original article

Prevalence and pattern of alternative medicine use: the results of a household survey

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BACKGROUND AND OBJECTIVES: Alternative medicine (AM) encompasses all forms of therapies that fall outside the mainstream of medical practice. Its popularity is on the increase. Because previous surveys were limited and not generalizable, we estimated the prevalence, pattern and factors associated with use of AM in the community.

SUBJECTS AND METHODS: A multistage cluster cross-sectional household survey was conducted among Saudi residents of the Riyadh region. Data were collected in 2003 by trained interviewers from primary health care centers using a specially designed questionnaire.

RESULTS: Of 1408 individuals participating in the study, 39% were men. The mean (±SD) age for the study population was 35.5 (±13.9) years. Sixty-eight percent of the respondents had used AM during the last 12 months. The Holy Quran as a therapy was the most frequently used AM (50.3%), followed by honey (40.1%), black seed (39.2%) and myrrh (35.4%). The health belief model was found to be the most important determinant of AM use. Factors independently associated with AM use included perceived failure of medical treatment, the perceived success of AM, a preference for natural materials, and long appointment intervals to see physicians.

CONCLUSIONS AND RECOMMENDATIONS: There is a high prevalence of AM use in the Riyadh region and the most important determinant of AM use was the perceived failure of medical treatment. The study results call for intensive health education campaigns in the media addressing wrong beliefs regarding AM and modern medicine. The popularity of AM in this community should alert decision makers to look at the difficult accessibility to the health system.

Alternative medicine (AM) includes all therapeutic procedures or practices that fall outside the mainstream of medical practice. It is also known as complementary, unconventional or unorthodox medicine, in addition to other descriptions.[1] AM includes more than 160 practices or remedies.[2] It can be classified into pharmacological categories (e.g. herbalism or homeopathy), physical remedies (acupuncture, cupping or chiropractic), dietary approaches (e.g. macrobiotics and vegetarianism) or cognitive therapy (e.g., hypnosis and other methods). Therefore, it is not homogenous.[3] The seven best-selling herbal medicines in the USA were ginkgo biloba, St. John's wort, ginseng, garlic, echinacea, saw palmetto and kava.[4]

Understanding the extent and patterns of complimentary and alternative medicine usage in an economically developing country like Saudi Arabia is important for a number of reasons, including the development of strategies to improve health outcomes and health service planning. Studies in Saudi Arabia are either restricted to inpatients[5,6] or to attendants of primary health care (PHC) centers[7,8] while others were limited to one type of AM,[5,9-11] so their findings cannot be generalized. These studies cannot be used to estimate the prevalence, pattern of use and characteristics of AM users in general. To design health education programs, data about the prevalence of AM use and the characteristics of its users are needed. We estimated the prevalence, cost and side effects of different types of AM use among Saudi adults in the general population by means of a household survey and studied factors associated with AM use in the Riyadh region.

SUBJECTS AND METHODS

The Riyadh region extends from Zolfi in the North to Wadi Al Dawasser in the South and from Dawadmi in the West to the Khorais in the East with an estimated population of 3 726 523 persons (males, 1 902 087; females, 1 824 436).[12] There are 275 health centers in the region, with 57 located in Riyadh city. Each PHC center has a catchment area with a complete registry of its population.[13]

The sampling unit used in the study was the family. This was defined as a group of individuals living together in a household, and usually included the father, the mother, sons and daughters and sometimes grandparents and uncles. Based on results of two previous studies in Riyadh city,[8,9] a prevalence rate of 20% was estimated. Accepting 5% degree of precision at a 95% level of significance, we estimated that we needed 246 families. Due to the cluster sampling method, a study design effect of 1.5 was used so that the sample size was recalculated to be 246×1.5=369 families. Assuming a response rate of 80%; the final sample size was estimated to be 369×100/80=462 families.

A multistage random cluster sampling technique was used for the selection of the study population in this cross-sectional study. Selection was based on the World Health Organization (WHO) form for a cluster sample.[14] The sample size (462 families) was divided into forty clusters, 30 inside Riyadh city and 10 from the suburban areas around the city. Each cluster was composed of 12 households. The clusters were distributed proportionally according to the size of catchment area for each center.

A structured questionnaire was designed to fulfill the study objectives. It consisted of five sections. The first section was concerned with the personal and sociodemographic characteristics of the participants, e.g., age, sex and education. The second section enquired about AM use. The third part enquired about AM practitioners visits, and the reasons and costs of their consultation. The fourth section investigated participants opinions regarding AM and modern medicine (MM). The last part was about AM use in the treatment of children. The first two sections are the source of the data for this paper. The other three sections will be reported elsewhere.

The questionnaire design went through many steps including, among others, a brain storming workshop and a pilot study. To test the reliability of the questionnaire 28 volunteers completed it on two occasions 2 weeks apart. The alpha coefficient of reliability ranged from 0.83 to 0.95 from the least to the most reliable questions.

Data were collected during the period from 6 April 2003 to 22 June 2003. Data collectors were selected from workers in PHC centers based on certain criteria. Each data collection team consisted of one man and two women. Two workshops in the form of small group discussions, role-play exercises and feedback were held to train data collectors. Male data collectors interviewed male study subjects and female data collectors interviewed women. The questionnaires were revised for completeness before leaving the household. Field supervisors checked for accuracy as a quality assurance measure.

For the sake of comparison with other studies and to quantify the magnitude of AM use, the results were based on the 12 months that preceded the interview. This may have also reduced the recall bias associated with lifelong use. Epi-Info (Centers for Disease Control, Atlanta, USA) was used for preliminary analysis where data were presented as percentages. Means and standard deviations were calculated for quantitative variables. For comparison between users' characteristics for various AM types, the chi-square test at 95% level of significance (P=.05) was used. Data were analyzed by the SPSS program where multivariate logistic regression analysis was used to determine the independent factors associated with AM use through calculation of the adjusted odds ratio (OR) and its 95% confidence intervals (CI).

RESULTS

We achieved a 95% response rate, resulting in a study sample of 1408 persons of whom 550 were males (39.1%) and 858 were females (60.9%). The mean age (±SD) of the study population was 35.5 (±13.9) years. All were Saudi Arabs. One thousand twenty-eight persons (73%) used AM at some time in the past, about 76% in Riyadh city and 66% in the suburban areas. A total of 955 (67.8%, 95% CI 66%-70%) persons had used AM over the preceding 12 months. About 77% of the women and 54% of the men used AM in the last 12 months. Older people tended to use AM more frequently than their younger counterparts (P=.03). The widowed (85.7%) and married people (70.1%) used AM more than single people (60.1%) (P<.0001) (Table 1). Most AM users spent less than SR 500/year (133 USD).

The association between occupation and AM use was statistically significant (P<.0001). The majority of the housewives (81.4%), employees (62.9%), and students (60.9%) used AM. AM was more frequently used among individuals from a large family (72.6%) compared to individuals from a small family (44.7%) (P<.0001) and among high income people (71%) com-

Table 1. Socio-demographic characteristics and alternative medicine use during the last 12 months.

Characteristic	Number of persons responding	Use of alternative medicine (number, percent)	*P* value
Sex			
Male	550	299 (54.4)	<.0001
Female	858	656 (76.5)	
Age in years			
<30	560	335 (63.4)	.03
30-39	344	249 (72.4)	
40-49	248	173 (69.58)	
50-59	129	91 (70.5)	
≥60	109	80 (73.4)	
Marital Status			
Single	371	223 (60.1)	.00005
Married	897	629 (70.1)	
Widowed	70	60 (85.7)	
Divorced	26	18 (69.2)	
Family size			
<5	264	118 (44.7)	<.0001
5-9	740	501 (67.7)	
10-14	324	211 (65.1)	
≥15	62	445 (72.6)	
Occupation			
Housewife	447	364 (81.4)	<.0001
Military	105	51 (58.6)	
Student	215	131 (60.9)	
Employee	194	122 (62.9)	
Merchant	103	58 (50.3)	
Retired	116	75 (64.7)	
Other	53	24 (45.3)	
Total	1408	955 (67.8)	

Table 1 (continued). Socio-demographic characteristics and alternative medicine use during the last 12 months.

Characteristic	Number of persons responding	Use of alternative medicine (number, percent)	*P* value
Residence			
Villa	740	529 (71.5)	.0008
Apartment	215	141 (65.6)	
Floor in villa	197	145 (73.6)	
Traditional house	189	96 (50.8)	
Other	67	35 (52.2)	
Education			
Illiterate	286	209 (73.1)	.181
Primary	247	153 (61.9)	
Intermediate	202	138 (68.3)	
Secondary	344	233 (67.7)	
Diploma	65	44 (67.7)	
University	264	178 (67.4)	
Ownership of house			
Owned	956	680 (71.1)	.0004
Rented	412	253 (61.4)	
Other	40	22 (55.0)	
Income			
High	131	93 (71.0)	.036
Moderate	1027	709 (69.0)	
Low	229	139 (60.7)	
Setting			
Urban	1035	751 (72.6)	.0001
Suburban	373	204 (54.7)	
Total	1408	955 (67.8)	

pared to intermediate (69%) and low income (60.7%) people (*P*=.036). The only factor that was not associated with AM use was educational level (*P*=.181) (Table 1). The proportion of AM use among suburban residents (54.7%) was less than that of Riyadh city residents (72.6%) (*P*=.00001).

Treatment with the Holy Qur'an was widely reported by the study population, by either treating themselves by self-reciting the Qur'an or by having a relative treating them through recitation directly over the body (Table 2). Having the Qur'an recited over water or oil which was then drunk or massaged either by oneself or by a friend/relative was also popular, as was purchase of commercially available water/oil over which the Qur'an had been recited. The use of honey was the second most frequently used AM type followed by black seeds, myrrh, *Trigonella foenum* (Fenugreek), cautery and antimony. In contrast, use of acupuncture was very uncommon (n=4; 0.3% 95% CI 0.00%- 0.06%). Women used different types of AM more commonly than men. The difference was statistically significant (*P*<.001) for all remedies except honey and other less frequently used types, namely cupping, bone setting and acupuncture (Table 2).

Factors independently associated with AM use included perceived failure of medical treatment, perceived

Table 2. Types of alternative medicine used during the previous 12 months.

Types	Number	Percentage of AM users (n=955)	Percentage of total sample (n=1408)	Male (n=550) %	Female (n=858) %	*P* value (men vs. women)
Self reciting of Quran	708	74.1	50.3	37.1	58.7	.0001
Self reciting of Quran on water or oil	292	30.6	20.7	17.5	22.8	.018
A friend or relative recites Quran directly	178	18.6	12.6	9.6	14.6	.008
A friend or relative recites Quran on water or oil	132	13.8	9.3	6.7	11.1	.008
Purchased water or oil	399	41.8	28.3	15.1	41.8	<.0001
Honey	565	59.2	40.1	37.5	41.8	.11
Black seed	552	53.3	39.2	29.6	45.3	.000001
Commiphora molmola (myrrh) or helteet	498	48.1	35.4	25.1	42.0	<.0001
Trigonella foenum (fenugreek)	358	37.5	25.4	16.9	30.9	<.0001
Herbs from friends or herbalist	270	28.3	19.2	12.4	23.5	<.0001
Expelling jinni	20	2.1	1.4	0.5	2.0	.026
Cautery	97	10.2	6.9	5.1	8.0	.033
Kohl (antimony)	62	6.5	4.4	1.8	6.1	.0002
Breast milk	52	5.4	3.7	0.5	5.7	.000001
Cupping	29	3.0	2.1	2.7	1.6	.16
Bone setting	26	2.7	1.8	2.5	1.4	.17
Acupuncture	4	0.0042	0.003	0.007	0.004	1.00

Table 3. Multivariate logistic regression analysis of factors associated with the use of alternative medicine.

Factor	Odds ratio	95% confidence Interval	*P* value
Perceived failure of medical treatment	38.74	9.13-164.3	<.0001
Perceived success of alternative medicine	32.99	11.89-91.55	<.0001
Preference of natural materials	20.69	7.37-58.14	<.0001
Long appointment interval with physician	10.75	2.23-51.92	.003
Marriage	2.18	1.33-3.57	.002
Female	1.87	1.11-3.16	.18
Knowledge of harmful herbs	1.57	1.04-2.36	.032

success of AM, preference of using natural materials, long appointment interval with physicians, marriage, female gender and knowledge of harmful herbs (Table 3). Adverse effects of AM use were reported by 6.6% of our study population in the form of diarrhea (3.4%), headache (1.6%) and constipation (1.2%).

DISCUSSION

This is the largest household survey of AM use in Saudi Arabia. Data collectors were well trained and supervised. The study excluded non-Saudis who constitute one fourth of the people living in Saudi Arabia. AM use in the present study was high (67.8%) compared to other studies in different parts of the world. In the USA, DelMundo et al[15] reported that 47% of his study population used AM. Eisenberg et al (1998)[16] reported that 34% of the participants, in his 1990 national telephone survey of adult Americans 18 years and older, had used AM during the previous year. The same authors conducted a follow-up study between 1990 to 1997 in the USA. They found that the use of at least 1 of 16 remedies increased from 33.8% in 1990 to 42.1% in 1997.[17] Fisher and Ward reported that the proportion of patients who used AM over one year was 23% in Denmark and 49% in France.[18] Maclennan et al found that 48.5% of Australian people used AM, one-third of the population regularly visited a natural therapist and two-thirds regularly took vitamins and natural remedies.[19] Ernst reported in a systematic review that the prevalence of AM use ranged between 9% and 65%.[20]

The health belief model was found to be an important determinant of AM use and attitude towards AM and MM use in the current study. The study population interpretation of MM inability to cure chronic diseases is an example of one important factor of the health belief model. Palinkas et al 2000 suggested that the popularity of AM use and its huge upsurge may be due to fear of adverse effects of MM, the demand for greater patient participation in their treatment, failure of MM and friends' advice.[21] Similarly, the current study had shown that factors independently associated with AM use were perceived failure of medical treatment, perceived success of AM, and a preference for natural materials. Similarly, Al-Faris reported that the reasons behind AM use among patients attending PHC centers were its previous success in treating similar illnesses (28%) and dissatisfaction with physician diagnosis (21%).[7] The high prevalence of AM use suggests indirectly a failure or inadequacy of health education programs. For instance, some diseases are incurable by medical treatment, e.g. diabetes mellitus, hypertension and cancer. If patients did not realize this fact and continued with unrealistic hopes, they are likely to abandon medications and advice prescribed by physicians and look for alternatives, such as AM. A study of AM use among diabetic patients in KSA found that 17.4% used herbs to treat diabetes mellitus namely, myrrh, black seeds, fenugreek, helteet and aloe.[22]

The present study revealed that AM is used by women more than men. This finding is inconsistent with DelMundo et al's finding in the USA in which there was no gender difference.[15] The present difference may be attributed to the reduced accessibility that women in Saudi Arabia have to the health care system, in addition to their long stay at home where many herbs are available as well as the influence of the media.

The most frequently used types of AM in the current study were the Qur'an, honey, black seeds, myrrh or helteet, fenugreek and herbs. In Western countries, the common types of AM include relaxation, multivitamins, homeopathy, ginseng, massage, spiritual healing, acupuncture and commercial weight loss programs.[2,19,23,24] Cautery was used by about 7% of the present study population while it is not mentioned in the western studies. DelMundo et al reported that the most common types used were chiropractic (17.2%), relaxation (16.9%), herbal medicine (16.9%) and massage (14.2%) in Pennsylvania in the USA.[15] Palinkas et al in California reported that 26.7% of the study AM users used herbal remedies which is very similar to the present study findings (28.3%).[21] In Saudi Arabia, AM types are different; visiting a Sheikh for reciting the Qur'an is common. The strong belief in the curative effect of the holy Qur'an contributed to the high prevalence of AM use. Al-Faris found that 46% of patients attending PHC centers in the National Guard Campus in Riyadh used AM over their lives and only 19% used AM during the previous year. Fourteen percent of his study population consulted a Sheikh for reciting the Qur'an, while 8.7% used herbs and 4.5% used honey.[7]

The popularity of AM in any community should alert the decision makers in that it suggests a failure of the traditional health system. The three most important contributing factors to AM use are the perceived failure of medical treatment, the perceived success of AM and a preference for natural materials, which strongly call for intensive health education campaigns in the media and by treating physicians. Such campaigns should target women, the married, housewives and members of large families. The campaigns should explore people's ideas, concerns and expectations and address wrong beliefs regarding AM and MM. The fourth factor, namely the long appointment interval with physicians indicates that there is an accessibility issue with the traditional

health system.

Other studies have reported that some herbs cause liver toxicity.[25] In Saudi Arabia, 14 diabetic patients who were prescribed lamb bile by a local AM practitioner suffered from nausea, and 12 were hospitalized due to vomiting and diarrhea, one had oligouria, while others lost consciousness.[26]

AM use among the Riyadh population is very high compared with international figures. The most important factor associated with AM use was the health belief model–the perceived failure of MM and the perceived success of AM. There is a need for legislation and control of AM practice including the clinics of the Holy Qur'an. Liaison with sheikhs who recite the Qur'an as a treatment and establishing a trusting relationship is needed. Similar studies should be conducted in other regions of Saudi Arabia to display the nationwide pattern. Academic institutes (e.g. colleges of pharmacy and medicine) should establish centers and databases that include local herbs to provide guidance for evidence-based AM practice. This will help physicians practicing in Saudi Arabia to make safe and evidence-based decisions during encounters with their patients. For instance, they can use safe types of AM, but continue with the doctors' prescribed medications.

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