Perceptions and utilisation of complementary and alternative medicine practices among hospital patients in Bangladesh

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Abstract

Background

Complementary and alternative medicine (CAM) has played an important role in providing universal access to essential health care services globally. Conventional medicine (CM) driven health care practices are well-developed in Bangladesh; however, millions of people utilise CAM-based healthcare services for specific health conditions or health benefits due to high out-of-pocket payment (74%) in Bangladesh, while the global average is only 32%. Lack of evidence exists about the perception and utilisation of CAM in Bangladesh. This study aimed to estimate the prevalence correlates of the perception and utilisation of CAM among patients who received health care at a tertiary hospital, Bangladesh.

Methods

This study comprised a cross-sectional study with 1,183 individuals from the cross-sectional survey among patients who received health care from Government Unani and Ayurvedic Medical College Hospital in Dhaka, Bangladesh. Logistic regression analyses were employed to estimate the adjusted effect of independent factors on CAM health care services utilisation.

Results

Thirty-three percent of patients utilised CAM health care services, while 67% of patients sought conventional treatment before turning to CAM. CAM health care utilisation was significantly associated with young adult patients aged 26 to 45 years (AOR=6.26, 95% CI:3.24-12.07), patients without education (AOR=2.99, 1.81-4.93), and being married (AOR=1.79, 1.08-2.97). The apparent effectiveness, lower side effects, adequate patient satisfaction, and recommendations from others were the most prevalent reasons for using CAM.

Conclusion

CM plays a dominant role in health care provision in Bangladesh, with high-level patient satisfaction and health benefits. These results could be valuable for health policymakers as they explore prospects for integrating CAM and conventional medical services.

Introduction

Complementary and alternative medicine (CAM) has been the traditional method of meeting people's basic healthcare requirements (1). This still holds for one-third of the world's population who lack access to CM. In these circumstances, millions of individuals rely on CAM and its practitioners for their primary healthcare. Often it is their only option due to a lack of access to conventional healthcare, geographic isolation, and high conventional healthcare costs (2). Although conventional medical access has improved rapidly in recent decades the use of CAM is increasing globally in illness prevention, control, and management (2, 3).
A large percentage of people in developed countries use CAM (4–6), and this trend is also seen in lesser developed countries like Bangladesh (7–10). About 20% of people in the UK (4), 42% in the USA (5), 48% in Australia (6) and 76% of Japanese people (7) use CAM for their primary health care services. In developing countries such as India (70%) (8), Pakistan (70-80%) (9), CAM usage is widespread. A recent study showed that in Southeast Asia 20–97% of people use CAM (11). In Bangladesh, at least 70% of the population uses various forms of CAM for their primary health care (12). Different clinical or medical methods or techniques like Ayurvedic, Unani, Homeopathy, and Naturopathy are widely practised addressing medical needs in Bangladesh (13). Ayurvedic is a Hindu system of medicine and Unani is a traditional Muslim system of medicine originating in India and Greece, respectively (13, 14).

A number of studies have documented some potential predictors of CAM usage such as age (1, 4, 6, 15), gender (1, 4, 13, 16), religion (1, 8), education (4, 13, 16, 17), marital status (1, 6, 8, 13), residency (12, 13), occupation (6, 13), and household income (1, 4, 6, 17) in both developed and developing countries. Other possible reasons include that there are less-side effects (7, 18), better efficacy (7, 13, 18), dissatisfaction with conventional medicines (7, 16, 17), and the low cost of CAM (7, 13, 18). A recent study found many people are using CAM due to a lack of access and affordability of CM in Bangladesh (19). However, in Bangladesh, the use and perception of CAM healthcare services, have been rarely studied, despite their widespread use. This is important for policymakers to improve alternative healthcare services.

The present study aims to examine the use and perception of CAM among patients receiving treatment in a tertiary care CAM health facility in Dhaka, Bangladesh. To address the objective following the research questions (RQs) were formulated.

1. To what extent do Bangladeshi patients use CAM?
2. How do patients perceive the effectiveness and satisfaction of the use of CAM?
3. What variables influence the use of CAM in Bangladesh?

Methods

Study design and setting

This study design was a cross-sectional survey in Bangladesh. Patients who utilised outpatient healthcare services in the Government Unani and Ayurvedic Medical College Hospital between December 2019 and May 2020 in Dhaka, Bangladesh were recruited. Dhaka is the capital of Bangladesh, which has a large and high-density population (21m. people).

Sample size determination and procedure

The ideal sample size was calculated using the standard formula for a cross-sectional study.

\[ n = \frac{Z^2 PQ}{d^2} \]
Where \( n \) is the appropriate sample size, \( P \) is the approximate proportion of CAM use (0.615); taken from a related study conducted in Nepal (15). \( Q = 1 - P \) is the likelihood of those that do not use CAM, i.e. \((1 - 0.615)\), \( Z \) = the value of the test statistics corresponding to the 95% confidence interval (1.96), and \( d \) = the degree of accuracy/standard error (0.05). This results in approximately 364 participants required as a minimum sample size. The final recruitment of 1,183 participants greatly reduced the risk of sampling error.

Data collection tools and techniques

A structured questionnaire was used to gather information about demographic characteristics, socioeconomic characteristics, and preferences of consumers/patients for CAM usage. Patients were surveyed after completing their CAM healthcare visit. Before conducting the survey, the study objectives, aims, and benefits were explained to patients. Patients attending the hospital were first told about the intent of the research and asked to participate by responding to the questionnaire (S1).

Data were obtained either via a face-to-face interview with undereducated or through the self-administration of a questionnaire for those who were literate. Two skilled medical students at the hospital administered the questionnaires to patients.

Data analysis

Data from the completed questionnaires were coded and analysed using the Statistical Package for Social Sciences (SPSS) for Windows, Version 26. Categorical and continuous variables were expressed in frequency, percentage, mean and standard deviations, respectively. Frequency tabulation was used to summarise basic details such as demographic and socioeconomic characteristics and their relation to CAM use. The obtained data were analysed descriptively. Also, socio-demographic data were inferentially analysed. Usage of CAM was checked by comparing CAM users' socio-demographic data with non-users, using chi-square at 0.05 levels of significance. To find potential socio-demographic predictors of CAM use, a logistic regression model was used. Unadjusted odds ratios (ORs) with 95% confidence intervals were calculated using independent variables from the bivariate analysis with a p-value less than 0.05 in the initial univariate analysis. In the multivariable analysis, demographic characteristics with p-values less than 0.05 in the univariate analysis were entered to obtain adjusted ORs with a 95% confidence interval. All the data were entered into Microsoft Excel, used to generate descriptive statistics, and transferred into SPSS (version 26) for further statistical analysis.

Results

Participant's characteristics

This study included a total of 1,183 patients (Table 1). The majority of the participants were between the ages of 18 and 25, female (64.9%), married (70.5%), Muslim (93.7%), and 33.3% had completed university education. A significant proportion of patients (34.7%) were from the highest income quintile. The
majority of participants (89.4%) were from nuclear families and resided in urban areas (71.3%). Of
patients aged 65 and up, 76.5% had never used CAM similarly for most female patients (60.2%).
Approximately -thirds of Muslim patients sought CAM treatment, but 80.7% of people with a university
education had never tried it, and 80.5% of high-income people never used CAM.
Table 1
Participant’s characteristics, including sociodemographic characteristics

Distribution of patient’s characteristics (N = 1,183)

| Characteristics          | Number of patients, n (%) | Utilisation of CAM, n (%) | p-value |
|--------------------------|---------------------------|---------------------------|---------|
|                          |                           | no                        | yes     |         |
|                          |                           |                           |         |         |
| Patient’s age in year    |                           |                           |         |         |
| <18                      | 249(21.0)                 | 195(78.3)                 | 54(21.7) | <0.001  |
| 18-25                    | 283(23.9)                 | 182(64.3)                 | 101(35.7) |         |
| 26-45                    | 218(18.4)                 | 86(39.4)                  | 132(60.6) |         |
| 46-65                    | 169(14.3)                 | 112(66.3)                 | 57(33.7)  |         |
| 65+                      | 264(22.3)                 | 202(76.5)                 | 62(23.5)  |         |
| Sex of the patients      |                           |                           |         |         |
| Male                     | 415(35.1)                 | 315(75.9)                 | 100(24.1) | <0.001  |
| Female                   | 768(64.9)                 | 462(60.2)                 | 306(39.8) |         |
| Religion status          |                           |                           |         |         |
| Muslim                   | 1108(93.7)                | 733(66.2)                 | 375(33.8) | 0.186   |
| Others                   | 75(6.3)                   | 44(58.7)                  | 31(41.3)  |         |
| Level of education       |                           |                           |         |         |
| No education             | 314(26.5)                 | 168(53.5)                 | 146(46.5) | <0.001  |
| Primary                  | 270(22.8)                 | 170(63.0)                 | 100(37.0) |         |
| Secondary                | 205(17.3)                 | 121(59.0)                 | 84(41.0)  |         |
| Tertiary                 | 394(33.3)                 | 318(80.7)                 | 76(19.3)  |         |
| Marital status           |                           |                           |         |         |
| Single                   | 349(29.5)                 | 267(76.5)                 | 82(23.5)  | <0.001  |
| Married                  | 834(70.5)                 | 510(61.2)                 | 324(38.8) |         |
| Place of residence       |                           |                           |         |         |
| Urban                    | 1058(89.4)                | 703(66.4)                 | 355(33.6) | 0.107   |
| Rural                    | 125(10.6)                 | 74(59.2)                  | 51(40.8)  |         |

Note: CAM = Complementary and Alternative Medicine, p-value = probability value, p-value was derived from the chi-square test.
### Characteristics

| Characteristics       | Number of patients, n (%) | Utilisation of CAM, n (%) | p-value |
|-----------------------|---------------------------|---------------------------|---------|
|                       |                           | no                        | yes     |         |
| **Types of family**   |                           |                           |         |         |
| Nuclear               | 844(71.3)                 | 584(69.2)                 | 260(30.8)| <0.001 |
| Joint                 | 339(28.7)                 | 193(56.9)                 | 146(43.1)|         |
| **Employment status** |                           |                           |         |         |
| Unemployed            | 165(13.9)                 | 101(61.2)                 | 64(38.8) | <0.001 |
| Informal workers      | 522(44.1)                 | 295(56.5)                 | 227(43.5)|         |
| Formal employee       | 173(14.6)                 | 137(79.2)                 | 36(20.8) |         |
| Business              | 81(6.8)                   | 70(86.4)                  | 11(13.6) |         |
| Students              | 209(17.7)                 | 155(74.2)                 | 54(25.8) |         |
| Others                | 33(2.8)                   | 19(57.6)                  | 14(42.4) |         |
| **Income quintiles**  |                           |                           |         |         |
| Q1 (Lowest 20%)       | 158(13.4)                 | 126(79.7)                 | 32(20.3) | <0.001 |
| Q2                    | 251(21.2)                 | 136(54.2)                 | 115(45.8)|         |
| Q3                    | 204(17.2)                 | 100(49.0)                 | 104(51.0)|         |
| Q4                    | 160(13.5)                 | 85(53.1)                  | 75(46.9) |         |
| Q5 (Highest 20%)      | 410(34.7)                 | 330(80.5)                 | 80(19.5) |         |

Note: CAM = Complementary and Alternative Medicine, p-value = probability value, p-value was derived from the chi-square test.

Seventeen different types of health problems were identified. Gastrointestinal problems, skin problems, respiratory diseases, and menstrual disorders were the four most common illnesses for which CAM was utilised (Figure 1). Of the total 67% of the patients said they had tried CM before trying CAM to solve their problem.

## Utilisation of CAM

Table 2 shows the adjusted model outputs. Patients aged 26-45 years had a substantially higher use of CAM (AOR= 6.26, CI: 3.24 -12.07; p<0.001), followed by the age group 18-25 years (AOR=2.62, 95% CI: 1.51 - 4.54; p = 0.001), and for the 46-65 years age group (AOR=2.39, 95% CI: 1.18 - 4.84; p=0.016). Patients with no or little education were 2.99 and 2.30 times more likely to use CAM than those with the
highest level of education, respectively. Married participants were more likely to use CAM (AOR=1.79, CI:1.08 - 2.97, p=0.022) than those who were unmarried. The probabilities were 2.18 and 2.34 times higher in patients in the third- and fourth-income quartiles to use CAM than persons in the highest income quantile. Alternatively, patients who were involved in business were 78% (AOR=0.22; 95% CI: 0.120-0.51; p=<0.001) or were formally employed 48% (AOR=0.52, CI:0.29-0.95, p=0.034) were less likely to use CAM. Surprisingly, people from the lowest income quantile were 51% (AOR: 0.49, 95% CI: 0.28-0.88, p=0.016) less likely to utilise CAM than the highest-income patients.
| Characteristics          | Unadjusted model | Adjusted model |
|-------------------------|-----------------|----------------|
|                         | OR (95% CI)     | p-value        | OR (95% CI)     | p-value        |
| **Patient’s age in year** |                 |                |                 |                |
| <18 (= ref)             |                 |                |                 |                |
| 18-25                   | 2.00(1.36-2.95) | <0.001         | 2.62(1.51-4.54) | 0.001          |
| 26-45                   | 5.54(3.69-8.32) | <0.001         | 6.26(3.24-12.07)| <0.001         |
| 46-65                   | 1.84(1.19-2.85) | 0.007          | 2.39(1.18-4.84) | 0.016          |
| 65+                     | 1.10(0.73-1.68) | 0.627          | 1.61(0.80-3.24) | 0.176          |
| **Sex of the patients** |                 |                |                 |                |
| Male (= ref)            |                 |                |                 |                |
| Female                  | 2.09(1.59-2.72) | <0.001         | 1.17(0.83-1.63) | 0.361          |
| **Religion status**     |                 |                |                 |                |
| Muslim                  | 0.73(0.45-1.17) | 0.188          | 0.71(0.41-1.21) | 0.213          |
| Others (= ref)          |                 |                |                 |                |
| **Level of education**  |                 |                |                 |                |
| No education            | 3.64(2.60-5.08) | <0.001         | 2.99(1.81-4.93) | <0.001         |
| Primary                 | 2.46(1.73-3.49) | <0.001         | 2.30(1.40-3.78) | 0.001          |
| Secondary               | 2.91(1.99-4.220)| <0.001        | 2.26(1.41-3.63) | 0.001          |
| Tertiary (= ref)        |                 |                |                 |                |
| **Marital status**      |                 |                |                 |                |
| Single (= ref)          |                 |                |                 |                |
| Married                 | 2.07(1.55-2.74) | <0.001         | 1.79(1.08-2.97) | 0.022          |
| **Place of residence**  |                 |                |                 |                |
| Urban (= ref)           |                 |                |                 |                |
| Rural                   | 1.36(0.93-1.99) | 0.108          | 0.78(0.48-1.26) | 0.318          |
| **Types of family**     |                 |                |                 |                |
| Nuclear (= ref)         |                 |                |                 |                |

Note: OR = Odd ratio, CI = Confidence interval
Most patients used more than one type of CAM treatment. The most frequently CAM therapies were Ayurveda (48%), Unani (45%) and Neuropathy (7%).

The majority of patients reported multiple reasons for using CAM. The most common reasons were: 20.2% believed that CAM could control their illness/disease, 17.7% believed that CAM had fewer side effects than CM, and 16.5% used CAM because people advised them to do so (Figure 2).

Satisfaction with CAM treatment was very high (78%), and patients were willing to advise others to use CAM (65%). About 19% were willing to combine CAM with conventional treatment.

**Discussion**

This study aimed to examine the sociodemographic characteristics linked with CAM use in Bangladesh, as well as the relevant indications for CAM usage and patients' perceptions of CAM. The findings showed that socioeconomic characteristics (age, education, marital status, occupation, and income status) were positively connected to the use of CAM. The preference for CAM was highest among middle-aged
patients, which is similar to the findings of previously published studies elsewhere (4–6, 20). This could be due to their health-seeking behaviours or more likely to seek out treatments that will help them improve their health (13).

Patients with no or school education are more likely to use CAM than those with higher levels of education. However, prior studies have shown that those with higher education and more economically affluent are more inclined to use CAM (4, 6, 15, 17). This could be because well-educated and financially secure patients are more motivated to look into alternative remedies and ways to cope with their sickness and medication side effects. However, in Bangladesh, poor and non-educated patients often have insufficient money to purchase advanced medical treatment from well-equipped conventional/modern hospitals or clinics (21, 22). The study findings suggest that married patients are more likely to utilise CAM. However, a prior study indicated that single respondents were more likely to utilise CAM than married participants (13). This disparity in results can be attributed to contextualisation and cultural backgrounds. Another factor could be that married women often rely on their husbands for health-seeking behaviour in a male-dominated and patriarchal society like Bangladesh (23).

Patients who own their business or are formal employees are much less likely to use CAM, contradicting previous findings (6). This might be because the out-of-pocket model of payment is the norm for CAM treatment. This study also found that patients with relatively high-incomes were more likely to use CAM, which is consistent with prior studies conducted in the USA (5), Ethiopia (17), and Nepal (15), in contrast to a study in India (8) and Pakistan (9). This might be because of the tendency of people with high incomes to seek out alternatives for their health care treatments and well-being. Although a recent study reported that along with the income distribution both the lowest and highest socioeconomic groups showed a strong preference for CAM in China (24).

In this study the most common reasons for using CAM were 1. effectiveness of CAM, 2. fewer side effects, 3. easily available and 4. cheaper. These findings are confirmed by previous studies (8, 9, 20). The placebo effect is an essential component of CAM treatment. The development of CAM treatment is predictable on a broad base of quality research. There is momentum now to expand beyond basic clinical and experimental research to a joint public health program alongside CM. Interestingly, most patients (78.3%) were satisfied with CAM, and they want to recommend it to others (65.7%) which is in line with attitudes expressed elsewhere in Ethiopia (17) and Bangladesh (12). This may be because of their positive belief that CAM is less harmful than conventional medicine. Many consumers believe that CAM is equally reliable in terms of its scientific basis with CM which could convince them towards utilising CAM more regularly (13).

Strength and limitations

This is the first-ever study among Bangladeshi healthcare consumers on their attitudes towards CAM. The study does however have several limitations. The major one is that the study population was from an out-patient department of a medical college hospital which specialises in CAM. Moreover, as this study was cross-sectional, so it cannot attribute causality to any of its associated factors. A nationwide
population-based study is required to be undertaken to understand the exact prevalence, patterns, and perception among the general population of CAM use.

**Conclusions**

This study examined how patients in Bangladesh use CAM and how they perceive it. Ayurveda and Unani are the most common CAM practices in Bangladesh. Overall, there was a strong link between CAM utilisation and socioeconomic position. Common motivations for embracing CAM include belief in its ability to control disease, resulting in fewer adverse effects, a lack of faith in pharmaceutical treatments, and lower cost than CM. Furthermore, most surveyed patients are satisfied with CAM therapies and are prepared to recommend them to others.

**Abbreviations**

CAM: Complementary and alternative medicine

CM: Conventional medicine

**Declarations**

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**Declarations**

**Ethics approval and consent to participate**

Institutional Review Board (IRB) approval was received from North South University, Bangladesh, before the survey (2019/OR-NSU/IRB-No.1006). All participants provided informed consent, and hospital officials also gave their permission orally. Moreover, participants were assured that all information would be kept strictly confidential and used only for research purposes. All methods were carried out in accordance with relevant guidelines and regulations.

**Consent for publication**

Not applicable

**Availability of data and materials**
The data are available at Mendeley Data. Shahjalal, Md (2021), “Utilisation and perception of complementary and alternative medicine (CAM) among patients in Bangladesh”, Mendeley Data, V2, (http://dx.doi.org/10.17632/jpfj36wyf2.2).

Authors' contributions

MS conceived and designed this study. MS and MNAK managed and conducted the statistical analyses and interpreted the data under the guidance of RAM. MS, JG, MAR and MJH wrote the first draft and MS, JG, AH, MSA and RAM revised it to make the final manuscript. All authors critically reviewed and approved the final version of the manuscript.

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Competing interests

The authors declare that they have no competing interests.

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**Figures**

**Figure 1**

Patients with diseases according to income quintile
Figure 2

Reasons for using CAM * multiple responses

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- CAMQuestionnaire.docx