

# Knowledge, Attitude, Perception of Biological Science and Healthcare Professional Students to Complementary and Alternative Medicine Health Belief and Practice in Southeastern Region of Bangladesh: A Comparative Study

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## Abstract

The health professionals require scientific knowledge to advise their patients on complementary and alternative medicines (CAM). Previously, several studies were conducted regarding the CAM perception, attitude and use on health care professionals only; in contrast, our study encompasses both students of health care professionals and other disciplines. The aim of this study was to compare the attitudes and perception about CAM practices between students of biological sciences (Biochemistry and Molecular Biology, Microbiology and Botany) and health care professionals (Pharmacy and medical students) in public and private universities located in the southeastern region in Bangladesh. The questionnaire-based study conducted on 332 systematically sampled students (four private and one public universities) located in the southeastern region in Bangladesh. The cross-sectional study was conducted from March to July, 2018. All students showed a positive attitude towards CAM use. Herbal medicine, homeopathy, nutritional supplements followed by hypnosis, massage, spiritual healing, and meditation were the most commonly known and used CAM modalities. Most of the students (40.7%) believed that the integration of CAM and conventional medicine should be essential in health care setting. The major obstacles for CAM use are patient interest (48.2%) and lack of physician interest (43.4%). In addition, 36.7% students believed that CAM practices should be included in their school's curriculum. Moreover, 39.5% students assumed that CAM knowledge is important to their daily life. Biological sciences and healthcare professional students of Bangladesh showed positive perception on CAM uses.

**Key words:** Complementary and alternative medicine (CAM), Awareness, Biological sciences and healthcare students.

## Introduction

The National Center for Complementary and Integrative Health (NCCIH) declared CAM as a group of diverse medical and health care systems, practices, and products that are not presently considered to be a part of conventional medicine (Tabish, 2008). The acceptability of CAM increases in the commencement of the 19<sup>th</sup> century and became

widespread modalities for ameliorating diseases. In USA almost 67.0% of its population using at least one form of CAM in their daily life (Smith *et al.*, 2007). CAM covers products obtained from nature (herbs and probiotics), mind, and body practices (acupuncture, chiropractic, massage therapy, hypnosis, spiritual healing, meditation, etc.) and other traditional medical practices such as African

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traditional medicine, Chinese traditional medicine, and Indian Ayurvedic medicine (Babar *et al.*, 2019; Bellah *et al.*, 2017; Haque *et al.*, 2020; Hossen *et al.*, 2021; Rahman *et al.*, 2021; Uddin *et al.*, 2018).

In developing countries, CAM practice has long been used by local communities as a prime source of their healthcare system to improve a huge number of diseases (Ansari *et al.*, 2017; Hossain *et al.*, 2020; Moni *et al.*, 2021; Rahman *et al.*, 2021). The uses of CAM increased significantly both the developed and developing countries due to its accessibility, affordability, and good perception about safety comparing to conventional medicine. In Bangladesh, 70-75% populations are using traditional medicine in the form of herbal, homeopathy, religious, and magical methods (Saha *et al.*, 2017). Considering the aforesaid evidences, the objectives of this study were to evaluate the awareness, attitude, and perception of CAM between biological sciences students (Biochemistry and Molecular Biology, Microbiology, and Botany) and future healthcare professional students (Pharmacy and medical students) in public and private universities situated in the Southeastern region in Bangladesh.

## Materials and Methods

*Study design and sampling:* In this cross-sectional study the respondents were selected from the students of biological science (Biochemistry and Molecular Biology, Microbiology and Botany) and health care professionals (Pharmacy and medical students) in public and private universities located in the Southeastern region in Bangladesh between March 2018 to July, 2018. A simple random sampling technique was used for the selection of study participants. The total numbers of respondents were 332. All the participants willingly joined in this study providing written consent. The study protocol was approved by the ethical research committee of the Department of Pharmacy of International Islamic University Chittagong, Bangladesh.

*Study questionnaire:* The questionnaire was adopted from a formerly published study (Hasan *et al.*, 2011; Jahan *et al.*, 2021; James *et al.*, 2014;

Tiralongo *et al.*, 2008; Yeo *et al.*, 2005) standardized for biological science (Biochemistry and Molecular Biology, Microbiology and Botany) and health care professionals (Pharmacy and medical students) students. The questionnaire was divided into nine sections: A: demographic information; B: General Attitudes Toward Complementary and Alternative Medicine (CAM); C: Barriers to Use of CAM Practices; D: CAM Approaches: "Alternative" or Mainstream; E: CAM resources; F: CAM Personal Use; G: CAM Approaches in Your Practice; H: first introduction with CAM approaches, I: respondent family status of CAM use; J: Knowledge about CAM therapies.

*Data collection:* The questionnaires were circulated among the selected students with a consent form that explained the objectives of the research and guaranteed them of their confidentiality. The respondents were given an explanation of the therapy, its most important principles and evidence base and a practical demonstration for about fifteen minutes. They were invited to complete the questionnaire immediately. The authors were present on hand to answer questions or clarify any doubt that they might have. The class leader collected all the filled-up questionnaires in each class.

## Results and Discussion

This study was designed to evaluate the knowledge, attitude, and perception of university students towards the CAM health belief and practice in their daily life. Data were collected from three different fields of biological science students and two different fields of future healthcare professional students in public and private universities. The study revealed the resources of CAM information, barriers to use of CAM, CAM approaches, and knowledge about CAM therapies. Most of the students showed positive perception regarding CAM and a desire to include CAM education in their curriculum. Table 1, Figure 1 showed the demographic characteristics in which male and female were 57.2% and 42.8%, respectively. Among the 332 respondents, 3.3%, 5.1%, 18.1%, 51.2%, and 22.3% were studied in first,

second, third, fourth years and masters level study, (94.0%) ranges between 21 to 25 years, respectively. The age of majority of the respondents

**Table 1. Biological science and medical student's demographics.**

Item	Subgroup	Number	Percentage (%)
Year of study	1st year	11	3.3
	2nd year	17	5.1
	3rd year	60	18.1
	4th year	170	51.2
	Masters	74	22.3
Sex	Male	190	57.2
	Female	142	42.8
Age group (years)	Less than 20 years	18	5.4
	21 to 25 Years	312	94.0
	More than 26 years	2	0.6
Ethnic Group	Bangladeshi	325	97.9
	Tribal	5	1.5
	Non-tribal Bangladeshi	2	0.6
Subjects	Department of Pharmacy	183	55.1
	Department of Biochemistry and Molecular Biology	52	15.7
	Department of Microbiology	17	5.1
	Department of Botany	11	3.3
	MBBS	69	20.8

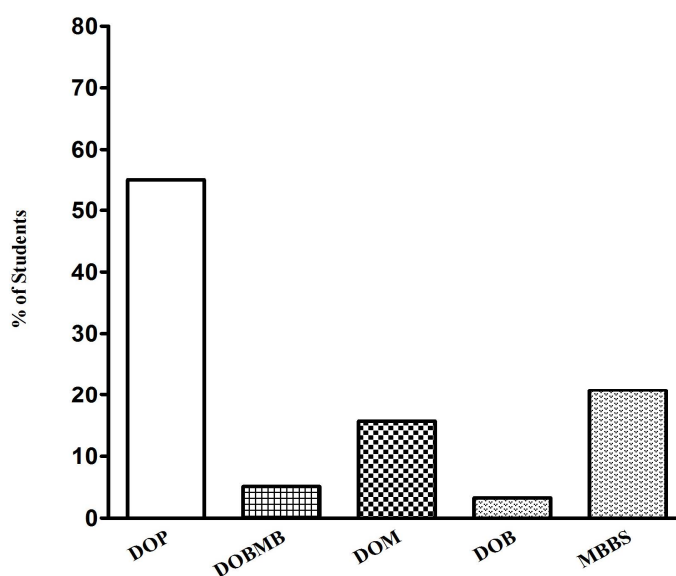


Figure 1. Investigation of CAM among biological science students and future health professional students. Where, DOP= Department of Pharmacy, DOBMB= Department of Biochemistry and Molecular Biology, DOM= Department of Microbiology, DOB= Department of Botany and MBBS= Medical students.

Recently, a number of studies suggest that an increasing interest in CAM has been observed among future healthcare professional students (Freymann *et al.*, 2006; Hasan *et al.*, 2011; Hussain *et al.*, 2012; Tiralongo *et al.*, 2008; Woloschuk *et al.*, 2004). Most of the studies involved in health professional students and to later extent on biological discipline students. The respondents considered the CAM modalities

such as massage (59.6%), therapeutic/healing touch (51.5%), bioelectromagnetic therapies (44.9%) and herbal medicine (42.2%) considered as clear alternative therapies whereas meditation (29.2%), acupuncture (21.4%), homeopathy (18.1%), massage (10.2%) and spiritual healing (15.1%) as clearly mainstream therapy (Table 2).

**Table 2. Pattern of CAM approaches among respondents.**

Item	Clearly mainstream, n (%)	Neither clearly mainstream nor alternative, n (%)	Clearly alternative, n (%)
Acupuncture	71 (21.4)	82 (24.7)	179 (53.9)
Bioelectromagnetic therapies, e.g., magnets	65 (19.6)	118 (35.5)	149 (44.9)
Biofeedback	64 (19.3)	115(34.6)	153 (46.1)
Chiropractic	76 (22.9)	111 (33.4)	145 (43.7)
Herbal medicine	71 (21.4)	121 (36.4)	140 (42.2)
Homeopathy	60 (18.1)	131(39.5)	141(42.5)
Hypnosis/guided imagery	91 (27.4)	130 (39.2)	110 (33.1)
Massage	34 (10.2)	100 (30.1)	198 (59.6)
Nutritional supplements	92 (27.7)	130 (39.2)	109 (32.8)
Prayer/spiritual healing	50 (15.1)	131 (39.5)	151 (45.5)
Meditation	97 (29.2)	128 (38.6)	106 (31.9)
Therapeutic/healing touch	74 (22.3)	87 (26.2)	171 (51.5)

Twelve attitude statements related to CAM were included in the questionnaire to which the students could either, very strongly disagree or strongly disagree or disagree, be neutral, or very strongly agree or strongly agree or agree (Table 3).

Most of the students (40.7%) believed that the integration of CAM and conventional medicine should be essential in health care setting and thought that CAM included ideas and methods from which conventional medicine could benefit (38.3%). Among the 332 respondents, 36.7% believed that CAM practices should be included in their school's curriculum. Moreover, 39.5% students assumed that the CAM knowledge can prompt life as a student and future professional life. Table 4 and Figure 2 showed the barriers of CAM practice among students'

opinion about the constraint of CAM use in Bangladesh.

Almost 38.0% respondents considered the deficient of knowledge as the main barrier to CAM use. The quantitative data regarding barrier of CAM are ranked in following order lack of patient interest (48.2%), lack of physician interest (43.4%), time-consuming (40.4%), lack of compensation (36.7%), lack of trained professionals (33.7%), and lack of evidence for practices (31.0%). The major resources of CAM information among the students were the internet (58.7%), textbook (59.6%), articles on clinical trials of alternative medicine therapies (60.5%), lectures (61.4%), hands-on experience with alternative medicine therapies (62.7%), and using CAM therapies to promote own health (63.3%) (Table 5).

Moreover, 70.5%, 8.1%, and 21.4% students know about disease pathophysiology with a remedy, brand name in specific disease cases, and at least one brand name with disease, respectively (Table 6).

Due to the increased public demand of CAM, the knowledge, attitude and perception of biological science and healthcare professional of undergraduate and graduate students have become a matter of interest.

**Table 3. General attitudes toward Complementary and Alternative Medicine among respondents.**

Statements	VSA, N (%)	SA, N (%)	A, N (%)	D, N (%)	SD, N (%)	VSD, N (%)	X, N (%)
Clinical care should integrate the best of conventional and CAM practices.	61 (18.4)	69 (20.8)	135 (40.7)	30 (9.0)	15 (4.5)	4 (1.2)	18 (5.4)
CAM includes ideas and methods from which conventional medicine could benefit.	68 (20.5)	66 (19.9)	127 (38.3)	26 (7.8)	12 (3.6)	8 (2.4)	25 (7.5)
While we need to be careful in our claims, a number of CAM approaches hold promise for treatment of symptoms, conditions, and/or diseases.	102 (30.7)	130 (39.2)	96 (28.9)	2 (0.6)	1 (0.3)	1 (0.3)	-
The results of CAM are in most cases due to a placebo (drug without active ingredients) effect.	128 (38.6)	175 (52.7)	5 (1.5)	8 (2.4)	2 (0.6)	2 (0.6)	12 (3.6)
CAM therapies not tested in a scientific manner should be discouraged.	101 (30.4)	59 (17.8)	68 (20.5)	85 (25.6)	16 (4.8)	-	3 (0.9)
While a few CAM approaches may have limited health benefits, they have no true impact on treatment of symptoms, conditions, and/or diseases.	97 (29.2)	126 (38.0)	109 (32.8)	-	-	-	-
CAM is a threat to public health.	-	67 (20.2)	130 (39.2)	-	133 (40.1)	-	2 (0.6)
I hope to have some CAM practices available to patients in my practice or referral network.	76 (22.9)	81 (24.4)	172 (51.8)	-	-	-	3 (0.9)
Health professionals should be able to advise their patients about commonly used CAM methods.	63 (19.0)	69 (20.8)	133 (40.1)	30 (9.0)	14 (4.2)	4 (1.2)	19 (5.7)
CAM practices should be included in my school's curriculum.	77 (23.2)	71 (21.4)	122 (36.7)	24 (7.2)	9 (2.7)	7 (2.1)	22 (6.6)
Knowledge about CAM is important to me as a student/future practicing health professional.	102 (30.7)	131 (39.5)	94 (28.3)	4 (1.2)	-	-	1 (0.3)
Most complementary therapies stimulate the body's natural therapeutic powers.	128 (38.6)	171 (51.5)	14 (4.2)	7 (2.1)	4 (1.2)	3 (0.9)	5 (1.5)

Where, VSA= Very Strongly Agree, SA= Strongly Agree, A= Agree, D= Disagree, SD= Strongly Disagree, VSD= Very Strongly Disagree, X=Neutral

**Table 4. Barriers to CAM implementation in Bangladesh.**

Statements	VSA, N (%)	SA, N (%)	A, N (%)	D, N (%)	SD, N (%)	VSD, N (%)	X, N (%)
Lack of evidence for practices	126 (38.0)	46 (13.9)	103 (31.0)	47 (14.2)	10 (3.0)	-	-
Unavailability of credentialed providers	106 (31.9)	60 (18.1)	75 (22.6)	77 (23.2)	13 (3.9)	-	1 (0.3)
Lack of compensation	98 (29.5)	122 (36.7)	111 (33.4)	1 (0.3)	-	-	-
Too time-consuming	126 (38.0)	72 (21.7)	134 (40.4)	-	-	-	-
Lack of physician interest	100 (30.1)	64 (19.3)	144 (43.4)	18 (5.4)	3 (0.9)	-	3 (0.9)
Lack of patient interest	127 (38.3)	160 (48.2)	19 (5.7)	6 (1.8)	5 (1.5)	3 (0.9)	12 (3.6)
Legal issues	126 (38.0)	48 (14.5)	101 (30.4)	49 (14.8)	8 (2.4)	-	-
Lack of trained professionals	112 (33.7)	66 (19.9)	63 (19.0)	77 (23.2)	13 (3.9)	-	1 (0.3)
Lack of appropriate equipment	94 (28.3)	126 (38.0)	112 (33.7)	-	-	-	-

Where, VSA= Very Strongly Agree, SA= Strongly Agree, A= Agree, D= Disagree, SD= Strongly Disagree, VSD= Very Strongly Disagree, X=Neutral

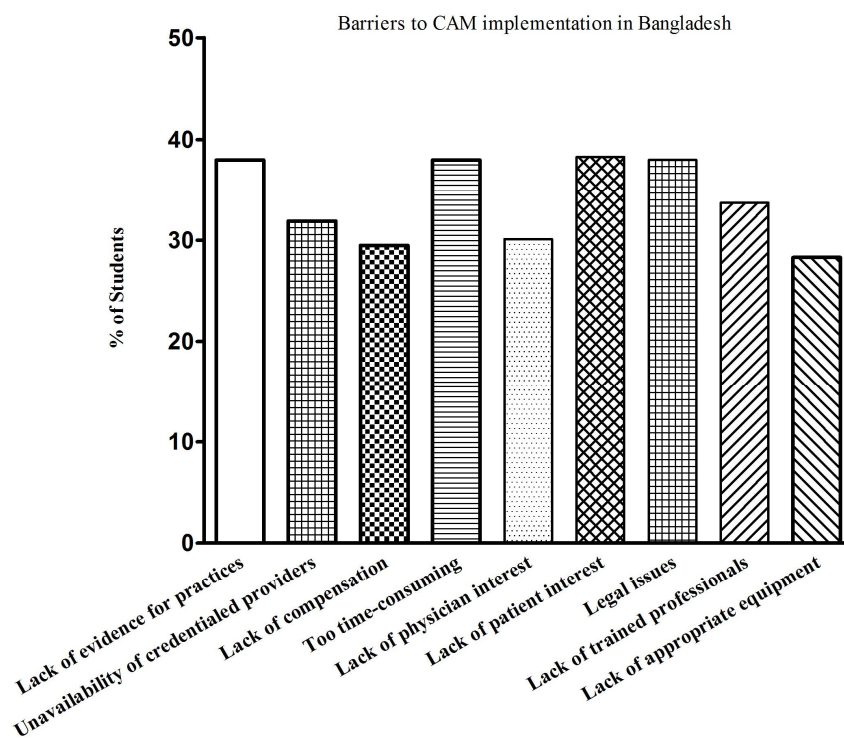


Figure 2. Perception regarding major barriers of CAM among biological science students and future health professional students.

**Table 5. Sources of CAM information among respondents (N = 332).**

Statements	NU, N (%)	U, N (%)	VU, N (%)
Internet	5 (1.5)	132 (39.8)	195 (58.7)
Textbook readings	1 (0.3)	133 (40.1)	198 (59.6)
Articles on clinical trials of alternative medicine therapies	2 (0.6)	129 (38.9)	201 (60.5)
Lectures	3 (0.9)	125 (37.7)	204 (61.4)
Observation of alternative medical therapies	1 (0.3)	123 (37.0)	208 (62.7)
Hands-on experience with alternative medicine therapies and patients in clinical settings	6 (1.8)	130 (39.2)	196 (59.0)
Case-based learning	3 (0.9)	131 (39.5)	198 (59.6)
Using alternative medicine therapies to promote my own health	2 (0.6)	120 (36.1)	210 (63.3)

Where, NU= Not useful, U= Useful, VU=Very Useful.

**Table 6. Knowledge about complementary therapies among respondents (N = 332).**

Statements	N (%)
Knows about disease pathophysiology and remedy	234 (70.5)
Knows about brand name in specific disease cases	27 (8.1)
Knows at least one brand name with disease	71 (21.4)

The complementary and alternative form is significantly influenced by culture and tradition of the society around the world (Bodeker *et al.*, 2007). Adequate knowledge is required to develop professional image as a CAM health care providers and conventional medicine advisors (Bodeker *et al.*, 2007; Hasan *et al.*, 2011). The pragmatic rate towards complementary and alternative medicine attitude and perception by the university students observed in this study is comparable with the results found earlier in Australia, Bangladesh, Pakistan and Sierra Leone (James *et al.*, 2014; Saha *et al.*, 2017; Tiralongo *et al.*, 2008). In Bangladesh, local practitioner used traditional and complementary medicine against fever (1.9%), cough and cold (7.1%), hypertension (2.5%), gastro-intestinal pain (3.4%) and dysentery (1.6%) (Bodeker *et al.*, 2007; Harun-Or-Rashid *et al.*, 2011). In our study, we found the main sources of CAM information were internet, surveillance of CAM therapies, textbook, articles, hands-on training and

case-based learning. Previously researcher found sources of CAM information as television, newspapers articles, books and family friend who has involved in traditional and alternative medicine therapies in Ghana and Bangladesh (Ameade *et al.*, 2016; Saha *et al.*, 2017). A positive attitude toward CAM among biological science and healthcare professional undergraduate students was observed in this study which is similar with other studies on pharmacy and other health professional students attitudes toward CAM globally (Chaterji *et al.*, 2007; Harris *et al.*, 2006; Hussain *et al.*, 2012; Kreitzer *et al.*, 2002; Lie *et al.*, 2006; Pokladnikova *et al.*, 2008; Yildirim *et al.*, 2010). Our study highlighted the barriers of CAM practice in Bangladesh were insufficient evidence of practice, unavailability of service providers, poor physician interest, poor compensation and untrained professionals. Similar challenges were also faced regarding CAM practice by physician in Lagos Nigeria, pharmacy students in Bangladesh (Awodele *et al.*, 2012; Saha *et al.*, 2017).

## Conclusion

Biological science and healthcare professional students of Bangladesh showed positive perception on CAM uses. The CAM can be considered as safe, effective and inexpensive. As it covers wide range of diagnostic and therapeutic approaches which is encouraging for the recipients. However, deficient of

scientific evidence, knowledge and untrained professionals were the major barriers of CAM use.

### Abbreviations

CAM = Complementary and Alternative medicine; MBBS = Bachelor of Medicine and bachelor of Surgery

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