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Use of traditional, complementary and alternative medicine in nine countries: A cross-sectional multinational survey

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ABSTRACT

Objectives: Traditional, complementary, and alternative medicine (TC&AM) play an exceptional role in health care around the world as many patients has sought a holistic approach.
Setting: In this study, a multinational survey was developed and administered to obtain experience, attitude, and promotion information with regard to the international use of TC&AM among nine countries: Germany, United States, Japan, China, Malaysia, Vietnam, Russia, Kazakhstan, and United Arab Emirates (UAE). The survey was administered via online to members of SurveyMonkey Audience, a proprietary panel of respondents who were recruited from a diverse population worldwide.
Results: A total of 1071 participants has completed the survey. The participants were in favor of the treatments and therapies as well as expressed positive attitudes and also have used herbal medicine treatment more than acupuncture therapy and also used the modalities to promote metabolism rather than treating musculoskeletal diseases. Moreover, participants mentioned that TC&AM should be applied for treating and managing infectious diseases, such as COVID-19. Additionally, participants recommended using Facebook channel to promote its treatments and therapies.
Conclusion: Based on the results, this study provides initial insights on TC&AM that may influence the non-users globally and perhaps inspire a need for further research including more countries in different continents.

1. Introduction

In recent decades, traditional, complementary, and alternative medicine (TC&AM) has been growing in health care worldwide.[1] The term TC&AM was chosen based on the explanation and definition from the National Center for Complementary and Integrative Health.[2] TC&AM modalities include medication therapies and nonmedication therapies carried out without the use of medication, such as acupuncture or manual therapy.[3] Interest in TC&AM has been popular to seek reliable information about TC&AM practices and therapies to explore more options in health care, as many patients have sought a holistic approach to treat the whole body in lieu of the symptom base conventional approach.[4] Due to the rapid growth, the value of the global TC&AM market is expected to reach 163.3 billion dollars by 2025.[5]

With regards to the prominence of the role of TC&AM in the healthcare systems across regions, it has also known that Africa, Asia, and Latin America use traditional medicine to help their primary health care needs. In Europe and North America, TC&AM is being used parallel to allopathic medicine, especially for treating and managing chronic disease.[3] Moreover, the negative adverse effects of conventional medicines and the desire for more personalized health care have been the spark for the rapid growth of TC&AM in many countries, which is different than the personalized medicine in conventional medicine.[4]

In contrast to the numerous previous single-country studies,[6–9] which have shown various attitudes, opinions, and differences in TC&AM users and non-users, studies comparing more than one country are scarce. Thus, a multinational approach was sought to systematically investigate the usage of TC&AM among different countries and to fill the

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gap between previous single-country studies. Other than the Fjaer et al. study examined 21 European countries, this study includes the second most countries, nine countries from three different continents, to observe the experience, attitude, and promotion information of TC&AM use at the country-level.[10] The article also surveyed the adequate method of advertising in each country to improve access and utilization since the marketing of healthcare differ through the nature of demand for health services,[11] and digital healthcare marketing has evolved to be significant when advertising health services.[12] Further, this paper explored the possibility of using TC&AM treatments for infectious disease management as a large amount of research work has pointed out that TC&AM was helpful in the era of Coronavirus (COVID-19).[13] Therefore, the potential utilization of TC&AM for treating infectious diseases was asked.

With all that mentioned, this multinational survey of the utilization of TC&AM was developed and administered to examine the current utilization, previous experiences, advertisement methods, and future recommendations of TC&AM in some countries when compared to others among the nine chosen countries: China, Germany, Japan, Kazakhstan, Malaysia, Russia, UAE, U.S., and Vietnam. The nine countries were chosen since each has been noted as having one of the highest prevalence of TC&AM in their health systems.[14]

2. Materials and methods

2.1. Study design

A cross-sectional survey was conducted using online survey software and questionnaire tool service from SurveyMonkey® (SurveyMonkey Inc., US, https://www.surveymonkey.com). The survey was administered to members of SurveyMonkey Audience, a proprietary panel of respondents who are recruited from a diverse population worldwide; the panels voluntarily join a program to take surveys and to be included as a member of the audience.[15] SurveyMonkey sent email invitations to a random sample of Audience members in Germany, U.S, Japan, China, Malaysia, Vietnam, Russia, Kazakhstan, and UAE on the 6th of January 2021. The nine countries were chosen after the authors analyzed the World Health Organization (WHO) Global Report on Traditional and Complementary Medicine 2019 and identified as the fastest growing countries for utilizing complementary and alternative medicine.[14] The aimed sample size was 120 for each country, with the available funding to purchase responses via SurveyMonkey. Depending on the number of panels available per country, the cost of response varies among the selected countries. Thus, only 50 SurveyMonkey panels were available from UAE. On the other hand, 179 U.S. panels' responses were available to purchase for this study. Overall, a total of 1071 panels were available to complete and participate in the survey.

2.2. Ethical consideration

All participants had to acknowledge by clicking a box within the SurveyMonkey that the data would only be used for research purposes only that all responses were confidential. This study involved no more than minimal risk to human subjects. For this reason, this study was exempt from the Institution Review Board (IRB) review by the IRB of Kyung Hee University (No. KHSIRB-20-562-EA). In addition, the participants volunteered to complete the survey among the recruited audience from SurveyMonkey.

2.3. Survey content

The questionnaire was designed based on a combination of the 2017 Korean Medicine Utilization and Herbal Medicine Consumption Survey,[16] and in-depth consultations from Korean medicine physicians. Before inviting SurveyMonkey® Audience members to take our survey, the survey draft was distributed to users in Korea for feedback on item clarity, adequacy of response options, and other topics of interest. Twenty respondents took the draft survey online and provided feedback via open-ended text boxes for each item. The survey was subsequently refined. The final survey questionnaire was translated into languages of each country through the native speakers. The definitions and modalities of TC&AM from the National Cancer Institute was provided before starting the survey.[17]

2.4. Experience of TC&AM

The questions for the experience of TC&AM were organized as follows: have you heard of TC&AM before, are you taking any herbal medicine or dietary supplements as of now, and have you ever experienced any of TC&AM previously. If the participants answered 'no' to the last question of the section, reasons for not using were asked. If the participants answered 'yes', the rest of the four questions were as followed: what are the reasons for using, which type of TC&AM have you used the most, how often do you use, and which disease or condition do you seek treatments from TC&AM practitioners.

2.5. Attitude toward TC&AM

The attitude toward TC&AM part of the survey asked five questions to the participants. The first question was about related to the type of medical institutions considered for the first visit when ill. The second question asked about the safety of using TC&AM, and the third was about the general cost of TC&AM therapies. The last two questions were asked for the opinions on the feasible utilization of TC&AM therapies for COVID-19 patients, along with the appropriateness of using TC&AM therapies to treat infectious diseases, including COVID-19.

2.6. Promotion of TC&AM

The last part of the survey dealt with the promotion of TC&AM. This section was created to primarily seek an idea of possible advertisement methods used in each country. There were four questions to ask: where did you first hear about TC&AM, what do you think is the best method to advertise in your country if using social media channels to promote TC&AM in your country, which channel is the most useful, and participants' current use of social media channels.

2.7. Statistical analysis

Descriptive statistics were used to summarize the data in an organized manner. The purpose of the logistics regression analysis was to determine the influence factors of the utilization of TC&AM within each country's characteristics. The dependent variable was chosen as the utilization of TC&AM. The independent variables were chosen as gender, age, marital status, level of education, household income and residence location. The statistical analysis was done by using Microsoft Excel and the R software (version 4.0.3, http://r-project.org/).

3. Results

3.1. General characteristics of respondents

Among the nine countries, a total of 1071 participants have completed the survey (Table 1). The participants from the United States (US) had the largest number (n = 179, 16.7 %). There were only slight differences between females (n = 530, 49.5 %) and males (n = 541, %), yet male participants indicated a higher number. The highest number of participants was 337 (31.5 %) from the 20–29 years group. The majority of the participants were married (n = 658, 61.4 %) and had bachelor's degrees (n = 542, 50.6 %). Additionally, 488 participants (45.6 %) had less than $30,000 of household income, and 864 of the total participants (80.7 %) were currently living in the city.

Table 1
Demographic characteristics of the 1071 participants.

	Total, n (%)	China, n (%)	Germany, n (%)	Japan, n (%)	Kazakhstan, n (%)	Malaysia, n (%)	Russia, n (%)	UAE, n (%)	US, n (%)	Vietnam, n (%)
Participated	**1071 (100 %)**	121 (11.3 %)	120 (11.2 %)	120 (11.2 %)	121 (11.3 %)	120 (11.2 %)	120 (11.2 %)	50 (4.7 %)	**179 (16.7 %)**	120 (11.2 %)
Gender										
Female	530 (49.5 %)	60 (49.6 %)	49 (40.8 %)	**64 (53.3 %)**	**65 (53.7 %)**	48 (40.0 %)	**67 (55.8 %)**	20 (40.0 %)	**100 (55.9 %)**	57 (47.5 %)
Male	**541 (50.5 %)**	**61 (50.4 %)**	**71 (59.2 %)**	56 (46.7 %)	56 (46.3 %)	**72 (60.0 %)**	53 (44.2 %)	**30 (60.0 %)**	79 (44.1 %)	**63 (52.5 %)**
Age										
20–29	**337 (31.5 %)**	36 (29.8 %)	**71 (59.2 %)**	**42 (35.0 %)**	**42 (34.7 %)**	**45 (37.5 %)**	25 (20.8 %)	12 (24.0 %)	**41 (22.9 %)**	23 (19.2 %)
30–39	323 (30.2 %)	**39 (32.2 %)**	33 (27.5 %)	23 (19.2 %)	40 (33.1 %)	35 (29.2 %)	**42 (35.0 %)**	**27 (54.0 %)**	33 (18.4 %)	**51 (42.5 %)**
40–49	219 (20.4 %)	20 (16.5 %)	6 (5.0 %)	23 (19.2 %)	22 (18.2 %)	30 (25.0 %)	32 (26.7 %)	8 (16.0 %)	38 (21.2 %)	40 (41.7 %)
50–59	132 (12.3 %)	24 (19.8 %)	6 (5.0 %)	19 (15.8 %)	13 (10.7 %)	8 (6.7 %)	16 (13.3 %)	1 (0.2 %)	**41 (22.9 %)**	4 (3.3 %)
60–69	53 (4.9 %)	2 (1.7 %)	2 (1.7 %)	13 (10.8 %)	4 (3.3 %)	2 (1.7 %)	5 (4.2 %)	2 (4.0 %)	21 (11.7 %)	2 (1.7 %)
70 and over	7 (0.7 %)	0 (0.0 %)	2 (1.7 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	5 (2.8 %)	0 (0.0 %)
Marital Status										
Married	**658 (61.4 %)**	**97 (80.2 %)**	44 (36.7 %)	55 (45.8 %)	**69 (57.0 %)**	**76 (63.3 %)**	**82 (68.3 %)**	**39 (78.0 %)**	**97 (54.2 %)**	**99 (82.5 %)**
Not Married	413 (38.6 %)	24 (19.8 %)	**76 (63.3 %)**	**65 (54.2 %)**	52 (43.0 %)	44 (36.7 %)	38 (31.7 %)	11 (20.0 %)	82 (45.8 %)	21 (17.5 %)
Level of Education										
Less than high school	70 (6.5 %)	4 (3.3 %)	36 (30.0 %)	7 (5.8 %)	6 (5.0 %)	3 (2.5 %)	2 (1.7 %)	0 (0.0 %)	10 (5.6 %)	2 (1.7 %)
High school graduate	310 (28.9 %)	9 (7.4 %)	**52 (43.3 %)**	49 (40.8 %)	45 (37.2 %)	39 (32.5 %)	34 (28.3 %)	7 (14.0 %)	62 (34.6 %)	13 (10.8 %)
Bachelor's degree graduate	**542 (50.6 %)**	**105 (86.8 %)**	20 (16.7 %)	**52 (43.3 %)**	**54 (44.6 %)**	**55 (45.8 %)**	**45 (37.5 %)**	**29 (58.0 %)**	**81 (45.3 %)**	**101 (84.2 %)**
Master's degree graduate	131 (12.2 %)	3 (2.5 %)	9 (7.5 %)	5 (4.2 %)	15 (12.4 %)	20 (16.7 %)	37 (30.8 %)	14 (28.0 %)	25 (14.0 %)	3 (2.5 %)
Ph. D. graduate	18 (1.7 %)	0 (0.0 %)	3(2.5 %)	7 (5.8 %)	1 (0.8 %)	3 (2.5 %)	2 (1.7 %)	0 (0.0 %)	1 (0.6 %)	1 (0.8 %)
Household Income (In U.S. Dollars)										
Less than $30,000	**488 (45.6 %)**	24 (19.8 %)	**53 (44.2 %)**	**62 (51.7 %)**	**106 (87.6 %)**	**73 (60.8 %)**	**61 (50.8 %)**	13 (26.0 %)	50 (27.9 %)	**46 (38.3 %)**
$30,000 ~ $49,000	297 (27.7 %)	**48 (39.7 %)**	31(25.8 %)	30 (25.0 %)	12 (9.9 %)	31 (25.8 %)	41 (34.2 %)	**26 (52.0 %)**	33 (18.4 %)	45 (37.5 %)
$50,000 ~ $74,999	168 (15.7 %)	28 (23.1 %)	26 (21.7 %)	21 (17.5 %)	3 (2.5 %)	8 (6.7 %)	13 (10.8 %)	6 (12.0 %)	40 (22.3 %)	23 (19.2 %)
$75,000 and over	118 (11.0 %)	21 (17.4 %)	10 (8.3 %)	7 (5.8 %)	0(0.0 %)	8 (6.7 %)	5 (4.2 %)	5 (10.0 %)	**56 (31.3 %)**	6 (5.0 %)
Residency										
City	**864 (80.7 %)**	**115 (95.0 %)**	**97 (80.8 %)**	**61(50.8 %)**	**101 (83.5 %)**	**99 (82.5 %)**	**116 (96.7 %)**	**47 (94.0 %)**	**114 (63.7 %)**	**114 (95.0 %)**
Rural Area	207 (19.3 %)	6 (5.0 %)	23 (19.2 %)	59 (49.2 %)	20 (16.5 %)	21 (17.5 %)	4 (3.3 %)	3 (6.0 %)	65 (36.3 %)	6 (5.0 %)

3.2. Experience of TC&AM

As shown in Table 2, more than 50 % of the participants have heard of TC&AM (n = 608, 56.8 %), have been taking herbal products, including functional health food or dietary supplements (n = 601, 56.1 %), and also have experienced any TC&AM modalities (n = 539, 50.3 %). The participants, who have expressed no experience with TC&AM, indicated a lack of information on TC&AM for the reason of not using (n = 222, 20.7 %). Participants with experiences have mentioned the effectiveness of the treatments or therapies of TC&AM (n = 241, 22.5 %); have used herbal medicine treatments the most (n = 174, 16.2 %); have used TC&AM treatments or therapies at least one to two times per month (n = 158, 14.8 %) and have visited TC&AM clinics for musculoskeletal conditions the most (n = 146, 13.6 %).

3.3. Attitude toward TC&AM

Three hundred and thirty-seven participants have said that a primary care physician was the first person in contact with when feeling ill (31.5 %), and only 111 participants would initially consider visiting TC&AM clinics for illnesses (10.4 %; Table 3). Relatively large participants have responded that the TC&AM treatments or therapies are safe (n = 812, 75.8 %), and 441 participants have mentioned that the cost of the treatments or therapies is reasonable (41.2 %). More than half of the participants have positively expressed the use of TC&AM treatments or therapies for treating infectious diseases (n = 621, 58.0 %) and utilizing TC&AM modalities in medical institutions for treating coronavirus patients (n = 504, 47.1 %).

3.4. Promotion of TC&AM

According to Table 4, the US participants have indicated a friend of a member of the family was the source for the first introduction of TC&AM (n = 60, 33.5 %), and participants from other countries mentioned that online was the first source. Therefore, 484 of the total participants responded that the first introduction to TC&AM was online (45.2 %). Participants from Japan responded that promoting via TV commercials was the best method (n = 41, 34.2 %), and all other participants from the eight countries chose social media channels as the best method to promote within each country. Instagram was chosen as the best social media channel to promote TC&AM by participants from Germany, Kazakhstan, and Russia; Facebook was chosen by participants from Malaysia, UAE,

Table 2
Responses to questions regarding experience of traditional, complementary and integrative medicine.

Question	Total, n (%)	China, n (%)	Germany, n (%)	Japan, n (%)	Kazakhstan, n (%)	Malaysia, n (%)	Russia, n (%)	UAE, n (%)	US, n (%)	Vietnam, n (%)
Participated	**1071 (100 %)**	121 (11.3 %)	120 (11.2 %)	120 (11.2 %)	121 (11.3 %)	120 (11.2 %)	120 (11.2 %)	50 (4.7 %)	179 (16.7 %)	120 (11.2 %)
Have you heard of TC&AM?										
Yes	**608 (56.8 %)**	**105 (86.8 %)**	**69 (57.5 %)**	22 (18.3 %)	54 (44.6 %)	**69 (57.5 %)**	**69 (57.5 %)**	**39 (78.0 %)**	71 (39.7 %)	**110 (91.7 %)**
No	463 (43.2 %)	16 (13.2 %)	51 (42.5 %)	**98 (81.7 %)**	**67 (55.4 %)**	51 (42.5 %)	51 (42.5 %)	11 (22.0 %)	**108 (60.3 %)**	10 (8.3 %)
Are you currently taking any herbal products or dietary supplements?										
Yes	**601 (56.1 %)**	**68 (56.2 %)**	**78 (65.0 %)**	38 (31.7 %)	45 (37.2 %)	**87 (72.5 %)**	**71 (59.2 %)**	24 (48.0 %)	85 (47.5 %)	**105 (87.5 %)**
No	470 (43.9 %)	53 (43.8 %)	42 (35.0 %)	**82 (68.3 %)**	**76 (62.8 %)**	33 (27.5 %)	49 (40.8 %)	**26 (52.0 %)**	**94 (52.5 %)**	15 (12.5 %)
Have you ever experienced any of TC&AM previously?										
Yes	**539 (50.3 %)**	**94 (77.7 %)**	57 (47.5 %)	21 (17.5 %)	51 (42.1 %)	52 (43.3 %)	**63 (52.5 %)**	24 (48.0 %)	74 (41.3 %)	**103 (85.8 %)**
No	532 (49.7 %)	27 (22.3 %)	**63 (52.5 %)**	**99 (82.5 %)**	**70 (57.9 %)**	**68 (56.7 %)**	57 (47.5 %)	**26 (52.0 %)**	**105 (58.7 %)**	17 (14.2 %)
If answered No, what are the reasons for not using?										
No information of TC&AM	**222 (20.7 %)**	6 (5.0 %)	**23 (19.2 %)**	29 (24.2 %)	**39 (32.2 %)**	**28 (23.3 %)**	**27 (22.5 %)**	**12 (24.0 %)**	51 (28.5 %)	**7 (5.8 %)**
TC&AM may be expensive	81 (7.6 %)	6 (5.0 %)	18 (15.0 %)	9 (7.5 %)	5 (4.1 %)	12 (10.0 %)	2 (1.7 %)	9 (18.0 %)	14 (7.8 %)	6 (5.0 %)
Worrisome of safety	77 (7.2 %)	**10 (8.3 %)**	9 (7.5 %)	23 (19.2 %)	4 (3.3 %)	14 (11.7 %)	9 (7.5 %)	3 (6.0 %)	4 (2.2 %)	1 (0.8 %)
TC&AM therapies are too much	38 (3.5 %)	3 (2.5 %)	0 (0.0 %)	2 (1.7 %)	9 (7.4 %)	3 (2.5 %)	11 (9.2 %)	0 (0.0 %)	7 (3.9 %)	3 (2.5 %)
Feeling no need of TC&AM	114 (10.6 %)	2 (1.7 %)	13 (10.8 %)	**36 (30.0 %)**	13 (10.7 %)	11 (9.2 %)	8 (6.7 %)	2 (4.0 %)	**29 (16.2 %)**	0 (0.0 %)
If answered Yes, what are the reasons for using?										
Treatments or therapies are effective	**241 (22.5 %)**	**41 (33.9 %)**	**33 (27.5 %)**	**8 (6.7 %)**	14 (11.6 %)	**23 (19.2 %)**	22 (18.3 %)	**13 (26.0 %)**	3 (16.8 %)	**57 (47.5 %)**
No burden on getting surgery or extra tests	85 (7.9 %)	14 (11.6 %)	11 (9.2 %)	2 (1.7 %)	8 (6.6 %)	14 (11.7 %)	4 (3.3 %)	7 (14.0 %)	8 (4.5 %)	17 (14.2 %)
Less side-effects	143 (13.4 %)	35 (28.9 %)	9 (7.5 %)	5 (4.2 %)	**18 (14.9 %)**	8 (6.7 %)	**26 (21.7 %)**	3 (6.0 %)	**17 (9.5 %)**	22 (18.3 %)
Close distance	14 (1.3 %)	1 (0.8 %)	0 (0.0 %)	3 (2.5 %)	3 (2.5 %)	1 (0.8 %)	0 (0.0 %)	0 (0.0 %)	4 (2.2 %)	2 (1.7 %)
Offer specialized treatments or therapies	56 (5.2 %)	3 (2.5 %)	4 (3.3 %)	3 (2.5 %)	8 (6.6 %)	6 (5.0 %)	11 (9.2 %)	1 (2.0 %)	15 (8.4 %)	5 (4.2 %)
If answered Yes, which type of TC&AM have you used the most?										
Acupuncture therapy	152 (14.2 %)	34 (28.1 %)	**15 (12.5 %)**	**8 (6.7 %)**	6 (5.0 %)	12 (10.0 %)	16 (13.3 %)	3 (6.0 %)	12 (6.7 %)	**46 (38.3 %)**
Chiropractic	72 (6.7 %)	4 (3.3 %)	8 (6.7 %)	4 (3.3 %)	1 (0.8 %)	2 (1.7 %)	2 (1.7 %)	5 (10.0 %)	**30 (16.8 %)**	16 (13.3 %)
Meditation,	45 (4.2 %)	2 (1.7 %)	8 (6.7 %)	2 (1.7 %)	3 (2.5 %)	3 (2.5 %)	4 (3.3 %)	4 (8.0 %)	13 (7.3 %)	6 (5.0 %)
Yoga, tai chi, and massage	76 (7.1 %)	11 (9.1 %)	14 (11.7 %)	3 (2.5 %)	10 (8.3 %)	11 (9.2 %)	6 (5.0 %)	4 (8.0 %)	9 (5.0 %)	8 (6.7 %)
Qi-gong	9 (0.8 %)	3 (2.5 %)	2 (1.7 %)	2 (1.7 %)	1 (0.8 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	1 (0.8 %)
Herbal medicine	**174 (16.2 %)**	**39 (32.2 %)**	4 (3.3 %)	2 (1.7 %)	**29 (24.0 %)**	**23 (19.2 %)**	**34 (28.3 %)**	**8 (16.0 %)**	9 (5.0 %)	26 (21.7 %)
Hypnosis	6 (0.6 %)	0 (0.0 %)	5 (4.2 %)	0 (0.0 %)	1 (0.8 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)
Visualization and guided imagery	5 (0.5 %)	1 (0.8 %)	1 (0.8 %)	0 (0.0 %)	0 (0.0 %)	1 (0.8 %)	1 (0.8 %)	0 (0.0 %)	1 (0.6 %)	0 (0.0 %)
If answered Yes, how often do you use?										
More than 3 times per week	58 (5.4 %)	7 (5.8 %)	8 (6.7 %)	3(5.2 %)	2 (1.7 %)	10 (8.3 %)	7 (5.8 %)	2 (4.0 %)	7 (3.9 %)	12 (10.0 %)
1–2 times per week	139 (13.0 %)	29 (24.0 %)	14 (11.7 %)	4(2.9 %)	5 (4.1 %)	**17 (14.2 %)**	9 (7.5 %)	7 (14.0 %)	**20 (11.2 %)**	34 (28.3 %)
1–2 times per month	**158 (14.8 %)**	**36 (29.8 %)**	**20 (16.7 %)**	**9(5.7 %)**	8 (6.6 %)	13 (10.8 %)	8 (6.7 %)	**8 (16.0 %)**	17 (9.5 %)	**39 (32.5 %)**
1–2 times per year	128 (12.0 %)	18 (14.9 %)	9 (7.5 %)	4(3.1 %)	**27 (22.3 %)**	8 (6.7 %)	**29 (24.2 %)**	5 (10.0 %)	15 (8.4 %)	13 (10.8 %)
3–4 times per year	56 (5.2 %)	4 (3.3 %)	6 (5.0 %)	1(1.8 %)	9 (7.4 %)	4 (3.3 %)	10 (8.3 %)	2 (4.0 %)	15 (8.4 %)	5 (4.2 %)
If answered Yes, which disease or condition do you seek treatments from TC&AM practitioners?										
Musculoskeletal diseases	**146 (13.6 %)**	13 (10.7 %)	14 (11.7 %)	**5(3.4 %)**	8 (6.6 %)	13 (10.8 %)	11 (9.2 %)	2 (4.0 %)	**19 (10.6 %)**	**61 (50.8 %)**
Mental diseases	62 (5.8 %)	6 (5.0 %)	**15 (12.5 %)**	2(3.2 %)	3 (2.5 %)	2 (1.7 %)	2 (1.7 %)	3 (6.0 %)	16 (8.9 %)	13 (10.8 %)
			12 (10.0 %)	4(2.9 %)	**17 (14.0 %)**	**16 (13.3 %)**				19 (15.8 %)

(*continued on next page*)

Table 2 (*continued*)

Question	Total, n (%)	China, n (%)	Germany, n (%)	Japan, n (%)	Kazakhstan, n (%)	Malaysia, n (%)	Russia, n (%)	UAE, n (%)	US, n (%)	Vietnam, n (%)
Promote metabolism and immune system	136 (12.7 %)	**35 (28.9 %)**					**16 (13.3 %)**	**6 (12.0 %)**	11 (6.1 %)	
Sprains, bruises and muscle strains	81 (7.6 %)	22 (18.2 %)	9 (7.5 %)	2(2.5 %)	2 (1.7 %)	11 (9.2 %)	4 (3.3 %)	4 (8.0 %)	17 (9.5 %)	10 (8.3 %)
Simple cold conditions	51 (4.8 %)	9 (7.4 %)	2 (1.7 %)	3(5.9 %)	10 (8.3 %)	3 (2.5 %)	16 (13.3 %)	7 (14.0 %)	1 (0.6 %)	0 (0.0 %)
Rehabilitation after surgery	24 (2.2 %)	2 (1.7 %)	2 (1.7 %)	2(8.3 %)	4 (3.3 %)	5 (4.2 %)	4 (3.3 %)	1 (2.0 %)	4 (2.2 %)	0 (0.0 %)
Geriatric conditions	5 (0.5 %)	0 (0.0 %)	2 (1.7 %)	0(0.0 %)	0 (0.0 %)	1 (0.8 %)	0 (0.0 %)	1 (2.0 %)	1 (0.6 %)	0 (0.0 %)
Chronic disease conditions	34 (3.2 %)	7 (5.8 %)	1 (0.8 %)	3(8.8 %)	7 (5.8 %)	1 (0.8 %)	10 (8.3 %)	0 (0.0 %)	5 (2.8 %)	0 (0.0 %)

Table 3
Responses to questions regarding attitude of traditional, complementary and integrative medicine.

Question	Total, n (%)	China, n (%)	Germany, n (%)	Japan, n (%)	Kazakhstan, n (%)	Malaysia, n (%)	Russia, n (%)	UAE, n (%)	US, n (%)	Vietnam, n (%)
Participated	**1071 (100 %)**	121 (11.3 %)	120 (11.2 %)	120 (11.2 %)	121 (11.3 %)	120 (11.2 %)	120 (11.2 %)	50 (4.7 %)	179 (16.7 %)	120 (11.2 %)
When you feel ill, which medical institution do you visit first?										
Primary care physician clinic	**337 (31.5 %)**	3 (2.5 %)	**88 (73.3 %)**	5 (4.2 %)	46 (38.0 %)	9 (7.5 %)	**54 (45.0 %)**	8 (16.0 %)	**109 (60.9 %)**	15 (12.5 %)
Local western medicine clinic	287 (26.8 %)	23 (19.0 %)	8 (6.7 %)	36 (30.0 %)	**48 (39.7 %)**	**55 (45.8 %)**	51 (42.5 %)	14 (28.0 %)	34 (19.0 %)	18 (15.0 %)
Traditional, Complementary, and Integrative Medicine Clinic	111 (10.4 %)	22 (18.2 %)	10 (8.3 %)	5 (4.2 %)	1 (0.8 %)	16 (13.3 %)	0 (0.0 %)	9 (18.0 %)	10 (5.6 %)	38 (31.7 %)
Hospital	286 (26.7 %)	**70 (57.9 %)**	12 (10.0 %)	**65 (54.2 %)**	23 (19.0 %)	30 (25.0 %)	9 (7.5 %)	**17 (34.0 %)**	13 (7.3 %)	**47 (39.2 %)**
Public health center	36 (3.4 %)	3 (2.5 %)	2 (1.7 %)	6 (5.0 %)	0 (0.0 %)	9 (7.5 %)	3 (2.5 %)	2 (4.0 %)	9 (5.0 %)	2 (1.7 %)
Others	14 (1.3 %)	0 (0.0 %)	0 (0.0 %)	3 (2.5 %)	3 (2.5 %)	1 (0.8 %)	3 (2.5 %)	0 (0.0 %)	4 (2.2 %)	0 (0.0 %)
Do you think that TC&AM treatments are safe?										
Yes	**812 (75.8 %)**	**108 (89.3 %)**	**89 (74.2 %)**	47 (39.2 %)	**80 (66.1 %)**	**105 (87.5 %)**	**83 (69.2 %)**	**45 (90.0 %)**	**142 (79.3 %)**	**113 (94.2 %)**
No	259 (24.2 %)	13 (10.7 %)	31 (25.8 %)	**73 (60.8 %)**	41 (33.9 %)	15 (12.5 %)	37 (30.8 %)	5 (10.0 %)	37 (20.7 %)	7 (5.8 %)
Have you felt that TC&AM treatments are generally expensive?										
Expensive	256 (23.9 %)	21 (17.4 %)	33 (27.5 %)	**62 (51.7 %)**	14 (11.6 %)	21 (17.5 %)	24 (20.0 %)	13 (26.0 %)	52 (29.1 %)	16 (13.3 %)
Reasonable	**441 (41.2 %)**	**65 (53.7 %)**	**47 (39.2 %)**	20 (16.7 %)	33 (27.3 %)	**52 (43.3 %)**	**54 (45.0 %)**	**25 (50.0 %)**	60 (33.5 %)	**85 (70.8 %)**
Inexpensive	56 (5.2 %)	5 (4.1 %)	10 (8.3 %)	10 (8.3 %)	11 (9.1 %)	5 (4.2 %)	4 (3.3 %)	0 (0.0 %)	6 (3.4 %)	5 (4.2 %)
Depends on treatment modalities	318 (29.7 %)	30 (24.8 %)	30 (25.0 %)	28 (23.3 %)	**63 (52.1 %)**	42 (35.0 %)	38 (31.7 %)	12 (24.0 %)	**61 (34.1 %)**	14 (11.7 %)
Do you think that TC&AM treatments should be used in medical institutions for treating COVID-19 patients?										
Yes	**621 (58.0 %)**	**79 (65.3 %)**	**76 (63.3 %)**	49 (40.8 %)	**63 (52.1 %)**	**71 (59.2 %)**	55 (45.8 %)	**39 (78.0 %)**	**99 (55.3 %)**	**90 (75.0 %)**
No	450 (42.0 %)	42 (34.7 %)	44 (36.7 %)	**71 (59.2 %)**	58 (47.9 %)	49 (40.8 %)	**65 (54.2 %)**	11 (22.0 %)	80 (44.7 %)	30 (25.0 %)
Do you think that TC&AM treatments are suitable to treat infectious diseases (such as COVID-19, etc.)?										
Yes	**567 (52.9 %)**	**80 (66.1 %)**	**68 (56.7 %)**	40 (33.3 %)	59 (48.8 %)	**64 (53.3 %)**	54 (45.0 %)	**38 (76.0 %)**	84 (46.9 %)	**80 (66.7 %)**
No	504 (47.1 %)	41 (33.9 %)	52 (43.3 %)	**80 (66.7 %)**	**62 (51.2 %)**	56 (46.7 %)	**66 (55.0 %)**	12 (24.0 %)	**95 (53.1 %)**	40 (33.3 %)

the US, and Vietnam. Participants from China indicated that Twitter is the best method; however, this result may be obsolete as China has banned all social media channels established out of the territory.[18] YouTube was ranked as the first for most utilization by the participants (n = 739, 69.0 %), and Instagram was chosen as the second-highest (n = 690, 64.4 %).

3.5. Single variable logistics regression analysis

A single variable regression analysis was based on the ever-experienced TC&AM question. The chosen categories were gender, age, marital status, level of education, household income, and residence location (Table 5). Participants from China, who have a household income between 30,000 USD and 49,000 USD (OR 9.42, 95 % CI [2.1, 42.22]), are likely to use TC&AM versus those who earn less than 30,000

Table 4
Responses to questions regarding promotion of traditional, complementary and integrative medicine.

Question	Total, n (%)	China, n (%)	Germany, n (%)	Japan, n (%)	Kazakhstan, n (%)	Malaysia, n (%)	Russia, n (%)	UAE, n (%)	US, n (%)	Vietnam, n (%)
Participated	**1071 (100 %)**	121 (11.3 %)	120 (11.2 %)	120 (11.2 %)	121 (11.3 %)	120 (11.2 %)	120 (11.2 %)	50 (4.7 %)	179 (16.7 %)	120 (11.2 %)
Where did you first hear about TC&AM?										
Online (Internet)	**484 (45.2 %)**	**52 (43.0 %)**	**51 (42.5 %)**	**45 (37.5 %)**	**73 (60.3 %)**	**70 (58.3 %)**	**51 (42.5 %)**	**28 (56.0 %)**	55 (30.7 %)	**59 (49.2 %)**
Off-line	89 (8.3 %)	10 (8.3 %)	10 (8.3 %)	20 (16.7 %)	8 (6.6 %)	5 (4.2 %)	9 (7.5 %)	2 (4.0 %)	18 (10.1 %)	7 (5.8 %)
Friends or family	329 (30.7 %)	43 (35.5 %)	40 (33.3 %)	26 (21.7 %)	28 (23.1 %)	32 (26.7 %)	42 (35.0 %)	16 (32.0 %)	**60 (33.5 %)**	42 (35.0 %)
Other patients	52 (4.9 %)	9 (7.4 %)	4 (3.3 %)	8 (6.7 %)	5 (4.1 %)	3 (2.5 %)	5 (4.2 %)	3 (6.0 %)	8 (4.5 %)	7 (5.8 %)
Primary care physician	48 (4.5 %)	4 (3.3 %)	7 (5.8 %)	7 (5.8 %)	5 (4.1 %)	5 (4.2 %)	4 (3.3 %)	0 (0.0 %)	11 (6.1 %)	5 (4.2 %)
Others	69 (6.4 %)	3 (2.5 %)	8 (6.7 %)	14 (11.7 %)	2 (1.7 %)	5 (4.2 %)	9 (7.5 %)	1 (2.0 %)	27 (15.1 %)	0 (0.0 %)
What do you think the best method to advertise in your country?										
Magazine and local newspaper	99 (9.2 %)	14 (11.6 %)	8 (6.7 %)	26 (21.7 %)	5 (4.1 %)	11 (9.2 %)	8 (6.7 %)	3 (6.0 %)	14 (7.8 %)	10 (5.6 %)
Social media channels	**566 (52.8 %)**	**60 (50.0 %)**	**57 (47.5 %)**	30 (25.0 %)	**87 (71.9 %)**	**76 (63.3 %)**	**56 (46.7 %)**	**41 (34.2 %)**	**97 (54.2 %)**	**62 (51.7 %)**
TV commercials	268 (25.0 %)	36 (30.0 %)	33 (27.5 %)	**41 (34.2 %)**	22 (18.2 %)	21 (17.5 %)	42 (35.0 %)	4 (8.0 %)	37 (20.7 %)	32 (26.7 %)
Radio channels	41 (3.8 %)	1 (0.8 %)	9 (7.5 %)	8 (6.7 %)	1 (0.8 %)	6 (5.0 %)	2 (1.7 %)	2 (5.0 %)	7 (3.9 %)	5 (4.2 %)
Email marketing	22 (2.1 %)	0 (0.0 %)	4 (3.3 %)	4 (3.3 %)	0 (0.0 %)	1 (0.58 %)	2 (1.7 %)	0 (0.0 %)	10 (5.6 %)	1 (0.58 %)
Word of mouth marketing	75 (7.0 %)	10 (8.3 %)	9 (7.5 %)	11 (9.2 %)	6 (5.0 %)	5 (4.2 %)	10(13.3 %)	0 (0.0 %)	14 (7.8 %)	10 (8.3 %)
If using social media channels to promote TC&AM in your country, which channel is the most useful?										
Instagram	302 (28.2 %)	14(11.6 %)	**50 (41.7 %)**	22 (18.3 %)	**83 (68.6 %)**	18 (15.0 %)	**60 (50.0 %)**	13 (26.0 %)	39 (21.8 %)	3 (2.5 %)
Facebook	**361 (33.7 %)**	17 (14.0 %)	25 (20.8 %)	14 (11.7 %)	15 (12.4 %)	**74 (61.7 %)**	14 (11.7 %)	**23 (46.0 %)**	**94 (52.5 %)**	**85 (70.8 %)**
Twitter	106 (9.9 %)	**38 (31.4 %)**	9 (7.5 %)	29 (24.2 %)	3 (2.5 %)	7 (5.8 %)	3 (2.5 %)	3 (6.0 %)	12 (6.7 %)	2 (1.7 %)
YouTube	245 (22.9 %)	9 (7.4 %)	32 (26.7 %)	**53 (44.2 %)**	18 (14.9 %)	20 (16.7 %)	41 (34.2 %)	11 (22.0 %)	31 (17.3 %)	30 (25.0 %)
Tumblr	8 (0.7 %)	1 (0.8 %)	3 (2.5 %)	0 (0.0 %)	1 (0.8 %)	0 (0.0 %)	1 (0.58 %)	0 (0.0 %)	2 (1.1 %)	0 (0.0 %)
LinkedIn	32 (3.0 %)	25 (20.7 %)	1 (0.8 %)	2 (1.7 %)	1 (0.8 %)	1 (0.58 %)	1 (0.58 %)	0 (0.0 %)	1 (0.6 %)	0 (0.0 %)
Which social media channels are you current using? (multiple answers are allowed)										
Instagram	690 (64.4 %)	32 (26.4 %)	85 (70.8 %)	51 (42.5 %)	98 (81.0 %)	93 (77.5 %)	94 (78.3 %)	37 (74.0 %)	112 (62.6 %)	88 (73.3 %)
Facebook	660 (61.6 %)	42 (34.7 %)	70 (58.3 %)	33 (27.5 %)	55 (45.5 %)	**112 (93.3 %)**	65 (54.2 %)	41 (82.0 %)	**126 (70.4 %)**	**116 (96.7 %)**
Twitter	396 (37.0 %)	35 (28.9 %)	43 (35.8 %)	53 (44.2 %)	17 (14.0 %)	65 (54.2 %)	27 (22.5 %)	26 (52.0 %)	76 (42.5 %)	54 (45.0 %)
YouTube	**739 (69.0 %)**	19 (15.7 %)	**91 (75.8 %)**	**64 (53.3 %)**	**104 (86.0 %)**	99 (82.5 %)	**100 (83.3 %)**	**42 (84.0 %)**	115 (64.2 %)	105 (87.5 %)
Tumblr	95 (8.9 %)	14 (11.6 %)	10 (8.3 %)	2 (1.7 %)	4 (3.3 %)	22 (18.3 %)	5 (4.2 %)	10 (20.0 %)	16 (8.9 %)	12 (10.0 %)
LinkedIn	228 (21.3 %)	**53 (43.8 %)**	18 (15.0 %)	6 (5.0 %)	11 (9.1 %)	36 (30.0 %)	5 (4.2 %)	28 (56.0 %)	53 (29.6 %)	18 (15.0 %)
Not using any social media channels	68 (6.3 %)	19 (15.7 %)	5 (41.7 %)	27 (22.5 %)	2 (1.7 %)	1 (0.58 %)	5 (4.2 %)	0 (0.0 %)	7 (3.9 %)	2 (1.7 %)
Others	65 (6.1 %)	11 (9.1 %)	6 (5.0 %)	3 (2.5 %)	15 (12.4 %)	3 (2.5 %)	16 (13.3 %)	1 (2.0 %)	8 (4.5 %)	2 (1.7 %)

USD. Married participants (OR 2.88, 95 % CI [1.17, 7.08]) from Germany were to use TC&AM versus not married participants. For the participants who have master's degrees or above among the participants from Japan (OR 18.81, 95 % CI [1.63, 216.95]) and have had less than high school education (OR 11.95, 95 % CI [1.07, 132.93]) was more likely to use TC&AM when compared to high school graduates. In addition, those who have a household income between 50,000 USD and 74,999 USD (OR 8.02, 95 % CI [1.44, 44.91]) are likely to use TC&AM versus those who earn less than 30,000 USD. Within the Kazakhstan participants, the 40–49 age group (OR 4.41, 95 % CI [1.33, 14.60]) had a higher tendency to use TC&AM than the 20–29 age group. The U.S. participants from the 40–49 years age group (OR 3.32, 95 % CI [1.20, 9.20]) were likely to use TC&AM versus the 20–29 years age group. Those with a master's degree or above (OR 3.53, 95 % CI [1.26, 9.92]) were more likely to use it. Participants from Vietnam, who have a household income between 30,000 USD and 49,000 USD (OR 6.95, 95 % CI [1.28, 37.71]), have a higher intention for those who earn less than 30,000 USD to use TC&AM.

4. Discussion

The present study was proposed to explore the determinants of utilization, observe experience, attitudes, and promotion information of TC&AM at the country-level and discover the possibility of using TC&AM treatments for infectious disease management. Relatively young people (in their 20s and 30s) from each country marked a higher percentage of participation in this survey; this may be that young people are more inclined to use online. As of 2019, 50 % of global online users

Table 5
Logistic regression modeling for use of CAM by each nation; odds ratio (95 % confidence interval).

Variable	China	Germany	Japan	Kazakhstan	Malaysia	Russia	UAE	US	Vietnam
Gender (female) ref: male	1.32 (0.49–3.57)	2.45 (0.99–6.08)	3.38 (0.66–17.27)	1.66 (0.74–3.73)	0.58 (0.25–1.33)	0.86 (0.36–2.05)	0.43 (0.10–1.88)	1.65 (0.85–3.17)	0.92 (0.24–3.46)
Age (years) ref: 20–29 years old									
30–39	0.24 (0.04–1.48)	1.03 (0.37–2.81)	0.44 (0.09–2.27)	2.11 (0.74–6.05)	0.51 (0.17–1.5)	2.05 (0.63–2.05)	1.56 (0.20–12.47)	2.06 (0.73–5.76)	0.19 (0.02–1.53)
40–49	0.26 (0.03–1.96)	0.84 (0.12–5.95)	1.36 (0.19–9.48)	4.41 (1.33–14.60)	0.37 (0.11–1.21)	1.12 (0.33–3.76)	1.13 (0.10–13.14)	**3.32 (1.20–9.20)**	-a
50–59	0.51 (0.07–3.49)	0.42 (0.06–2.79)	2.63 (0.4–17.14)	3.46 (0.82–14.58)	0.43 (0.06–2.87)	1.42 (0.30–6.60)	-a	1.16 (0.42–3.17)	-a
60 and over	-a	0.33 (0.03–3.99)	0.45 (0.03–7.53)	0.85 (0.07–9.74)	0.44 (0.02–8.94)	5.17 (0.41–65.77)	-a	1.06 (0.34–3.30)	-a
Marital Status (married) ref: not married	3.22 (0.54–19.31)	2.88 (1.17–7.08)	2.25 (0.67–7.58)	1.59 (0.66–3.84)	2.72 (0.95–7.80)	0.93 (0.33–2.56)		1.08 (0.53–2.18)	2.32 (0.33–16.43)
Level of Education ref: high school graduate									
Less than high school	-a	0.38 (0.14–1.04)	11.95 (1.07–132.93)	3.11 (0.28–33.88)	0.08 (0.00–1.56)	-a	0	0.74 (0.16–3.42)	-a
Bachelor's degree graduate	3.49 (0.54–19.31)	0.71 (0.22–2.23)	3.73 (0.86–16.18)	2.89 (0.27–30.66)	0.16 (0.01–3.06)	-a	1.74 (0.19–16.08)	1.35 (0.63–2.90)	2.28 (0.30–17.04)
Master's degree graduate or above	-a	1.11 (0.25–4.83)	18.81 (1.63–216.95)	1.87 (0.15–24.03)	0.34 (0.02–7.38)	-a	2.07 (0.16–26.67)	3.53 (1.26–9.92)	-a
Household Income (In U.S. Dollars) ref: less than $30,000									
$30,000–$49,000	9.42 (2.1–42.22)	0.84 (0.3–2.32)	4.03 (0.85–19.21)	1.86 (0.5–6.94)	0.94 (0.37–2.41)	2.06 (0.77–5.5)		1.24 (0.47–3.29)	6.95 (1.28–37.71)
$50,000–$74,999	3.04 (0.72–12.96)	2.07 (0.61–6.95)	8.02 (1.44–44.91)	-a	0.43 (0.07–2.51)	1.43 (0.38–5.4)		0.90 (0.34–2.37)	0.74 (0.12–4.48)
$75,000 and over	1.66 (0.39–7.08)	1.55 (0.29–8.36)	6.05 (0.69–52.81)	-a	1.48 (0.28–7.87)	0.7 (0.09–5.32)		0.86 (0.35–2.09)	-a
Residency (rural area) ref: city	0.92 (0.1–8.18)	1.98 (07–5.56)	0.37 (0.11–1.32)	1.00 (0.31–3.21)	0.89 (0.28–2.75)	0.54 (0.04–7.29)	-a	0.53 (0.26–1.10)	0.2 (0.01–4.04)

Note: If the confidence interval is wide, this may mean that the sample size is small.
'-a' means that the value was extremely low to provide.

were aged 18–34 years.[19] Of the nine countries, most participants from six countries (Germany, Japan, Kazakhstan, Malaysia, Russia, and Vietnam) had household income of less than 30,000 USD; this result aligns with the world's estimated average gross domestic product per capita of Int$ (international dollar) 18,381.[20]

Within the results of the study, there are numerous essential findings. First of all, among the participants who have used TC&AM modalities, herbal medicine was chosen as the most utilized. Acupuncture therapy was chosen as the second-highest from this survey. Although acupuncture, being the most popular amid CAM modalities, has been the most widely used worldwide, the participants preferred the herbal medicine treatments.[21] In addition, Chiropractic care was chosen as the highest among the American participants. This may be the reason that chiropractic treatment has well-known for managing spinal pain in lieu of opioid treatment among Americans.[22] Moreover, it is notable to find participants from five countries (China, Kazakhstan, Malaysia, Russia, and UAE) have revealed the main reason for the use of TC&AM was to promote metabolism and the immune system; however, many users have previously indicated that the primary reason for the use of traditional and complementary medicine was for musculoskeletal diseases and also mentioned the high satisfaction levels from patients with musculoskeletal diseases.[23] The high usage of TC&AM in particular countries (China, Japan, Germany, US, Kazakhstan, and Malaysia) may be related to the established regulatory status in healthcare systems.[14]

When it comes to choosing a medical institution to visit for illnesses, a majority of the participants from each country has expressed that hospital, local western medicine clinic, and primary care physician clinic were the initial institutions to consider. Unfortunately, TC&AM clinics were not as favorable for primary care. This may be because participants believe conventional medicine is more effective for curing illnesses because the efficacy of the treatments has been demonstrated through double-blind, randomized controlled trials.[24] As an example, non-users of Korean medicine have shown a higher level of trust in western medicine.[25] Another reason could be that the existing number of TC&AM clinics is extremely small compared to conventional medicine institutions.[26] Furthermore, there are not enough materials to introduce TC&AM modalities and their effectiveness to non-users.[5]

There is a rare surprise to this study. Despite the fact that the participants from the following six countries have indicated a higher percentage of having no prior experience of TC&AM: Germany, Japan, Kazakhstan, Malaysia, UAE, and the U.S., the countries mentioned above except Kazakhstan have national policies on traditional and complementary medicine.[11] Although there are no set regulations for TC&AM in Kazakhstan, various complementary therapies have grown rapidly since gaining independence of the Republic of Kazakhstan.[27]

Two interesting factors are noteworthy from this survey. With reference to utilizing TC&AM treatments for coronavirus (COVID-19) cases and infectious diseases, the survey asked perception of its usefulness to participants, as previous studies stated that the use of TC&AM modalities was commonly used during the COVID-19 pandemic and also reported the use of herbal medicines for protection from infectious diseases.[28,29] That said, participants from more than half of the countries have conveyed that TC&AM treatments ought to be vibrantly employed for the management of infectious diseases. However, unfortunately, not many countries actually used TC&AM modalities to treat COVID-19 symptoms as expected. One of the few countries that have enthusiastically used CAM modalities to treat COVID-19 patients was China. China has used traditional Chinese medicine for treating new cases of COVID-19, with a national participation rate of over 90 %; in addition, more than 70,000 people were cured of COVID-19 and discharged from the hospital, showing a positive correlation between the cure rate of COVID-19 and the rate of TCM per se the relationship needs to be inspected by science.[30]

This also may be the first survey to ask the most effective social media channel to advertise TC&AM. Even though the highest number of participants thought using Facebook was the best platform to promote,

YouTube was the most frequently used social media platform among the participants. As of 2021, Facebook (2740 million) has a higher number of users than YouTube (2291 million), and this may be the reason why participants have recommended Facebook.[31]

In terms of the chosen variables for logistic regression, there are three distinctive results that may be viewed as important. As participants within the 40–49 years age group from Kazakhstan and the U.S. were likely to use TC&AM, this corresponds with that mid-age populations are in favor of seeking CAM therapies. Also, participants with graduate school degrees from Japan and the U.S. were more likely to use TC&AM. Moreover, participants, for those who have a household income between 30,000 USD and 49,000 USD from China and Vietnam; participants those who have household income between 50,000 USD and 74,999 USD from Japan were likely to use TC&AM, which identifies the population from middle to upper income levels is willing to receive CAM treatments. Based on the complementary medicine use by the Australian population study, CAM users are more likely to be middle-aged with a higher education along with a higher income.[32]

This study could be the second multinational study to examine country-level determinants of TC&AM use. As Fjaer et al., stated that the use of CAM in Europe study is the first multinational study; the study analyzed data from 33,371 respondents in 21 European countries from the seventh round of the European Social Survey.[10] In comparison to the European study, there are two vital discoveries that are aligned with the current paper. First, both studies have agreed that people of a higher socioeconomic position are more willing to seek and choose TC&AM treatments. Second, users of TC&AM may be better educated on average.

There are several limitations of the present study. First, there is no definite evidence that the study population is represented in each country, fully relying on the population from the SurveyMonkey Audience. Second, as a web-based survey, this study was limited to a population with access to the internet. Third, since health care systems and licenses of TC&AM in each country are different, the degree of understanding that respondents accept questions may be different. However, in order to compare the situation of each country, a unified survey was carried out. Fourth, some countries may not have a primary care physician system in the country's health system so that participants may not have understanding the term. Fifth, responses to the promotion questions regarding social media have no effect on this study since China has developed its own social media platforms.[33] Sixth, there are wide confidence intervals from the regression analysis; this may mean that the value itself has a low precision even if statistically significant. However, this can be resolved when the sample size is large. Lastly, as the cross-sectional survey, it may be difficult to draw conclusions with regard to causal relationships. Moreover, findings are only applicable to a specific time. There are a few strengths to this study as well. The study used the same questions to survey the chosen countries. Additionally, the participants were recruited from four different WHO regions.

5. Conclusion

This study provides the current prevalence of use of TC&AM among a sample of SurveyMonkey audiences across nine countries. A majority of the participants from this multinational study were in favor of the treatments and therapies as well as expressed positive attitudes. Participants have used herbal medicine treatment more than acupuncture therapy and also used the modalities to promote metabolism rather than treating musculoskeletal diseases. Moreover, participants mentioned that TC&AM should be applied for treating and managing infectious diseases, such as COVID-19. Additionally, participants recommended using the Facebook channel to promote its treatments and therapies in the future. Based on the conclusions, this study provides initial insights on TC&AM that may influence globally and perhaps inspire a need for further research, including more countries on different continents.

CRediT authorship contribution statement

Conceptualization, Methodology: Bo-Young Youn, Bo-Hyoung Jang, Seong-Gyu Ko. Formal analysis: Chunhoo Cheon, Younme Ko, Sunju Park. Writing – original draft: Bo-Young Youn, Yong-Cheol Shin. Writing – review & editing: Kyungyul Mok, Seonghwan Moon, Bo-Young Youn. Supervision: Seong-Gyu Ko.

Ethics Approval and Consent to Participate

Ethics approval was sought from the Kyung Hee University Institution Review Board (No. KHSIRB-20-562-EA). Consent to participate was obtained from the participants prior to commencing the survey.

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Submission Declaration

This research has not been published previously and is not under consideration for publication by any other journal. All authors approve of the publication of this research.

Declaration of Competing Interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Availability of Data and Materials

The data will be made available for special purposes only upon request to the first author.

Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at doi:10.1016/j.ctim.2022.102889.

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