having university level of education (54.3%) and were employed (57.7%) (Table 1). Most of the study subjects reported social media (51%) as the main source of information for the CAMs followed by family members (45.5%)(Figure 1).

When enquired about the use of CAMs among
### Table 1: Demographic characteristics of the study Participants

| Demographic variables | n   | %    |
|-----------------------|-----|------|
| **Age (Years)**       |     |      |
| 18-30                 | 55  | 14.4%|
| 31-40                 | 137 | 36.0%|
| 41-50                 | 102 | 26.8%|
| 51-60                 | 58  | 15.2%|
| >60                   | 29  | 7.6% |
| Total                 | 381 | 100.0%|
| **Gender**            |     |      |
| Male                  | 223 | 58.5%|
| Female                | 158 | 41.5%|
| Total                 | 381 | 100.0%|
| **Nationality**       |     |      |
| Saudi                 | 348 | 91.3%|
| Non-Saudi             | 33  | 8.7% |
| Total                 | 381 | 100.0%|
| **Educational level** |     |      |
| Primary               | 14  | 3.6% |
| Intermediate          | 13  | 3.4% |
| Secondary             | 106 | 27.8%|
| University            | 207 | 54.3%|
| Postgraduate          | 41  | 10.8%|
| Total                 | 381 | 100.0%|
| **Occupation**        |     |      |
| Student               | 34  | 8.9% |
| Employee              | 220 | 57.7%|
| Unemployed            | 21  | 5.5% |
| House wife            | 80  | 21.0%|
| Business              | 26  | 6.8% |
| Total                 | 381 | 100.0%|
| **Background Knowledge of CAMs** |      |      |
| Yes                   | 296 | 77.7%|
| No                    | 85  | 22.3%|
| Total                 | 381 | 100.0%|

### Table 2: Various sources of CAM and their usage by study Participants

| Types                                               | n   | %      |
|-----------------------------------------------------|-----|--------|
| Herbal medicine                                     | 277 | 72.70% |
| Bee product, bee stings and honey (Apitherapy)      | 270 | 70.90% |
| Roqia (Recitation of Holy Quran)                    | 248 | 65.10% |
| Massage                                             | 197 | 51.70% |
| Physio therapy                                      | 196 | 51.40% |
| Cupping/Hijama                                      | 192 | 50.40% |
| Aroma therapy                                       | 134 | 35.5%  |
| Cauterization                                       | 83  | 21.80% |
| Camel milk and urine therapy                        | 68  | 17.80% |
| Acupuncture                                         | 58  | 15.20% |
Table 3: Various types of CAMS and their usage by study Participants based on Demographic Profiles

| Type of CAMS | Age | p-value | Gender p-value |
|--------------|-----|---------|----------------|
|              | 18-30 | 31-40 | 41-50 | 51-60 | 60> |        | Male | Female |
| Ever used any kind of alternative medicine | Yes | 76.4 | 73.7 | 85.3 | 91.4 | 82.8 | 0.031* | 74.4 | 89.2 | 0.000* |
| No | 23.6 | 26.3 | 14.7 | 8.6 | 17.2 | 25.6 | 10.8 |
| Cupping | Yes | 23.6 | 48.9 | 53.9 | 72.4 | 51.7 | 0.000* | 57.4 | 40.5 | 0.001* |
| No | 76.4 | 51.1 | 46.1 | 27.6 | 48.3 | 42.6 | 59.5 |
| Roqia | Yes | 41.8 | 62.8 | 70.6 | 77.6 | 75.9 | 0.000* | 61.9 | 69.6 | 0.119 |
| No | 58.2 | 37.2 | 29.4 | 22.4 | 24.1 | 38.1 | 30.4 |
| Acupuncture | Yes | 18.2 | 13.1 | 9.8 | 24.1 | 20.7 | 0.116 | 17.9 | 11.4 | 0.080 |
| No | 81.8 | 86.9 | 90.2 | 75.9 | 79.3 | 82.1 | 88.6 |
| Cauterization | Yes | 23.6 | 21.2 | 15.7 | 24.1 | 37.9 | 0.136 | 26.5 | 15.2 | 0.009* |
| No | 76.4 | 78.8 | 84.3 | 75.9 | 62.1 | 73.5 | 84.8 |
| Herbal medicine | Yes | 67.3 | 67.2 | 79.4 | 75.9 | 79.3 | 0.136 | 63.7 | 85.4 | 0.009* |
| No | 32.7 | 32.8 | 20.6 | 24.1 | 20.7 | 36.3 | 14.6 |
| Camel milk/Urine therapy | Yes | 18.2 | 14.6 | 20.6 | 17.2 | 24.1 | 0.186 | 22.9 | 10.8 | 0.000* |
| No | 81.8 | 85.4 | 79.4 | 82.8 | 75.9 | 77.1 | 89.2 |
| Apitherapy | Yes | 74.5 | 73.7 | 68.6 | 72.4 | 55.2 | 0.679 | 75.3 | 64.6 | 0.002* |
| No | 25.5 | 26.3 | 31.4 | 27.6 | 44.8 | 24.7 | 35.4 |
| Physiotherapy | Yes | 32.7 | 51.8 | 48 | 65.5 | 69 | 0.003* | 57.8 | 42.4 | 0.003* |
| No | 67.3 | 48.2 | 52 | 34.5 | 31 | 42.2 | 57.6 |
| Massage | Yes | 38.2 | 54 | 52 | 55.2 | 58.6 | 0.271 | 57 | 44.3 | 0.015* |
| No | 61.8 | 46 | 48 | 44.8 | 41.4 | 43 | 55.7 |
| Aroma therapy | Yes | 25.5 | 33.6 | 39.2 | 32.8 | 51.7 | 0.147 | 35.9 | 34.2 | 0.732 |
| No | 74.5 | 66.4 | 60.8 | 67.2 | 48.3 | 64.1 | 65.8 |

Figure 1: Source of Information from various Media

the study participants, majority of them used herbal medicine (72.70%), followed by apitherapy (70.90%), Roqia (65.10%) and least was acupuncture (15.20%), as shown in Table 2.

Study subjects in age category (51-60 years) showed significantly higher use of CAMs (p=0.03), cupping (p=0.000), Roqia (p=0.000). While physiotherapy use was significantly higher among study participants aged 60 > years (p=0.003) compared to the
Table 4: Various sources of CAMS and their usage by study Participants based on Nationality, Education and Occupation

| Type of CAMs                  | Nationality 80.50 | Nationality 81.80 | Education ≤ Sec  | Education Uni  | Stu  | Emp  | Unemp | HW  | Busin |
|------------------------------|------------------|------------------|------------------|----------------|------|------|-------|-----|-------|
| Ever used any kind of alternative medicine | Yes              | 79.70            | 81.00            | 73.50          | 78.60| 85.70| 86.30| 84.60|
|                              | No               | 19.50            | 18.20            | 20.30          | 19.00| 26.50| 21.40| 14.30| 13.80| 15.40|
| C Cupping                   | Yes              | 53.20            | 21.20            | 50.40          | 50.40| 17.60| 55.50| 47.60| 43.80| 73.10|
|                              | No               | 46.80            | 78.80            | 49.60          | 49.60| 82.40| 44.50| 52.40| 56.30| 26.90|
|                             | 0.000*           | 0.996            | 0.000*           |                |      |      |       |      |      |      |
| R Roqia                     | Yes              | 67.20            | 42.40            | 65.40          | 64.90| 38.20| 65.90| 76.20| 72.50| 61.50|
|                              | No               | 32.80            | 57.60            | 34.60          | 35.10| 61.80| 34.10| 23.80| 27.50| 38.50|
|                             | 0.004*           | 0.923            | 0.007*           |                |      |      |       |      |      |      |
| A Acupuncture               | Yes              | 13.20            | 36.40            | 15.00          | 15.30| 26.50| 13.60| 28.60| 8.80 | 23.10|
|                              | No               | 86.80            | 63.60            | 85.00          | 84.70| 73.50| 86.40| 71.40| 91.30| 76.90|
|                             | 0.000*           | 0.941            | 0.033*           |                |      |      |       |      |      |      |
| C Cauterization             | Yes              | 23.00            | 9.10             | 29.30          | 17.70| 20.60| 22.70| 28.60| 16.30| 26.90|
|                              | No               | 77.00            | 90.90            | 70.70          | 82.30| 79.40| 77.30| 71.40| 83.80| 73.10|
|                             | 0.065            | 0.753            | 0.635            |                |      |      |       |      |      |      |
| H Herbal Medicine           | Yes              | 74.40            | 54.50            | 73.70          | 72.20| 64.70| 69.10| 76.20| 87.50| 65.40|
|                              | No               | 25.60            | 45.50            | 26.30          | 27.80| 35.30| 30.90| 23.80| 12.50| 34.60|
|                             | 0.014*           | 0.753            | 0.016*           |                |      |      |       |      |      |      |
| C Camel milk/Urine therapy  | Yes              | 18.10            | 15.20            | 22.60          | 15.30| 20.60| 20.00| 19.00| 12.50| 11.50|
|                              | No               | 81.90            | 84.80            | 77.40          | 84.70| 79.40| 80.00| 81.00| 87.50| 88.50|
|                             | 0.672            | 0.079            | 0.532            |                |      |      |       |      |      |      |
| A Apitherapy                | Yes              | 71.00            | 69.70            | 66.20          | 73.40| 73.50| 71.80| 76.20| 61.30| 84.60|
|                              | No               | 29.00            | 30.30            | 33.80          | 26.60| 26.50| 28.20| 23.80| 38.80| 15.40|
|                             | 0.877            | 0.139            | 0.167            |                |      |      |       |      |      |      |
| P Physiotherapy             | Yes              | 52.30            | 42.40            | 45.10          | 54.80| 29.40| 55.90| 66.70| 43.80| 53.80|
|                              | No               | 47.70            | 57.60            | 54.90          | 45.20| 70.60| 44.10| 33.30| 56.30| 46.20|
|                             | 0.278            | 0.070            | 0.015*           |                |      |      |       |      |      |      |
| M Massage                   | Yes              | 52.90            | 39.40            | 38.30          | 58.90| 26.50| 60.90| 52.40| 37.50| 50.00|
|                              | No               | 47.10            | 60.60            | 61.70          | 41.10| 73.50| 39.10| 47.60| 62.50| 50.00|
|                             | 0.139            | 0.000*           | 0.000*           |                |      |      |       |      |      |      |
| A Aroma therapy             | Yes              | 35.10            | 36.40            | 34.60          | 35.50| 35.30| 38.20| 42.90| 25.00| 34.60|
|                              | No               | 64.90            | 63.60            | 65.40          | 64.50| 64.70| 61.80| 57.10| 75.00| 65.40|
|                             | 0.881            | 0.861            | 0.282            |                |      |      |       |      |      |      |

S=Saudi, NS= Non-Saudi, Sec=Secondary level, Uni=University, Stu=Student, Emp=Employed, Unemp=Unemployed, HW=House Wife, Busin=Business
Table 5: Perception about CAMS amongst study Participants and Demographic Profile by applying chi square test

| Perception about CAMs                          | Overall | Age | Gender | Nationality | Education | Occupation |
|------------------------------------------------|---------|-----|--------|-------------|-----------|------------|
|                                                 | n       | %  | p      | p           | p         | p          |
| Is it safe to use alternative medicine?         |         |     |        |             |           |            |
| Agree                                          | 155     | 40.70 | 0.223  | 0.548       | 0.000     | 0.094      | 0.074 |
| Disagree                                       | 54      | 14.20 |        |             |           |            |        |
| Neutral                                        | 172     | 45.10 |        |             |           |            |        |
| Less expensive than modern medicine            |         |     |        |             |           |            |
| Agree                                          | 206     | 54.40 | 0.080  | 0.391       | 0.000     | 0.451      | 0.226 |
| Disagree                                       | 64      | 16.90 |        |             |           |            |        |
| Neutral                                        | 109     | 28.80 |        |             |           |            |        |
| CAMs more effective than modern medicine        |         |     |        |             |           |            |
| Agree                                          | 127     | 33.30 | 0.493  | 0.718       | 0.210     | 0.026      | 0.769 |
| Disagree                                       | 66      | 17.30 |        |             |           |            |        |
| Neutral                                        | 109     | 28.80 |        |             |           |            |        |
| Able to treat diseases of inability to treat by modern medicine? |         |     |        |             |           |            |
| Agree                                          | 188     | 49.30 | 0.213  | 0.567       | 0.056     | 0.365      | 0.083 |
| Disagree                                       | 151     | 39.60 |        |             |           |            |        |
| Neutral                                        | 100     | 26.20 |        |             |           |            |        |
| Need for licensed centers or clinics            |         |     |        |             |           |            |
| Agree                                          | 312     | 81.90 | 0.023  | 0.080       | 0.782     | 0.904      | 0.337 |
| Disagree                                       | 24      | 6.30  |        |             |           |            |        |
| Neutral                                        | 45      | 11.80 |        |             |           |            |        |
| Recommended to use                              |         |     |        |             |           |            |
| Agree                                          | 207     | 54.30 | 0.023  | 0.660       | 0.530     | 0.200      | 0.476 |
| Disagree                                       | 34      | 8.90  |        |             |           |            |        |
| Neutral                                        | 140     | 36.70 |        |             |           |            |        |

other groups. Similarly, females tend to use significantly higher CAMs (p=0.000), and herbal medicine (p=0.003) compared to the males. (Table 3).

A significantly higher percentage of Saudi nationals used cupping (p=0.000), Roqia (p=0.004) and herbal medicine (p=0.014) compared to the non-Saudis. While acupuncture was commonly used CAMs among non-Saudis (p=0.001). Significantly higher percentage of study participants having ≤Secondary level of education used cauterization compared to the university level of education (p=0.009). (Table 4).

Almost (40.70%) of the study participants agreed that the CAMs is safe. A significantly higher percentage of Saudis (42.8%) compared to the non-Saudi’s (18.2%) agreed that the CAMs is safe (p=0.000). CAMs are less expensive than modern medicine was perceived by overall 54.40% of the study participants, whereas group-wise comparison again showed more Saudis (57.5%) compared to the non-Saudis (21.2%) perceived this belief, and this difference was statistically significant (p=0.000). Nearly (17.30%) of the subjects believed that the CAMs is more effective than the modern medicine and difference was significant based on education level of participants with more individuals in ≤secondary education (23.3%) compared to the University educated participants (14.1%). Nearly (81.90%) of the participants perceived that there is a need for licensed centres or clinics of CAMs and 54.30% of the study participants recommended the use of CAMs and for both these perception higher percentages were seen in 51-60 year as compared to the other groups (Table 5).

Partial improvement after using CAMs was the most common (44.1%) response obtained from the participants followed by improvement (38.6%), no change (16.30%) and worse (1%) (Figure 2).

The recent trends show more inclination towards CAMs in many countries. And since the use varies...
from region to region and also depends on the environmental factors it is important to find the extent of use and perceptions regarding CAMs in a timely manner.

Our results show maximum respondents (51%) used social media as the main source of information for the CAMs followed by family members (45.5%). The extent of dependency people have on social media for making health-related decision have been shown in studies (Sen et al., 2016). In Saudi Arabia also, the dissemination of internet usage have crossed 30 million in 2018 and in the previous decade it emerged as a powerful sources of communication (Alkadhi et al., 2020).

The recommendation of CAM use by family was second most prevalent in our study and this have also been stated in the study conducted by (Jan et al., 2009) and in an Indian study by Jaiswal et al., however only 4.34% Indians referred to media as an information source (Jaiswal et al., 2015). Only a handful of participants reported that information on use of CAMs was given by any physician or specialist of the concerned field. These findings were also seen by Jaiswal et al. (2015). Physicians should be alert regarding use of alternate medicine by the patients as there can be certain drug interactions or possible side effects. Patients should not be criticized and rather encouraged for sharing information on CAM use with their health care professionals (Vidal et al., 2013).

The most common CAM practice in study participants was herbal medicine (72.7%), whereas study conducted in Jeddah showed use of herbs just 30% (Jan et al., 2009). The study in India also showed practice of alternative medicine Ayurveda by 71.73% (Jaiswal et al., 2015). Caution should be advised with the potential use of herbs and the delusion of the perception that natural ingredients are ‘always’ safe should be dealt tactfully. Since herbs have biological activity overuse may lead to severe toxic reactions (Jan et al., 2009).

Our analysis showed individuals belonging to 51-60 years showed significantly higher use of CAMs. This was in accord to the previous researches who also reported frequent utilization of alternative medicine by the older age group (El-Gendy et al., 2005).

Similarly, females tends to use significantly higher CAMs in the present study, which is in line with findings of previous studies carried out in different countries. The possible explanation for this observation given by them was the cultural circumstances and disagreeing health beliefs between the genders (Bakhhotmah and Alzahrani, 2010).

The CAM use was found more in less educated individuals this was in contrast to the previous research which stated that educated patients are likely to have more earnings and capable of better meeting expense of CAM use (Shmueli and Shuval, 2006).

Around 40% participants felt CAMs are safe to use and 54% considered it less expensive. The low cost of these therapies was also seen in study by (Jan et al., 2009) and they considered this might be an encouraging factor for patients to use CAMs. The better effectiveness of CAMs than modern medicine was more perceived in individuals who are less educated. People should be made aware that there is lack of scientific evidence to support this belief and they should consult specialist only of the alternative therapies for its use (Jaiswal et al., 2015).

There are few limitations of the study population was only from a single region which questions the generalizibility of the outcomes. The study design was cross-sectional and these studies alone cannot be used as a basis for drawing the final inference. Furthermore, the information was collected by using questionnaire and people might not be reporting the actual use of the CAMs.

**CONCLUSIONS**

The national centre of CAM in Saudi Arabia should encourage research in the area of CAM by focusing each practice separately so that sufficient evidence exists to use or refute any CAM practice. Physicians should also be cautious that patients might be using CAM besides the modern medicine and thus taking thorough history can avoid drug interactions as well as they can advise patients to consult the respective experts and work in an integrated approach for the well-fare of the patients and the society.

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**Conflict of Interest**

The authors declare that they have no conflict of interest for this study.

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