

Complementary and alternative medicine use among ischemic stroke survivors in Jeddah, Saudi Arabia

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ABSTRACT

الأهداف: معرفة مدى انتشار استخدام العلاجات التكميلية والبديلة بالإضافة إلى أنواعها وأتماطها بين المرضى الناجين من السكتة الدماغية في جدة، المملكة العربية السعودية.

المنهجية: أجريت دراسة مقطعية على 152 من المرضى الناجين من السكتة الدماغية الذين زاروا مستشفى الملك فهد العام بجدة خلال الفترة ما بين (يناير 2018 – ديسمبر 2019) وتم جمع البيانات عن طريق التواصل مع المرضى بالاتصال الهاتفي أو المقابلات الشخصية في العيادات، باستخدام استبيان يقيس المعلومات الديموغرافية بالإضافة إلى أنواع وأتماط العلاجات التكميلية والبديلة.

النتائج: من بين 90 (59.2%) من المرضى الذين استخدموا العلاجات التكميلية والبديلة، تبين أن أكثر الأنواع شيوعاً هي الكي (29.61%) وقراءة القرآن من قبل شيخ متدين (28.95%). معظم المرضى (72.22%) استخدموا العلاج التكميلي والبديل بعد خروجهم من المستشفى، وفي أقل من شهر واحد من حدوث السكتة الدماغية (62.22%). الأقلية من المرضى (6.67%) توقفوا عن استخدام علاجاتهم مع استخدامهم للعلاجات التكميلية والبديلة. بعض المرضى (25.56% to 31.11%) ناقشوا استخدامهم للعلاج التكميلي والبديل مع أطبائهم. أفاد المرضى المستخدمين لطب التكميلي بالتحسن الحركي (45.6%) بينما التحسن النفسي (62.2%) وكان المصدر الأكثر شيوعاً لاستخدام العلاجات التكميلية والبديلة هو الأصدقاء والأقارب (96.7%)، بينما السبب الأكثر شيوعاً لاستخدامها هو التصديق والإيمان بها وبفعاليتها (4.22%).

الخلاصة: أظهرت نتائج الدراسة أن الطب التكميلي والبديل شائع الاستخدام بين المرضى الناجين من السكتة الدماغية. وكان الكي ووقراءة القرآن من قبل شيخ متدين الأكثر شيوعاً من بين بقية أنواع العلاج التكميلي والبديل. كما بينت النتائج وجود نقص في التواصل الفعال بين المرضى وأطبائهم في هذا الخصوص. على الرغم من اهتمام غالبية المرضى بذلك.

Objectives: To determine the prevalence and pattern of complementary and alternative medicine (CAM) use and the CAM types used by stroke patients in Jeddah, Kingdom of Saudi Arabia.

Methods: This cross-sectional study included 152 ischemic stroke survivors who visited King Fahad

Hospital, Jeddah, Kingdom of Saudi Arabia, between January 2018 and December 2019. Phone-based and face-to-face surveys were conducted. Data on the patients' demographic characteristics, their use of CAM, and their pattern of CAM use were gathered

Results: Ninety (59.2%) stroke patients used CAM, mainly cauterization (29.61%) and Quran recitation by a religious sheik (28.95%). Most of the patients (72.22%) used CAM post-hospitalization and within less than one month from stroke onset (62.22%). A minority (6.67%) of the patients stopped their medication while on CAM. Some patients (25.56% to 31.11%) discussed with their physician their use of CAM. The CAM users reported a subjective improvement in their physical weakness (45.6%) and psychological wellbeing (62.2%). The patients learned about CAM mainly from their relatives and friends (96.7%), and the most common reason for their CAM use was their belief in this intervention (42.22%).

Conclusion: The CAM use was prevalent among our cohort of Saudi ischemic stroke patients, and cauterization and Quran recitation were the most commonly used CAM interventions. An effective communication was lacking between the medical professionals and the stroke patients as regards CAM use despite the interest of the patients in this intervention.

Neurosciences 2020; Vol. 25 (5): 362-368

doi: 10.17712/nsj.2020.5.20200088

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Received 24th May 2020. Accepted 10th July 2020.

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Over the past 2 decades, the burden of stroke has increased globally.¹ Stroke is the second leading cause of morbidity and mortality; the annual incidence of stroke is approximately 15 million, and over 5.5 million stroke-related deaths occur annually.²⁻⁴ Also, the prevalence of the modifiable risk factors of stroke is increasing, and the burden of stroke increases with the aging of the population.⁵ Adults aged >25 years have an estimated lifetime stroke risk of 24.9%.⁶ Despite the advancements in acute stroke care, highly effective treatments for the later phases of stroke are lacking. This shortcoming in the stroke care leads patients and their relatives to seek other treatment options, such as complementary and alternative medicine (CAM).⁷ The CAM is defined by the United State of America National Institutes of Health as “a group of diverse medical and health care systems, practices, and products that are not generally considered conventional medicine.”⁸ The CAM has been used for a long time now,⁹ and people widely practice CAM for various health conditions, such as cancer, epilepsy, multiple sclerosis, infertility, surgical procedure, dermatological conditions, hypertension, pain, and other types of illnesses.^{1,9-11} The prevalence of CAM use varies by country. For example, the prevalence of CAM use is 82% in the United States,¹² 61% in Australia,¹³ 51% in Malaysia,¹⁴ and 61% in Turkey.¹⁵ Religion, cultures, and values influence the types and patterns of its use.¹⁶ People in Western countries practice herbal medicine, reflexology, aromatherapy, massage, osteopathy, meditation, and spiritual healing;^{10,17-19} by contrast, those in Asian countries such as China, India, and Taiwan commonly use therapies such as traditional Chinese medicine, Ayurvedic medicine, physical exercises, acupuncture, Tai Chi, yoga, and homeopathy.²⁰⁻²³ In Saudi Arabia, different types of CAM are used including the Quran recitation therapy, honey consumption, plant-based traditional medicine (e.g., Murrah and black seed consumption), cupping (“Hojamah”), and cauterization (“skin ironing”).^{9,24-27}

Research highlighted that aside from their potential benefits, some types of CAM have many side effects and potential toxicities, and patients are commonly unaware of these possible dangers.²⁸ One study reported 2 cases wherein the cauterization led to severe complications, such as skin burn.²⁹ Another study that investigated the components of herbal medicines in Saudi Arabia

indicated that 15.7% of the tested samples contain toxic amounts of heavy metals, including arsenic and mercury.³⁰ Despite the potential risk of many CAM interventions, it has been noted that many patients do not inform their physicians about their practice of CAM.³¹

Stroke patients in many countries, including the United States (30.6%–46%)^{32,33} and South Korea (54%), use CAM.³⁴ In Riyadh, Saudi Arabia, 67% of patients with neurological problems use CAM,⁹ and most of them use cupping (Hojamah) (45.4%), herbal medicine (42.3%), cauterization (33.7%), and Quran recitation (20.4%).⁹ However, no available study has analyzed the use of CAM particularly by stroke patients in Saudi Arabia. Thus, this study aimed to determine the prevalence and pattern of CAM use and the types of CAM being practiced by ischemic stroke patients relation to their demographic data.

Methods. This work is a cross-sectional study investigating the prevalence of CAM use among stroke survivors in Jeddah, Kingdom of Saudi Arabia. A convenience sampling technique was employed to recruit participants from the King Fahad General Hospital in Jeddah, Kingdom of Saudi Arabia. Ischemic stroke patients aged >18 years and who presented themselves to the hospital between January 2018 and December 2019 were included in this study. Stroke diagnosis was identified from the patients’ medical files based on the International Statistical Classification of Diseases and Related Health Problems (ICD) code. The exclusion criteria were as follows: brain imaging findings suggestive of a diagnosis other than ischemic stroke, use of CAM for reasons other than cerebrovascular diseases, and lack of consent. The prospective participants were approached in the clinic or were contacted by phone (their telephone numbers were obtained from their medical files).

The participants were subjected to an interviewer-administered questionnaire survey wherein a research team member asked the participants questions in the Arabic language either face-to-face or via phone. An oral or written informed consent (depending on the medium of communication used for the interview) was obtained from all of the participants prior to the interview.

The questionnaire used in this study was derived from four validated questionnaires used in previous studies^{7,16,35,36} with some modifications. A pilot study involving 10 participants was conducted to validate the questionnaire in terms of logical sequence, syntax, order, organization, content, clarity of meaning, and

Disclosure. Authors have no conflict of interests, and the work was not supported or funded by any drug company.

grammar. The data obtained in the said pilot study were not included in this study.

The questionnaire comprised 2 sections. The first section consisted of 8 questions on demographic characteristics: gender, age, nationality, marital status, whether living with their family, education level, employment status, and family income. The second section consisted of 12 questions on the type of CAM utilized for stroke, their experience of any side effect after using cauterization for stroke treatment, the time of CAM use in relation to stroke onset, continuation of the prescribed medical therapy, source of information about CAM, informing their doctor about CAM use for stroke treatment, whether their doctor asked them about CAM use for stroke treatment, their intent or willingness to discuss with their doctor the use of CAM for stroke treatment, improvement in their physical and psychological states following CAM use, reasons of seeking CAM for stroke treatment, and the total cost of CAM.

Prior to the conduct of this study, ethical approval was obtained from the Institutional Review Board of the Ministry of Health, Saudi Arabia (H-02-J-002; Research No. 01221).

Data were analyzed using SPSS version 21 (IBM Corp., Armonk, NY, USA). The statistical analysis involved the use of T-test, chi-square test, and Fisher's exact test, and $p < 0.05$ was set to indicate statistical significance.

Results. Among the 500 prospective participants, 152 answered our phone calls or completed the face-to-face interview; the response rate is 30.4%. The rest were not interviewed because their phone numbers were out of service or they changed their numbers or they did not answer our calls (after three attempts). The participants' mean age was 62.15 years (SD=14.7). Their demographic data are summarized in Table 1.

The CAM use. In this study, 90 (59.2%) patients used CAM. A significantly higher proportion of women than men used CAM (Table 1). Moreover, the CAM users were significantly older (mean age: 96.33 years, SD=14.67) than the non-CAM users (mean age: 58.98 years, SD=14.3). No significant correlation was observed between CAM use and nationality, marital status, family income, living with family, employment, or educational level.

Table 2 shows the prevalence of CAM use among the stroke patients. With the use of the chi-square and Fisher's exact tests, the obtained correlations of the CAM types with gender nationality, marital status, family income, employment, and educational level were as follows: Cauterization use was significantly

higher ($p=0.018$) among Saudis (36.6%) than among non-Saudis (18.6%). Quran recitation use was also significantly higher ($p=0.026$) among women (40.8%) than among men (23.3%); similarly, it was higher ($p=0.016$) among those with no schooling (42.1%) than among those who attained up to secondary school education (19.2%) or those who attained a university degree or higher (27.3%). Black seed use was also significantly higher ($p=0.003$) among women (32.7%) than among men (12.6%).

Experience of stroke patients who used CAM ($n=90$). The CAM users have had different experiences in terms of time of CAM use, duration of CAM use, continuation of stroke medication, patient-physician experience in relation to CAM practice, improvements reported, and source of information. These experiences are summarized in Table 3. The reasons why the patients sought for a CAM intervention are illustrated in Figure 1.

Among the 45 patients who underwent a cauterization, more than half did not experience any side effects (60%), whereas the others experienced delayed wound healing (17.8%), pain (17.8%), local infection (2.2%), and/or irritability (2.2%).

As regards the assessment of the correlation between CAM types and subjective physical and/or psychological improvement by using chi-square test, only cauterization was associated with subjective physical improvement wherein 60% of the patients who underwent cauterization reported a significant perceived physical improvement ($p=0.011$) compared with those who did not (31.1%). No difference in subjective physical or psychological improvement was observed in other CAM types.

The CAM cost. The median total cost incurred in CAM use by the participants was 400 Saudi riyal (SAR) (range: 0 (free) to 5200 SAR). Stratified by cost, the percentage of the participants who received CAM for free was 26.67%, whereas 37.78% spent 1-500 SAR, 23.33% spent 501-1000 SAR, and 12.22% spent 1001-5200 SAR.

Discussion. This study investigated the prevalence and patterns of CAM use and the types of CAM practiced by ischemic stroke patients in relation to their demographic data. More than 50% of the participants used CAM, and most of them were women and older adults. The most commonly used types of CAM were cauterization (29.61%), Quran recitation (28.95%), and the use of honey or Zamzam water (both 28.29%). Only a few patients informed their physicians about their CAM use, and only a few physicians asked their patients about CAM. The majority of the patients

used CAM post-hospitalization and within less than one month of stroke onset, and they did not stop their medication. After using CAM, approximately 50% had perceived physical or psychological improvements. The most common source of information about CAM were relatives and friends (96.7%), and most of the patients (42.22%) sought CAM because of their strong belief in it.

The use of CAM was prevalent among the stroke survivors in our study (59.2%) wherein the patients used at least one CAM type, and the prevalence rate is higher than that in the United States (30.6%–46%)^{32,33} but similar to that in Korea (54%) and Malaysia (66%).^{34,37} Notably, the studies conducted in these countries involved both ischemic and hemorrhagic stroke patients,^{33,34,37} whereas our study included ischemic stroke patients only. Comparison of our data with those of other local Saudi studies showed that the prevalence of CAM use was lower in our cohort than in a study assessing CAM use among adults with various

neurological diseases (67%),⁹ but it was higher than that among neuropediatric patients (42%)¹⁶ and among patients with other chronic conditions, such as Diabetes mellitus (33.3%), malignancy (21.6%), and bronchial asthma (34.5%).³⁸⁻⁴⁰ The prevalence of CAM use in patients with these conditions and also among stroke patients may be explained by the need of the patients to take an active, independent role in the treatment of their chronic conditions.

Women were more likely to use CAM in our cohort. This finding is consistent with that of Western studies on CAM use among patients with stroke and other medical conditions.¹³ However, those studies showed that younger patients were more likely to use CAM, whereas in our cohort, older adults had significantly higher prevalence of CAM use.¹³ Another local study (conducted in Riyadh, Saudi Arabia) found that older patients are more likely to use traditional medicine,³⁸ consistent with our results. This finding might echo the cultural differences among patients in different countries.

The most commonly used type of CAM was cauterization, followed by visiting a sheik for religious Quran recitation, drinking of holy Zamzam water, consumption of honey, consumption of black seed, and cupping. These findings are consistent with those reported by 2 other Saudi studies involving neurological patients wherein the CAM practice that is rooted from cultural and religious backgrounds was the most commonly used.^{9,16} A study on CAM in various medical conditions found that the CAM practices with spiritual dimension was the most commonly practiced intervention in Saudi Arabia.⁴¹ In fact, all of the common CAM types noted in these studies are rooted in Islamic teaching. This fact also explains why patients display a high belief in CAM.

Despite being a commonly practiced CAM as reported in different Saudi studies, cauterization has not been ranked as the most prevalent CAM.^{9,16} This finding is different in our results, which indicated that cauterization is the most prevalent CAM intervention. In addition, cauterization was the only CAM that significantly demonstrated a perceived subjective physical effectiveness, whereas the majority did not display any significant side effects. Overall, these factors could indicate that Saudi stroke patients strongly believe that cauterization is potentially beneficial. Future studies should assess the safety and the potential effectiveness of cauterization as an adjuvant to medical therapy in stroke. Notably, a study demonstrated that cauterization and cupping were less frequently used in pediatric neurological patients¹⁶ probably

Table 1 - Demographic data of the participants (n=152).

Variable	Total n (%)	CAM user	
		Yes n (%)	No n (%)
<i>Gender</i>			
Male	103 (67.76)	53 (51.46)	50 (48.54)*
Female	49 (32.24)	37 (75.51)	12 (24.49)
<i>Nationality</i>			
Saudi	93 (61.18)	58 (62.37)	35 (37.63)
Non-Saudi	59 (38.82)	32 (54.24)	27 (45.76)
<i>Marital status</i>			
Married	137 (90.13)	82 (59.85)	55 (40.15)
Unmarried	15 (9.87)	8 (53.33)	7 (46.67)
<i>Family income (Saudi Riyal)</i>			
<5000	94 (61.84)	56 (59.57)	38 (40.43)
5000–20,000	49 (32.24)	31 (63.27)	18 (36.73)
>20,000	9 (5.92)	3 (33.33)	6 (66.67)
<i>Living with family</i>			
Yes	125 (82.24)	76 (60.8)	49 (39.2)
No	27 (17.76)	14 (51.85)	13 (48.15)
<i>Employment</i>			
Unemployed	58 (38.16)	36 (62.07)	22 (37.93)
Employee	42 (27.63)	21 (50)	21 (50)
Freelancer	13 (8.55)	5 (38.46)	8 (61.54)
Retired	39 (25.66)	28 (71.79)	11 (28.21)
<i>Educational level</i>			
None	57 (37.5)	40 (70.18)	17 (29.82)
Up to secondary school	73 (48.03)	38 (52.05)	35 (47.95)
University and higher	22 (14.47)	12 (54.55)	10 (45.45)

*Chi-square test, $p=0.05$

due to the invasive nature of these procedures among children. Our study also showed a lower percentage of acupuncture, a practice popular in East Asian countries²¹⁻²³ but not in Saudi Arabia. Meanwhile, the reported low use of herbal and vitamin supplements in our study contradicted the result of another study,⁹ which reported a high prevalence of the use of these supplements. This disparity might be due to the being unfamiliar of the people in Saudi Arabia on the use of such supplements in stroke.

Our results indicated that more than two-thirds of the patients gained information on CAM from their relatives and friends, consistent with previous findings.^{16,34} Additionally, most of the CAM users tended to gravitate toward CAM practice post-hospitalization especially within one month of stroke onset, similar to the result of a Korean study.³⁴ This pattern could be attributed to the tremendous burden and the significant disability experienced after the acute stroke phase.

Most patients did not inform their treating physicians about their use of CAM whether it be a procedure or an oral medication. These results are similar to the other findings on CAM use in Saudi.^{16,42} In our study, every 2 of 3 patients reported that their treating physicians did not ask or discuss CAM with them. Most of our study participants would prefer to discuss with their physicians the safety and possible effectiveness of CAM and its interaction with their stroke medical therapy. This finding implies a gap in patient care

communication. Therefore, we recommend that health care providers give importance to and preferably initiate the discussion on CAM with stroke patients.

There are a few limitations of this study. First, the relatively small number of stroke patients sampled from one center limits the generalizability of our results. Second, the response rate was low, which might be due to the telephone-based data collection; a similar pattern was observed in other studies that used the same survey method.^{13,43,44} Larger multicenter studies

Table 2 - Types of complementary and alternative medicine used by the ischemic stroke patients.

Items	n (%)
Cauterization	45 (29.61)
Quran recitation	44 (28.95)
Zamzam (drinking of holy water)	43 (28.29)
Honey	43 (28.29)
Black seeds	29 (19.08)
Cupping	25 (16.45)
Massage	11 (7.24)
Herbal mixture	10 (6.58)
Murrah	3 (1.97)
Vitamins and minerals	1 (0.66)
Acupuncture	1 (0.66)

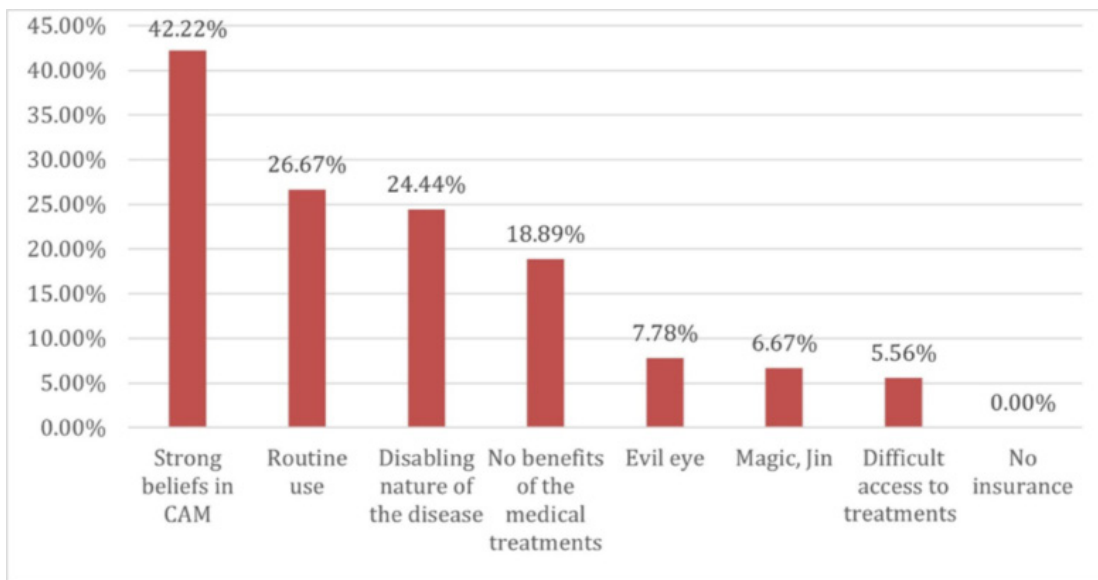


Figure 1 - Reasons why the stroke patients (n=90) sought for a CAM intervention. Note: The participants could choose more than one answer.

Table 3 - Stroke patient experience while on complementary and alternative medicine (n=90).

Time of CAM use*	n (%)
Prehospitalization	6 (6.67)
During hospitalization	24 (26.67)
Posthospitalization	65 (72.22)
<i>Length of CAM use after stroke onset</i>	
<1 month	56 (62.22)
1–3 months	24 (26.67)
≥4 months	10 (11.11)
<i>Use of medication while on CAM</i>	
Discontinued their medications	6 (6.67)
Used CAM while continuing their medications	84 (93.33)
<i>CAM and patient–physician experience*</i>	
Informed their doctor about CAM use	28 (31.11)
Doctors asked their patients about CAM use	23 (25.56)
With intention to discuss CAM use with their doctor	73 (81.11)
<i>Improvement reported after CAM use*</i>	
Subjective physical improvement	41 (45.56)
Subjective psychological improvement	56 (62.22)
<i>Source of information*</i>	
Relatives/Friends	87 (96.7)
Social media and the Internet	3 (3.3)
Other patients	7 (7.8)

*For this question, the participants could choose more than one answer

are recommended to further extrapolate the results. Also, more objective methods are warranted to assess the physical and psychological improvements attributed to the use of CAM.

The CAM is used by more than half of the investigated Saudi ischemic stroke patients, particularly women and older patients. Cautionization was the most commonly practiced CAM, which caused no major side effects in the majority of the patients. Next in line is the Quran recitation by sheiks followed by drinking of holy water Zamzam, honey eating, black seed consumption, and cupping. These CAM therapies have deep roots in the Islamic teachings and Saudi culture. Most of the patients used CAM post-hospitalization within less than one month of stroke onset and without stopping their medication. Only a few patients informed their physician about using CAM, and only a few physicians asked their patients about it, indicating the lack of effective communication between medical professionals and stroke patients in this regard despite the interest of the patients on CAM. Approximately

half of the participants reported a subjective physical and psychological improvement after using CAM. Relatives and friends were the most common source of information about CAM. Moreover, the most common reason for CAM use was the patients' strong belief in CAM. Research on both the dangers and potential effectiveness of these CAM therapies in stroke patients is limited. Further studies are warranted to investigate the cauterization practice in particular. Physicians must discuss CAM use with their patients to deliver proper health care and address potential harmful effects.

Acknowledgement. *We would like to thank scribendi for their great job in English language editing and also, we are grateful to Dr. Yahya Ahmed Jedar, Dr. Ahmed Abid, and Dr. Ahmed Ammar for their help in data acquisition.*

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