

**Current Status of Traditional and Complementary Medicine use in
Qassim Province, Saudi Arabia**

Running title: Traditional and Complementary Medicine

ABSTRACT

Background: Traditional medicine is an ancient nonconventional method of treating a variety of diseases in diverse cultures of the Eastern world, and currently its potential value has been recognized around the world. **Objective:** The aim of this study was to evaluate the current use of traditional and complementary medicine (T&CM) in Qassim province and to determine the users' profile and the most common T&CM therapies used in Saudi Arabia. **Methods:** A cross-sectional study of primary healthcare (PHC, n=16) attendees (n=285, response rate=71.3%) using a self-designed reliable questionnaire concerning their sociodemographic variables and T&CM use. **Results:** Besides revealing some sociodemographic characteristics and associations with traditional medicine, about 62% of participants used T&CM and 57.5% of participants reported T&CM as part of their indigenous inherited tradition. The main traditional practices including religious and spiritual healings, herbs, cupping (Al-Hijamah), cautery and honey and bee products were used most importantly for the treatment of diverse chronic health conditions by females, the two predictors of T&CM use. Ministry of Health (MOH) should offer T&CM in all public healthcare settings and should regulate its practice in private sector in order to safeguard patient affairs including holistic care and patient-centered medicine. **Conclusion:** Traditional indigenous therapies especially culture-based are widely used by PHC patients in Qassim province. The National Survey is needed to draw a more comprehensive epidemiological trend of T&CM use in Saudi Arabia and by extension in other Gulf countries.

Keywords: Traditional and complementary therapies; Primary healthcare attendees; Ministry of Health; Al-Qassim province; Saudi Arabia.

1. INTRODUCTION

Traditional and Complementary Medicine (T&CM) involves a variety of different medical therapies that are mainly used outside conventional healthcare. However, T&CM and modern medicine are now offered together in an integrative healthcare approach in many modern medicine centers[1, 2]. Traditional medicine refers to practices based on the indigenous culture. The terms “complementary medicine therapies” refers to practices that are not part of the country’s own traditions[3]. The growing interest in Traditional and Complementary Medicine (T&CM)[4-6] reflects the need to resort to alternative/complementary healing modalities which cannot be found in modern medicine[7, 8]. However, patient surveys suggest that most T&CM users prefer to have access to safe, cost-effective and regulated T&CM services[9]. In Saudi Arabia, prevalence of T&CM use is reported to ranging from 50-70% according to different regional studies[10-12]. Even with the availability of advanced modern medical services, Saudi patients are reported to seek traditional therapies as a method of healings[13, 14]. In a recent review of relevant literature, the most frequently used complementary and alternative medicine (CAM) therapies in decreasing frequency in Saudi Arabia were spiritual type such as prayer and reciting Quran alone or on water/oil (9-95.6%), different herbs (8-76%), dietary products/ nutritional supplement (6-82%), and honeybee and its products (14-73%). Other less frequently used CAM therapies in Saudi Arabia were medical massage (up to 62%), zamzam water (up to 60%), cautery (up to 56%), acupuncture (up to 55%), camel milk and urine (up to 53%), cupping (Al-hijamah) (45%), movement therapy (up to 29%), relaxation (up to 26%), aromatherapy (25%), physical therapy (24%), chiropractic (4%), relaxation (3%) and homeopathy (0.1%) [10]. Notably, these CAM therapies were used for a variety of acute (49%) and chronic (53%) diseases associated with pain and concerning diverse body systems especially gastrointestinal, respiratory, cardiovascular, neurological, psychiatric and musculoskeletal. For detailed description of various traditional and complementary therapies and their underlying mechanisms and outcomes, these sources are very useful[10,15-17].

In the absence of national T&CM surveys, multiple regional surveys can be the only feasible methods to evaluate T&CM use. It is important to continue to monitor the use of these Traditional and complementary health approaches in Saudi Arabia. Continuous monitoring will help healthcare researchers to draw a more comprehensive picture for

T&CM users'profile, and to identify the most prevalent T&CM modalities. Then, we can focus on the most commoncomplementary and alternative medicine (CAM) treatments and their contributionsin the managements of common, chronic disabling,and costly health conditions in Saudi Arabia.The aim of this study was to evaluate the current use of T&CM in Qassim province in Saudi Arabia and to determine the user profile and the most common T&CM therapies.

2. METHODS

2.1 Study design

This was a cross-sectional analytic survey study conducted in Qassim province, Saudi Arabia. A face-to-face interview by trained interviewers was used to collect the data using pre-structured questionnaire format.

The Qassim province (Figure 1) is relatively more conservative region of Saudi Arabia with agriculture production especially of dates, vegetables,fruits and wheat. From the perspectives of health and socioeconomic status, this region is at par with other provinces. Furthermore the clinical wisdom suggests that relatively a large number of Qassim people useT&CM.In addition, most of coauthors on this paper have long experience of working in Qassim province linked with high feasibility of conducting this research successfully.Another important point is to compare this study with published papers from Saudi Arabia.



Figure 1 Map of Saudi Arabia showing Qassim province

86 2.2 Study Population

87 The study population included adults of 18 years and above, attending the Primary
88 Health Care (PHC) services in Qassim province. The study was conducted from May to
89 June 2016.

90 2.3 Sample Size

91 Based on previously published data, the prevalence of T&CM ranged from 50-70
92 % [11]. Assuming a proportion of 50%, a null hypothesis of 30%, the significance of
93 0.05 and power of 80%, a sample size of 50 was enough [18]. Taking into
94 consideration multivariable analysis and dropout of 50%, a sample size of 400 was
95 planned.

96 2.4 Sampling Technique

97 Multistage sampling technique was used. In the first stage, out of the 178 PHCs in
98 Qassim province, 20 were selected using randomly a computer generated random
99 numbers. In the second stage 20 participants recruited from each of the selected
100 PHCs, ten males and ten females, two each day during the field work period. The
101 sequence number was generated every day.

102 2.5 Survey instrument

103 A pre-designed, structured questionnaire was used for the purpose of this study, which
104 was developed by five bilingual experts in Arabic language after a literature review of
105 the topic of research, i.e., the use of CAM therapies in primary healthcare setting to
106 tap primary healthcare attendees' use of traditional and complementary medicine in
107 Qassim province. The questionnaire was translated into English and then back into
108 Arabic by two bilingual experts and one neutral expert to check its accuracy, with
109 modifications applicable to the community of Saudi Arabia. This questionnaire
110 comprised of 20 questions to be answered some in 'yes' or 'no' and some were open
111 ended questions. For example, one of the questions was "did you use traditional
112 therapies in the past? Another related question was if yes, what therapies from the
113 following you used; spiritual therapy (Roqia –Quranic reading), herbal therapies,
114 cupping therapy, honey therapy, cautery, acupuncture, manual therapy like massage
115 and others. One example of open ended question was, "did you develop any

116 complications from using traditional and complementary medicine? All the experts
117 reached 98% agreement on all questions that were included in this questionnaire. This
118 two-page questionnaire was pilot tested on a sample of 20 subjects for testing the
119 logistics, suitability, and clarity of the data collection along with administration time.
120 These subjects were not included in the present study. The PHC attendees suggested
121 minor changes in Arabic version, and the modifications were made with the
122 agreement of all the experts with regard to any question included in this questionnaire.
123 The questions were rearranged for the sake of clear coding system and the data entry.
124 Finally, all the experts reached consensus regarding this questionnaire, its English and
125 Arabic versions. This developmental process and final selection of 20 questions based
126 on bilingual experts' consensus may reflect acceptable psychometric properties
127 especially reliability. English language version was necessary because some
128 participants (non-Saudis) requested it (both versions are available upon request from
129 NAQ). The time taken to fill out the questionnaire was about 20 to 30 minutes.

130 Overall the questionnaire was divided into four sections. The first section included
131 socio-demographic data including age, gender, nationality, educational level and
132 employment status. The second section included data regarding the cause of the
133 current visit to PHC; the use of traditional therapy for this health condition and if yes
134 what was the type of therapy and its outcome. The third section included data
135 concerning the use of traditional therapies in general, types and reasons. The fourth
136 section included data on knowledge, practice and attitude towards traditional
137 therapies. A list of the common traditional therapies in Saudi Arabia was included to
138 help the interviewer.

139 For the purpose of this study, the WHO definition of traditional medicine was used,
140 "Traditional medicine is the sum total of the knowledge, skills, and practices based on
141 the theories, beliefs, and experiences indigenous to different cultures, whether
142 explicable or not, used in the maintenance of health as well as in the prevention,
143 diagnosis, improvement or treatment of physical and mental illness" [3,19].

144 **2.6 Inclusion and Exclusion Criteria**

145 The inclusion criteria were age 18 years and above who were able to give oral
146 informed consent to participate in the study. The exclusion criteria were age below 18

147 and those with intellectual disability. Furthermore those elderly patients who were
148 cognitively impaired were also excluded from this study.

149 **2.7 Procedure**

150 The questionnaire was anonymous and was handed out to the patients by trained
151 nurses after they received information about the study, agreed to participate and
152 signed the consent form. Patients completed the questionnaire while they were
153 waiting at the outpatient clinic to be seen by their physician. Any query raised by the
154 participant was clarified by the attentivenurses.

155 **2.8 Statistical analysis**

156 The Statistical Package for Social Sciences (SPSS) Version 20 was used for data entry
157 and analysis. Results are presented as absolute number and proportion. Differences in
158 sociodemographic characteristics between T&CM users and nonusers were assessed
159 using the Chi-square test. Spearman correlation coefficients were also calculated
160 between T&CM use and other variables of interest, where p value <0.05 was
161 considered as significant.

162 **2.9 Ethical approval**

163 The study was reviewed and approved by the National Center for Complementary and
164 Alternative Medicine (NCCAM), Ministry of Health, Riyadh, Saudi Arabia. The
165 Ethical Committee Registration Number is 224/19344, dated 23/02/2010. Information
166 and nature of the research were explained to the study participants and consent was
167 collected. This study did not involve any risk to the participants.

168 **3. RESULTS**

169 **3.1 Survey Response**

170 Out of the 20 PHCs selected and invited during the first phase, 16 PHCs responded
171 and agreed to participate in the study. Four hundred questionnaires (25 for each PHC)
172 were sent to 16 PHCs. From the 16 PHCs, 285 filled out questionnaires were received.
173 The response rate was 71.3%.

174 **3.2 Sample Characteristics**

175 Mean age was 42.8 (± 14.98) years, and 97.4% of them were Saudis (Table 1). The
 176 T&CM use for the current PHC visit was significantly associated with male gender
 177 ($p=0.001$). Health promotion as a cause for PHC consultation was higher in
 178 females (55.5%) compared to males (44.5%). However, acute illness was 78.9% in
 179 males compared to 21.1% in females.

180 **Table 1** Sample Characteristics and distribution both by the use of T&CMs for the
 181 current cause of a visit to PHC and not related to the current visit (by Gender,
 182 Nationality, Education, and Job)

Variables		Number (%)	T&CM use - Yes [#] Number (%)	T&CM use [@] Number %	
Gender	M	165(58.1)	88(56.1)	97	60.2
	F	119(41.9)	71(65.7)	73	65.2
	Total	284(100.0)	159(60.0)	170	62.3
Nationality	Saudi	260(97.4)	145(59.7)	161	64.1
	Non Saudi	7(2.6)	2(28.6)	2	28.6
	Total	267(100.0)	147(58.8)	163	63.2
Education	Illiterate	52(18.4)	32(71.1)	28	62.2
	Primary	39(13.8)	22(61.1)	23	59.0
	Intermediate	41(14.5)	27(67.5)	30	73.2
	Secondary	75(26.5)	35(49.3)	43	59.7
	University or above	76(26.9)	41(56.9)	45	60.0
	Total	283(100.0)	157(59.5)	169	62.1
Job	No job	90(33.0)	54(65.1)	58	68.2
	Student	27(9.9)	7(26.9)	15	62.5
	Unskilled workers	6(2.2)	3(50.0)	1	16.7
	Temporary workers	37(13.6)	21(63.6)	23	63.9
	Skilled workers	14(5.1)	8(57.1)	8	57.1
	Clerk	46(16.8)	26(59.1)	25	54.3
	High managers	18(6.6)	8(44.4)	11	61.1
	Professionals	29(10.6)	20(76.9)	18	64.3
	Businessman	6(2.2)	4(80.0)	6	100.0
	Total	273(100.0)	151(59.2)	165	62.7
Common reasons for consultation	Acute	72 (25.4)	40(56.3)	-	-
	Chronic	101(35.7)	60(65.2)	-	-
	Health promotion	110 (38.9)	59(57.8)	-	-
	Total	283(100.0)	159(60.0)	-	-
T&CM use for	1(yes)	159(59.8)	88(56.1)	-	-

the current cause of visit	2 (no)	107(40.2)	71(65.7)	-	-
	Total	266(100.0)	159(60.0)	-	-

*Significant use and being unemployed was significantly associated with T&CM use (p=0.016); *current cause of visit; @ therapies used for any reason; **T&CM user was more likely to use traditional medicines for the current cause of visit (p=0.0001)

3.3 Characteristics of the T&CM user - the current cause of visit to the PHC

The overall use of T&CM for the current cause of visit was 59.8 % [95% CI, 53.59-65.67]. Traditional Medicine users were significantly older (44.5 ± 14.2 years) than non-users (40.3 ± 15.8 years) [p=0.03]. No job (being unemployed) was significantly associated with T&CM use (p=0.016). The current T&CM use was higher among Saudis, predominantly females with lower education but without statistically significant association (Table 1).

3.4 T&CM users– therapies used for the current cause of visit to the PHC

Herbs (32.9%), religious healings (22.8%), cautery (13.3%), honey (12.0%) and cupping (11.4%) were the most frequent therapies used in studied subjects. None of the participants used camel products and acupuncture (Table 2).

Table 2 Types of T&CM therapies used for the current and any cause of visit to PHC

Therapy	Number*	%	Number**	%
Herbs	52	32.9%	57	30.2
Religious	36	22.8%	54	28.6
Cautery	21	13.3%	18	9.5
Honey	19	12.0%	18	9.5
Cupping	18	11.4%	29	15.3
Manual therapy	5	3.2%	5	2.6
Others	7	4.4%	6	3.2
Missing	1	-	96	33.7
Total	159	100.0%	285	100.0

* For the current cause of visit to PHC; ** T&CM used for any reason (not only the current) and more than one answer was allowed

3.5 T&CM use in general (not related to the current visit):

Out of 274 who answered the question, T&CM use for any reason before the current visit was 62.4%, [95% CI, 56.35- 68.11]. History of T&CM use was not significantly

associated with gender, nationality, education, or job (Table 1). In general, a T&CM user was more likely to use traditional medicines for the current cause of visit ($p=0.0001$). Religious healings, herbs, cupping/Al-Hijamah, honey and cautery were the most frequent therapies used by the participants (Table 2).

3.6 Opinion Regarding T&CM

Out of the 219 participants who answered the question regarding the definition of T&CM; 57.5% said that it is part of inherited traditions, 24.7% defined T&CM as therapies linked to nature, 11.4% opined T&CM as practices not offered in modern medicine, and remaining gave different definitions. The primary sources of information regarding T&CM were; relatives (81.2%), social media (12.8%) and radio and newspaper (5.6%). A proportion of 83.8% agreed that Ministry of Health should regulate and control T&CM practices. T&CM users significantly agreed that MOH should offer T&CM in the government healthcare settings and private sector but under close supervision. ($p<0.05$) (Table 3).

Table 3 The effect of a history of T&CM use in the opinion regarding MOH control of traditional therapies, integration in government hospitals and private health sector

Opinions	T&CM Users			
	Yes		No	
	N	%	N	%
MOH should control and regulate T&CM	141	63.2	82	36.8
	24	55.8	19	44.2
MOH should offer T&CM in health settings	101	68.7	46	31.3
	62	53.0	55	47.0
T&CM in private sector under supervision	123	68.0	58	32.0
	40	48.8	42	51.2

Note: Values in the same row and sub table not sharing the same subscript are significantly different at $p<.05$ in the two-sided test of equality for column proportions. Cells with no subscript are not included in the test. Tests assume equal variances. 1. Tests are adjusted for all pairwise comparisons within a row of each innermost sub table using the Bonferroni correction. significant

4. DISCUSSION

The current study, conducted by the National Centre for Complementary and Alternative Medicine (NCCAM) in the Saudi Ministry of Health updated the current knowledge, attitude and practice concerning traditional and complementary medicine

232 in Al-Qassim province. This research may lay the foundation for a national survey to
233 draw a more comprehensive picture on the T&CM use and the related current
234 therapies in Saudi Arabia in near future. Notably, traditional and complementary
235 medicine as a part of integrated health care reflecting holistic model is increasingly
236 visible in advanced western societies[20, 21]. Understanding individual patient's needs
237 in a holistic concept of health care and patient-centred model will shape the future of
238 healthcare services around the world[22].

239 The overall T&CM use (62%) was comparable to published studies from Saudi
240 Arabia[10-12]. In an updated review of 36 studies, Alrowais and Alyousefi (2017)
241 found that the majority of included studies were cross-sectional recently conducted in
242 Riyadh, and spiritual therapy (prayers and reciting the Holy Quran) was most
243 frequently used followed by herbs (8–76%), honey (14–73%) and dietary supplements
244 (6–82%). According to this review, CAM is widely used in Saudi Arabia and future
245 research need to focus on individual CAM therapy in Saudi Arabia [10]. In a cross-
246 sectional study from Qassim province using customized International Questionnaire of
247 Complementary and Alternative medicine (I-CAM-Q), Al-Bedah et al (2013) found
248 similar findings [10], in addition to the studied subjects who spent 350000 US\$ on
249 CAM visits and 300000US\$ purchasing CAM products[11]. In a multistage cluster
250 cross-sectional survey from Riyadh, 68% of participants used alternative medicine
251 (AM) during the last one year. The reading from the Holy Quran as a therapy was
252 most frequently used (50.3%) followed by honey (40.1%), black seed (39.2%) and
253 myrrh (35.4%). In addition to other independent reasons, the health belief system of
254 people was the main determining factor to use AM[12]. According to the present study,
255 males constituted higher number, and unemployment associated significantly with
256 current users of T&CM which are not consistent with other studies [12]. Females
257 being conservative tend not to visit frequently PHCs in Qassim province. Unlike the
258 present study, spiritual therapies (prayers and reciting from the Holy Quran) were
259 most frequently used in other studies[10,12]. Old age as found in the present study was
260 significantly associated with the use of T&CM. Overall all studies found more
261 inconsistent results regarding sociodemographic variables such as male/female
262 gender, unemployment, and current users of T&CM than overlapping even findings
263 [10-12] attributed to setting (PHC), research design and other methodological factors
264 including used questionnaires and sample size. Almost all the used therapies can be

265 categorized as indigenous traditional therapies rather than complementary
266 medicine[3]. This may explain why 57.5% of participants said that it is part of our
267 inherited traditions when they were asked about definition of T&CM. Comparing the
268 results of the present study with other surveys, methodological concerns such as
269 T&CM definitions offered by health providers or users, span of measurement (use of
270 T&CM within last three or six months or last year), adequate and proper sample size
271 and its selection technique and standard questionnaire need to be unambiguous in
272 order to find out the epidemiological trend in the same population of a province or
273 nationwide. These are some of the important parameters if not taken into
274 consideration while conducting surveys will produce inconsistent results across
275 studies.

276 The leading traditional practices in the current studies were religious or spiritual
277 healings, herbs, cupping/Al-Hijamah, cautery and honey. This epidemiological trend
278 was the main conclusion of other published studies from Qassim [11] and other
279 regions in Saudi Arabia [12,23]. These practices are part of the traditional prophetic
280 medicine (Tibb al-Nabawi). Prophetic medicine [24], the indigenous remedies used
281 and recommended by the last prophet of Islam, Mohammad (PBUH), is strongly
282 linked to the Saudi culture and other Muslim countries. The wide use of Prophetic
283 therapies, also explains the interest in clinical studies in this field in Saudi Arabia and
284 other Muslim countries [25-29]. Religious and spiritual healings are more often the
285 leading modalities in T&CM in these countries [10]. Notably religious prayers as a
286 traditional therapy has increased the estimates of T&CM use [30]. Accordingly, when
287 the results of the present research are compared with other communities having a
288 diverse religious background, it is preferred to compare the results with and without
289 religious healings [31].

290 Chronic health condition was the leading cause of T&CM use in the current
291 study consistent with studies in Saudi Arabia and other countries [28, 32, 33]. However,
292 there was no significant association between chronic conditions and use of T&CM
293 might be due to small sample size and gender especially females (underrepresented in
294 this study) who present more often with chronic health conditions. Identifying the
295 predictors of T&CM users is very important. However, the sample size was not
296 calculated to measure the predictors or profile of T&CM users. Published data

297 showed that being female [34] or having chronic condition are the most important
298 predictors of T&CM use [35].

299 According to this study, even T&CM users opined that governments should offer
300 traditional therapies in public healthcare system itself and also regulate clinical
301 practice in private healthcare sectors [21, 36, 37]. The implication of this finding is that
302 this suggested integration will underlie the healthcare transformation process in order
303 to eventually provide a holistic care for patients at different healthcare settings.
304 Evidently the results of the present study support the tremendous importance of social
305 media as a source of information for T&CM users as it bypassed the conventional
306 media (Television, Radio, and newspapers) concerning information source of T&CM.
307 The insight from this finding is that the public awareness campaigns in Saudi Arabia
308 should depend more on social media [38, 39].

309 The study has some limitations. This survey has small sample size which was
310 calculated to evaluate the overall T&CM. Another weakness of this study is that
311 multivariable analysis cannot be conducted. However the study was feasible taken
312 into consideration the limited resources. The strength of this study is that it
313 substantiated and identified the most common epidemiological trend concerning
314 T&CM therapies found in a study conducted in Qassim province five years ago [11].

315 5. CONCLUSION

316 Traditional therapies especially culture-based are widely used by PHC patients in
317 Qassim province. The present research updated the current knowledge and practice of
318 primary healthcare patients regarding traditional and complementary medicine in
319 Qassim region. The implication of this study is that it might be used as a reference for
320 followup cross-sectional analytical study to be conducted five to ten years later for
321 measuring the important epidemiological trend of T&CM in this province. The
322 National survey is needed to draw a more comprehensive epidemiology of T&CM use
323 in Saudi Arabia. Measuring T&CM trend is highly important to identify any change in
324 T&CM use, user profile or the common therapies, knowledge, attitude and practices
325 over a time interval. This can be achieved by including T&CM in health information
326 reporting system and health surveys using standard and rigorous research methods.

327 CONSENT

As per international standard or university standard, patient's written consent has been collected and preserved by the authors.

ETHICAL APPROVAL

As per international standard or university standard, written approval of Ethics committee has been collected and preserved by the authors.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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