

## Perceptions of Ayurvedic medicine by citizens in Dhaka, Bangladesh

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### ABSTRACT

Bangladesh is now facing the public health problems of deficiency of iron and iodine, especially for women. The Ministry of Health and Family Welfare of Bangladesh has implemented strong countermeasures to enhance the health condition of the nation. On the other hand, based on the concept of the Declaration of Alma-Ata, complementary and alternative medicine should be used more vigorously to enhance public health in the world. The usage of complementary and alternative medicine such as ayurvedic medicine (AM) should be increased in Bangladesh. Therefore we conducted the study on perceptions of AM by citizens in Dhaka, Bangladesh in order to promote and enhance the effective usage of AM, including herbal medicines as medical resources, from December 2010 to January 2011. This study showed younger citizens (61.1%) did not get more benefit from AM than elder citizens (48.0%). On the other hand, younger citizens (76.8%) did not get more harm from AM than elder citizens (70.1%). We think that in terms of effectiveness of AM, the younger generation in Dhaka seems to be more skeptical to AM than the elder generation in Dhaka, even though the younger generation are more satisfied with AM than the elder generation. With viewpoint of enhancement of usage of AM in Dhaka, we think that scientifically sound information on AM should be collected rigorously and brought to the citizens vigorously to remove the skeptical feeling of AM from younger citizen in Dhaka. In terms of the effective utilization of limited medical resources, AM should be used appropriately in Bangladesh, Asia and the world.

Key Words: Ayurvedic medicine, perception, Bangladesh, citizen, satisfaction

### INTRODUCTION

Ayurvedic medicine (AM) is in number three in position in terms of worldwide popularity. Eighty percent of the world population uses traditional medicine for primary health care.

AM derives from plants which contain various phytochemicals and these phytochemicals make relief from disease by removing metabolic toxins from our body, boost up immunity and purify the blood. Many traditional healing herbs and their parts have been shown to have medicinal value and can be used to prevent, alleviate, or cure several human diseases. Presently, there is a resurgence of herbal medicine as people want more control in their personal healthcare.

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Bangladesh has approximately 170 million population and is now facing and tackling public health problems such as deficiency of iron and iodine, especially for women,<sup>1)</sup> and the contamination of arsenic in drinking water.<sup>2-4)</sup> We examined the frequency of iron and iodine deficiencies and associations of iron and iodine deficiencies with common diseases among 395 under-2 children, 355 adolescent girls, and 263 pregnant women of Bangladesh. Anemia was found in 49.1% of children, 24.8% of adolescent girls, and 44.4% of pregnant women. Prevalence of iodine deficiencies (urinary iodine <100  $\mu$ g/L) was 38.4% in adolescent girls and 39.4% in pregnant women. The Ministry of Health and Family Welfare of Bangladesh makes strong countermeasures to enhance the health conditions for the nation.

Furthermore, with the viewpoint of disease treatment, a larger contribution of Ayurveda should be focused on, conducted by medical doctors or doctors of AM. Traditional medical practice is still ongoing in Bangladesh. The traditional medical practitioners perform a central role in providing primary healthcare to the rural inhabitants of Bangladesh. There are 86,000 villages in the country and almost every village has one or two traditional practitioners. They are the providers of primary healthcare to village populations in Bangladesh. On the other hand, the Declaration of Alma-Ata of International Conference on Primary Health Care, Alma-Ata, USSR, on 6–12 September 1978 declared that the conference strongly reaffirmed that health, which is a state of complete physical, mental and social well-being, and not merely the absence of disease or infirmity, was a fundamental human right and that the attainment of the highest possible level of health is the most important world-wide social goal whose realization required the action of many other social and economic sectors in addition to the health sector.<sup>5)</sup> Based on the concept of the Declaration of Alma-Ata, complementary and alternative medicine (CAM) should be used more vigorously to enhance public health all over the world. Therefore, the purpose of this study is to confirm the perceptions of AM by citizens in Dhaka, Bangladesh. We hope this research will contribute to promoting and enhancing the effective usage of AM, including herbal medicines as medical resources in Bangladesh, Asia, and the world.

## MATERIALS AND METHODS

This study was conducted by face-to-face interview by trained staffs in Dhaka, Bangladesh using a structured questionnaire during December 2010 to January 2011. Respondents were 1502 citizens in Dhaka, Bangladesh. The respondents were randomly selected by the trained staffs of the research team of Dhaka, Bangladesh. The research team of Bangladesh initially obtained the name of villages and coded them using digital numbers. The respondents were recruited based on the household unit in the selected villages. The exclusion criteria were not adopted in this study.

The subjects were informed that they were free to decline answering any question with which they were not comfortable. Anonymity of their personal identity was preserved. Written informed consent was obtained from every participant before the interview.

The questionnaire was translated into Bengali and changes were made to make it understandable for the respondents before data collection in the field and back translated into English. To respond the questions of situation and perception of use of AM and Satisfaction on AM use among citizens, an index of “yes” or “no” was applied. For questions of attitudes toward AM use among citizens, a 5-point Likert scale ranging from 1 = “Strongly disagree” to 5 = “Strongly agree” was applied. Raw data was sent to Nagoya University and was analyzed with SPSS version 2.0.  $\chi^2$ -test and U-test were applied. Since this study was not involved in experimental research involving human subjects and also anonymization of personal identity was preserved, the concept of exemption of ethical approval was accepted at that time.

## RESULTS

Table 1 shows the demographics of the survey respondents of citizens in Dhaka, Bangladesh. We obtained responses from 1502 citizens (958 males and 544 females). Statistically significant gender differences of citizens were observed in the residence, marital status, education, occupation, monthly income, and health status. Though a statistically significant difference was observed in the residence by gender, the majority of male citizens (53.0%) were in rural areas, as were the majority of female citizens (61.7%). Though a statistically significant difference was observed in marital status by gender, the majority of males (59.1%) were married, as were the majority of females (70.4%). A significant difference was observed in education by gender, the majority of males (49.1%) had an education period of 11 years and more, 18.0% having 6 to 11 years education period, whereas the majority of females (36.4%) had an education period of 11 years and more and 22.9% had 6 to 11 years education period. The majority occupation of males (35.0%) was others which mainly consisted of retired, day laborer, rickshaw/van puller, and students, whereas the majority occupation of females (60.3%) was housewife. On the other hand, though a statistically significant difference was observed in the monthly income by gender, the majority of males (63.9%) received less than 7000 (Taka), as did the majority of females (84.4%). A significant difference was observed in health status by gender, the majority of males (43.0%) had good health status, as did the majority of females (44.6%).

**Table 1** Demographic data of citizens in Dhaka, Bangladesh

		Sex						Test <sup>a</sup>
		Male		Female		Total		
		n	%	n	%	n	%	
Age	15–24	259	27.0%	143	26.3%	402	26.8%	n.s.
	25–34	301	31.4%	171	31.4%	472	31.4%	
	35–44	168	17.5%	127	23.3%	295	19.6%	
	45–54	110	11.5%	47	8.6%	157	10.5%	
	55–64	69	7.2%	32	5.9%	101	6.7%	
	65 or more	51	5.3%	24	4.4%	75	5.0%	
	Total	958	100.0%	544	100.0%	1502	100.0%	
Residence	Urban	450	47.0%	207	38.3%	657	43.9%	*
	Rural	507	53.0%	333	61.7%	840	56.1%	
	Total	957	100.0%	540	100.0%	1497	100.0%	
Marital status	Married	567	59.1%	380	70.4%	947	63.2%	*
	Unmarried	388	40.5%	139	25.7%	527	35.2%	
	Widow	1	.1%	19	3.5%	20	1.3%	
	Divorced/separated	3	.3%	2	.4%	5	.3%	
	Total	959	100.0%	540	100.0%	1499	100.0%	
Education	No education	137	14.3%	121	22.5%	258	17.3%	*
	Primary	177	18.5%	98	18.2%	275	18.4%	
	6–10	172	18.0%	123	22.9%	295	19.8%	

	11 and more	469	49.1%	196	36.4%	665	44.5%	
	Total	955	100.0%	538	100.0%	1493	100.0%	
Occupation	Service	216	22.6%	83	15.3%	299	20.0%	
	Business	257	26.9%	20	3.7%	277	18.5%	
	Housewife	12	1.3%	327	60.3%	339	22.7%	*
	Jobless	135	14.2%	64	11.8%	199	13.3%	
	Others	334	35.0%	48	8.9%	382	25.5%	
	Total	954	100.0%	542	100.0%	1496	100.0%	
Monthly income (in Taka <sup>b</sup> )	<7000	608	63.9%	455	84.4%	1063	71.3%	
	7000–15000	197	20.7%	59	10.9%	256	17.2%	*
	>15000	146	15.4%	25	4.6%	171	11.5%	
	Total	951	100.0%	539	100.0%	1490	100.0%	
Religion	Islam	866	90.9%	495	91.7%	1361	91.2%	n.s.
	Hindu	87	9.1%	45	8.3%	132	8.8%	
	Total	953	100.0%	540	100.0%	1493	100.0%	
Health status	Excellent	33	3.5%	7	1.3%	40	2.7%	
	Very good	119	12.5%	48	8.9%	167	11.2%	
	Good	410	43.0%	242	44.6%	652	43.6%	*
	Average	302	31.7%	167	30.8%	469	31.4%	
	Not good	89	9.3%	78	14.4%	167	11.2%	
	Total	953	100.0%	542	100.0%	1495	100.0%	

a: Mann-Whitney U-test, b: 1USD = 70 Taka

\*,  $P < 0.05$

Table 2 shows satisfaction on AM use among citizens. 61.1% of citizens aged 15–34 years old and 52.0% of citizens aged 35 years old or elder did not receive benefits from AM. On the other hand, 76.8% of citizens aged 15–34 years old and 70.1% of citizens aged 35 years old or elder did not get harm from AM. 73.6% of citizens aged 15–34 years old and 64.7% of citizens aged 35 years old or elder were satisfied with AM, respectively. 72.9% of citizens aged 15–34 years old and 62.1% of citizens aged 35 years old or elder recommended AM to others. These differences were statistically significant. On the other hand, in terms of gender, there was no statistically significant difference.

Table 3 shows attitudes of citizens on AM. Though 41.5% of citizens aged 15–34 years old agreed that their AM provider gives good information on maintaining a healthy lifestyle, 43.1% of citizens aged 35 years old or elder strongly agreed it. Though 56.1% of citizens aged 15–34 years old and 52.9% of citizens aged 35 years old or elder agreed that herbal medicine has less side effects, 21.1% of citizens aged 15–34 years old had not decided it, while 32.3% of citizens aged 35 years old or elder strongly agreed. Though 53.5% of citizens aged 15–34 years old and 58.8% of citizens aged 35 years old or elder agreed that AM involves natural plant formulas which were healthier than taking western medicines, 26.1% of citizens aged 15–34 years old had not decided it, while 19.6% of citizens aged 35 years old or elder strongly agreed it. 55.4% of citizens aged 15–34 years old and 47.1% of citizens aged 35 years old or elder agreed

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**Table 2** Satisfaction on Ayurvedic medicine (AM) use among citizens in Dhaka, Bangladesh

		Age						Sex						Test
		15-34		35 or more		Total		Male		Female		Total		
		n	%	n	%	n	%	n	%	n	%	n	%	
Did you get benefit from AM?	Yes	334	38.9%	293	48.0%	627	42.7%	391	41.7%	237	44.5%	628	42.7%	n.s.
	No	524	61.1%	317	52.0%	841	57.3%	547	58.3%	295	55.5%	842	57.3%	
	Total	858	100.0%	610	100.0%	1468	100.0%	938	100.0%	532	100.0%	1470	100.0%	
Did you get harm from AM?	Yes	199	23.2%	184	29.9%	383	26.0%	247	26.3%	136	25.4%	383	26.0%	n.s.
	No	657	76.8%	431	70.1%	1088	74.0%	691	73.7%	399	74.6%	1090	74.0%	
	Total	856	100.0%	615	100.0%	1471	100.0%	938	100.0%	535	100.0%	1473	100.0%	
Were you satisfied with AM?	Yes	627	73.6%	394	64.7%	1021	69.9%	652	70.5%	370	68.8%	1022	69.9%	n.s.
	No	225	26.4%	215	35.3%	440	30.1%	273	29.5%	168	31.2%	441	30.1%	
	Total	852	100.0%	609	100.0%	1461	100.0%	925	100.0%	538	100.0%	1463	100.0%	
Did you recommend AM to others?	Yes	628	72.9%	384	62.1%	1012	68.4%	644	68.1%	368	68.8%	1012	68.3%	n.s.
	No	234	27.1%	234	37.9%	468	31.6%	302	31.9%	167	31.2%	469	31.7%	
	Total	862	100.0%	618	100.0%	1480	100.0%	946	100.0%	535	100.0%	1481	100.0%	

a:  $\chi^2$ -test

\*\*; p &lt; 0.01

**Table 3** Attitudes of the citizens on Ayurvedic medicine (AM) in Dhaka, Bangladesh

		Age						Sex						test
		15-34		35 or more		Total		Male		Female		Total		
		n	%	n	%	n	%	n	%	n	%	n	%	
AM provider gives good information on maintaining a healthy lifestyle	Strongly disagree	28	3.2%	14	2.2%	42	2.8%	27	2.8%	15	2.8%	42	2.8%	n.s.
	Disagree	20	2.3%	10	1.6%	30	2.0%	15	1.6%	15	2.8%	30	2.0%	
	Haven't decided	242	27.8%	129	20.6%	371	24.8%	238	24.8%	133	24.6%	371	24.7%	
	Agree	362	41.5%	203	32.4%	565	37.7%	361	37.6%	206	38.1%	567	37.8%	
	Strongly agree	220	25.2%	270	43.1%	490	32.7%	319	33.2%	171	31.7%	490	32.7%	
	Total	872	100.0%	626	100.0%	1498	100.0%	960	100.0%	540	100.0%	1500	100.0%	
Herbal medicine has less side effects	Strongly disagree	8	0.9%	2	0.3%	10	0.7%	6	0.6%	4	0.7%	10	0.7%	n.s.
	Disagree	15	1.7%	11	1.8%	26	1.7%	13	1.4%	13	2.4%	26	1.7%	
	Haven't decided	184	21.1%	80	12.7%	264	17.6%	180	18.8%	85	15.6%	265	17.6%	
	Agree	490	56.1%	332	52.9%	822	54.7%	534	55.6%	289	53.1%	823	54.7%	
	Strongly agree	177	20.3%	203	32.3%	380	25.3%	227	23.6%	153	28.1%	380	25.3%	
	Total	874	100.0%	628	100.0%	1502	100.0%	960	100.0%	544	100.0%	1504	100.0%	
AM involves natural plant formulas which are healthier than taking drugs given by the medical doctors	Strongly disagree	13	1.5%	4	0.6%	17	1.1%	12	1.3%	5	0.9%	17	1.1%	n.s.
	Disagree	27	3.1%	12	1.9%	39	2.6%	24	2.5%	16	3.0%	40	2.7%	
	Haven't decided	227	26.1%	118	19.0%	345	23.1%	227	23.8%	120	22.2%	347	23.2%	
	Agree	466	53.5%	366	58.8%	832	55.7%	521	54.6%	310	57.4%	831	55.6%	
	Strongly agree	138	15.8%	122	19.6%	260	17.4%	171	17.9%	89	16.5%	260	17.4%	
	Total	871	100.0%	622	100.0%	1493	100.0%	955	100.0%	540	100.0%	1495	100.0%	
People would be more likely to use AM if there were more AM clinics	Strongly disagree	8	0.9%	6	1.0%	14	0.9%	11	1.2%	3	0.6%	14	0.9%	n.s.
	Disagree	36	4.1%	19	3.0%	55	3.7%	34	3.6%	21	3.9%	55	3.7%	
	Haven't decided	172	19.8%	148	23.6%	320	21.4%	203	21.2%	118	21.8%	321	21.4%	
	Agree	388	44.6%	250	39.9%	638	42.6%	409	42.8%	230	42.4%	639	42.7%	
	Strongly agree	265	30.5%	204	32.5%	469	31.4%	299	31.3%	170	31.4%	469	31.3%	
	Total	869	100.0%	627	100.0%	1496	100.0%	956	100.0%	542	100.0%	1498	100.0%	
AM build up the body's own defenses	Strongly disagree	17	2.0%	12	1.9%	29	1.9%	22	2.3%	7	1.3%	29	1.9%	n.s.
	Disagree	30	3.4%	17	2.7%	47	3.1%	28	2.9%	19	3.5%	47	3.1%	
	Haven't decided	279	32.1%	176	28.1%	455	30.4%	294	30.8%	162	29.8%	456	30.4%	
	Agree	396	45.5%	302	48.2%	698	46.7%	430	45.1%	268	49.3%	698	46.6%	
	Strongly agree	148	17.0%	119	19.0%	267	17.8%	180	18.9%	88	16.2%	268	17.9%	
	Total	870	100.0%	626	100.0%	1496	100.0%	954	100.0%	544	100.0%	1498	100.0%	

The more knowledge a person has on AM, the more likely he/she use it	Strongly disagree	13	1.5%	7	1.1%	20	1.3%	n.s.	9	0.9%	11	2.0%	20	1.3%	n.s.
	Disagree	30	3.4%	31	5.0%	61	4.1%		36	3.8%	25	4.6%	61	4.1%	
	Haven't decided	186	21.3%	146	23.3%	332	22.2%		210	21.9%	124	22.9%	334	22.3%	
	Agree	374	42.9%	249	39.8%	623	41.6%		409	42.7%	215	39.7%	624	41.6%	
	Strongly agree	269	30.8%	193	30.8%	462	30.8%		294	30.7%	167	30.8%	461	30.7%	
Total	872	100.0%	626	100.0%	1498	100.0%		958	100.0%	542	100.0%	1500	100.0%		
Parent(s) can influence youth's AM use by exposing them to it	Strongly disagree	24	2.8%	19	3.0%	43	2.9%	n.s.	24	2.5%	19	3.5%	43	2.9%	n.s.
	Disagree	53	6.1%	40	6.4%	93	6.2%		57	5.9%	36	6.6%	93	6.2%	
	Haven't decided	236	27.1%	173	27.5%	409	27.3%		285	29.7%	125	23.1%	410	27.3%	
	Agree	443	50.9%	281	44.7%	724	48.3%		448	46.7%	277	51.1%	725	48.3%	
	Strongly agree	115	13.2%	115	18.3%	230	15.3%		145	15.1%	85	15.7%	230	15.3%	
Total	871	100.0%	628	100.0%	1499	100.0%		959	100.0%	542	100.0%	1501	100.0%		
People can be influenced to use AM if friends are using it	Strongly disagree	24	2.8%	13	2.1%	37	2.5%	n.s.	25	2.6%	12	2.2%	37	2.5%	n.s.
	Disagree	54	6.2%	54	8.6%	108	7.2%		59	6.2%	50	9.2%	109	7.3%	
	Haven't decided	193	22.1%	133	21.2%	326	21.7%		212	22.1%	115	21.2%	327	21.8%	
	Agree	463	53.1%	307	49.0%	770	51.4%		493	51.5%	277	51.0%	770	51.3%	
	Strongly agree	138	15.8%	120	19.1%	258	17.2%		169	17.6%	89	16.4%	258	17.2%	
Total	872	100.0%	627	100.0%	1499	100.0%		958	100.0%	543	100.0%	1501	100.0%		
Teacher can influence youth's AM use by exposing them to it	Strongly disagree	11	1.3%	22	3.5%	33	2.2%	**	20	2.1%	13	2.4%	33	2.2%	n.s.
	Disagree	41	4.7%	32	5.1%	73	4.9%		51	5.3%	22	4.1%	73	4.9%	
	Haven't decided	199	22.9%	164	26.2%	363	24.3%		243	25.4%	120	22.2%	363	24.2%	
	Agree	481	55.4%	295	47.1%	776	51.9%		477	49.9%	300	55.5%	777	51.9%	
	Strongly agree	137	15.8%	113	18.1%	250	16.7%		165	17.3%	86	15.9%	251	16.8%	
Total	869	100.0%	626	100.0%	1495	100.0%		956	100.0%	541	100.0%	1497	100.0%		
People who believe in the physical, mental and spiritual aspects of health are more likely to use AM	Strongly disagree	66	7.6%	45	7.2%	111	7.4%	**	61	6.4%	50	9.2%	111	7.4%	*
	Disagree	207	23.8%	97	15.5%	304	20.4%		212	22.2%	91	16.8%	303	20.3%	
	Haven't decided	252	29.0%	161	25.8%	413	27.7%		269	28.2%	146	26.9%	415	27.8%	
	Agree	230	26.5%	210	33.6%	440	29.5%		281	29.5%	160	29.5%	441	29.5%	
	Strongly agree	113	13.0%	112	17.9%	225	15.1%		130	13.6%	95	17.5%	225	15.1%	
Total	868	100.0%	625	100.0%	1493	100.0%		953	100.0%	542	100.0%	1495	100.0%		
Those who fear the discomfort of treatment from medical doctors are more likely to use AM	Strongly disagree	86	9.9%	37	5.9%	123	8.2%	**	72	7.5%	50	9.2%	122	8.1%	**
	Disagree	179	20.6%	82	13.1%	261	17.5%		178	18.6%	84	15.5%	262	17.5%	
	Haven't decided	240	27.6%	145	23.2%	385	25.8%		267	27.9%	119	22.0%	386	25.8%	
	Agree	256	29.5%	229	36.6%	485	32.4%		277	29.0%	209	38.6%	486	32.5%	
	Strongly agree	108	12.4%	133	21.2%	241	16.1%		162	16.9%	79	14.6%	241	16.1%	
Total	869	100.0%	626	100.0%	1495	100.0%		956	100.0%	541	100.0%	1497	100.0%		
AM are not harmful	Strongly disagree	8	0.9%	7	1.1%	15	1.0%	**	7	0.7%	8	1.5%	15	1.0%	n.s.
	Disagree	50	5.7%	24	3.8%	74	4.9%		55	5.8%	19	3.5%	74	4.9%	
	Haven't decided	293	33.6%	165	26.3%	458	30.6%		294	30.8%	164	30.1%	458	30.5%	
	Agree	376	43.2%	304	48.5%	680	45.4%		431	45.1%	251	46.1%	682	45.5%	
	Strongly agree	144	16.5%	127	20.3%	271	18.1%		169	17.7%	102	18.8%	271	18.1%	
Total	871	100.0%	627	100.0%	1498	100.0%		956	100.0%	544	100.0%	1500	100.0%		
People are mostly motivated to use AM by television, radio and mass media	Strongly disagree	12	1.4%	8	1.3%	20	1.3%	n.s.	12	1.3%	8	1.5%	20	1.3%	n.s.
	Disagree	36	4.1%	18	2.9%	54	3.6%		45	4.7%	10	1.8%	55	3.7%	
	Haven't decided	144	16.5%	100	16.0%	244	16.3%		158	16.5%	86	15.8%	244	16.3%	
	Agree	449	51.4%	305	48.9%	754	50.3%		478	50.0%	276	50.7%	754	50.3%	
	Strongly agree	233	26.7%	193	30.9%	426	28.4%		263	27.5%	164	30.1%	427	28.5%	
Total	874	100.0%	624	100.0%	1498	100.0%		956	100.0%	544	100.0%	1500	100.0%		

a: Mann-Whitney U-test  
 \*: p < 0.05  
 \*\*: p < 0.01

that teacher can influence youths' AM use by exposing them to it. Though 29.0% of citizens aged 15–34 years old had not decided whether people who believe in the physical, mental and spiritual aspects of health were more likely to use AM, 33.6% of citizens aged 35 years old or elder agreed it. 29.5% of citizens aged 15–34 years old and 36.6% of citizens aged 35 years old or elder agreed that those who fear the discomfort of treatment from medical doctors were more likely to use AM. 43.2% of citizens aged 15–34 years old and 48.5% of citizens aged 35 years old or elder agreed that AM was not harmful. These abovementioned differences were statistically significant.

On the other hand, in terms of gender, although 29.5% of male citizens agreed that people who believe in the physical, mental and spiritual aspects of health were more likely to use AM and 28.2% had not decided, 22.2% disagreed, 29.5% of female citizens agreed and 26.9% had not decided, 17.5% strongly agreed. 29.0% of male citizens and 38.6% of female citizens agreed that those who fear the discomfort of treatment from medical doctors were more likely to use AM, respectively. These above mentioned differences were statistically significant. As a whole 42.7% of respondents agreed that people would be more likely to use AM if there were more AM clinics, with 31.3% strongly agreeing. 46.6% of respondents agreed that AM built up the body's own defenses, with 17.9% strongly agreeing. 41.6% of respondents agreed that the more knowledge a person had of AM, the more likely he/she would use it, with 30.7% strongly agreeing. 48.3% of respondents agreed that parents could influence youths' AM use by exposing them to it, with 15.3% strongly agreeing. 51.3% of respondents agreed that people could be influenced to use AM if friends were using it, with 17.2% strongly agreeing. 50.3% of respondents agreed that people were mostly motivated to use AM by television, radio and mass media, with 28.5% strongly agreeing.

## DISCUSSION

First of all, we conducted this study as cross-sectional study. However, economic development of Bangladesh recently makes progress remarkably. Therefore, this kind of study should be conducted continuously to confirm precisely the perceptions of AM by citizens in Dhaka, Bangladesh. We think this is one of the limitations of the study.

To the best of the authors' knowledge, this is the first study on the perceptions of AM, including herbal medicine by citizens in Dhaka, Bangladesh. This study showed elder citizens had better impressions of AM than younger citizens especially in terms of adverse drug reactions. This study also showed that younger citizens did not get more benefit from AM than elder citizens. On the other hand, younger citizens did not get more harm from AM than elder citizens. Younger citizens were more satisfied with AM and also recommended AM to others more, with statistically significant differences. We think that in terms of effectiveness of AM, the younger generation in Dhaka seems to be more skeptical of AM than the elder generation, even though the younger generation are more satisfied with AM than elder generation. From the viewpoint of enhancement of usage of AM in Dhaka, we think that appropriate information should be delivered vigorously in order to remove the skeptical feeling of AM from younger citizen in Dhaka.

This study also showed that elder citizens thought more that AM providers gave good information on maintaining a healthy lifestyle than younger citizens did. In terms of side effects, elder citizens thought more that herbal medicine had less side effects than younger citizens. In addition, elder citizens thought more that AM involved natural plant formulas which were healthier than taking western medicines. Elder citizens seemed more to believe in the physical, mental and



spiritual aspects of health, were more likely to use AM and also agreed more that those who feared the discomfort of treatment from medical doctors were more likely to use AM. On the other hand, from the viewpoint of gender, there were not so great differences among respondents. In Japan herbal medicine is used to treat patients as not only over-the-counter drugs but also ethical drugs covered by universal health insurance.<sup>6-8)</sup> Recently a lot of studies regarding the safety and efficacy of herbal medicines have been vigorously conducted.<sup>9-13)</sup> The studies regarding safety and efficacy of herbal medicines don't always show that herbal medicines are much safer than western medicine.<sup>14-16)</sup> But we think every kind of information should be delivered, because any kinds of scientific data may become one of the strong tools to enhance the usage of herbal medicine in Bangladesh as well as Asia and the world as the sound evidence.

In addition, the previous studies we conducted in Japan showed that there was a perception gap in medical terms between healthcare worker and citizens.<sup>17-20)</sup> The perception gap also becomes an obstacle to ensuring the healthy lives of citizens with medical care, including AM. Therefore, this issue is also considered by the healthcare workers of Dhaka, Bangladesh.

The results of this study confirmed that the more AM was familiar to the citizens in Dhaka, the more the usage of AM was enhanced and improved. In addition, this study also confirmed that television, radio and mass media had huge impact on the promotion of usage of AM, including herbal medicine.

From the viewpoint of effective utilization of limited medical resource, AM should be used appropriately in Bangladesh, Asia and the world. Therefore, scientifically sound information should be collected rigorously and brought to the citizens vigorously.

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## CONFLICTS OF INTEREST

The authors declare that they have no conflicts of interest.

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