Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Advances in Integrative Medicine 8 (2021) 247–255

Contents lists available at ScienceDirect

Advances in Integrative Medicine

journal homepage: www.elsevier.com/locate/aimed

Original Research Paper

The impact of COVID-19 on complementary and alternative medicine providers: A cross-sectional survey in Norway

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ARTICLE INFO

Article history:
Received 18 April 2021
Received in revised form 4 August 2021
Accepted 10 August 2021
Available online 11 August 2021

Keywords:
Complementary and Alternative Medicine (CAM)
COVID-19
Pandemic
Finance management

ABSTRACT

Background: The Norwegian authorities decided in March 2020 to implement a nationwide lockdown to prevent spread of the COVID-19 virus. The lockdown had vast socioeconomic consequences for the society. The aim of this study was to investigate how COVID-19 affected Complementary and Alternative Medicine (CAM) providers' practice, financial situation, recommendations to patients, and how they perceived their future practice as CAM providers.

Method: Data were collected in this cross-sectional survey using a self-administrated electronic questionnaire. A total of 581 CAM providers completed the questionnaire, which was designed to describe consequences for CAM providers and their clinical practice caused by the nationwide lockdown. Descriptive statistics were carried out using frequency analyses to describe the demographics and consequences of the lockdown. Between group differences (gender and age) were analyzed using Pearson chi-square tests and Fisher's exact tests for categorical variables, and ANOVA tests and *t*-tests for continuous variables. Significance level was defined as $p < 0.05$ without adjustment for multiple comparisons.

Result: During the nationwide lockdown of Norway, 38.4% of the respondents were able to provide CAM treatment to their patients. Of those, the majority (96.4%) had reorganized their clinical practice in accordance with COVID-19 hygiene regulations, offered video consultations (57.4%) or telephone consultations (46.6%). To manage financially during the lockdown, half of the providers spent their savings (48.7%). More than one third (35.1%) was supported by their partner, and 26.7% received compensation from the Norwegian state. A total of 26.3% of the CAM providers had other paid work that provided them with income. Nearly a fifth (18.6%) borrowed money from friends and family, changed their loan terms, or took out new bank loans. More than half (62.7%) expressed uncertainty about the future of their practice. CAM providers who had reorganized their practice to online consultations were more optimistic.

Conclusion: The impact of COVID-19 on CAM providers was considerable. It adversely affected their clinical practice, financial situation, and view on their future practice. To ensure that the health needs of the Norwegian population regarding CAM use are met during pandemic times like COVID-19, it is recommended to support and train CAM providers in the development of online CAM services, as well as efficient implementation of infection prevention and control measures.

1. Background

The outbreak of a novel coronavirus disease (COVID-19; previously known as 2019-nCoV) [1] was first reported in Wuhan in December 2019 [2]. On January 7, 2020, the Chinese health authorities identified the Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) that rapidly spread to other parts of China and globally, including Norway [3]. On March 11, 2020, the World Health Organization (WHO) declared COVID-19 a pandemic [4]. By July 2020, the disease was confirmed in 14,043,176 people worldwide [5].

In general, COVID-19 is an acute resolved disease. However, in severe cases COVID-19 might result in death as a result of massive alveolar damage and progressive respiratory failure [6]. COVID-19 carries a mortality of approximately 3–7% [7] compared with a mortality rate of less than 1% from influenza. Currently, there is no effective treatment against COVID-19. Until vaccines are widely available, public health strategies focus on preventing or slowing

Abbreviations: CAM, Complementary and Alternative Medicine; COVID-19, Coronavirus Disease 2019; GP, General practitioner

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https://doi.org/10.1016/j.aimed.2021.08.001
2212-9588/

down further transmission of the virus. Suggested strategies are frequent hand-washing, face masks, social distancing, and home-quarantine. Other measures that have been implemented by governments on a national level are closure of schools and universities, working from home, minimizing the use of public transport in peak hours, and refraining from nonessential traveling [4].

1.1. Voluntary work as corona discourse

On March 12, 2020, the Norwegian government held a press conference presenting the most drastic nationwide restrictions since World War II. The Minister of Health and Care Services (Høie) stated that "working together will slow down and limit the transmission of the virus that is harmless to most people, but extremely dangerous to a few. By participating in this voluntary work, we can all help saving lives". Voluntary work is a concept characterizing the Norwegian corona discourse (encouraging people to follow the national guidelines to prevent the spread of the virus) [8]. It is like the nation has entered a warlike situation, appealing to unity, responsibility, voluntary work, and the national feelings of its citizens.

On 16 March 2020, the Norwegian authorities decided on a nationwide lockdown, including the closure of kindergartens and schools [9]. Where possible, employees were instructed to work from home. From one day to the next, health care providers such as physiotherapists, psychologists and ophthalmologists closed down their physical consultation practices if infection control and hygiene measureses could not be met (physical contact with less than two meters distance and with a duration of more than 15 min) [10,11]. This also applied to providers of Complementary and Alternative Medicine (CAM).

1.2. Complementary and Alternative Medicine (CAM)

CAM is defined as a group of diverse medical and health care symptoms, practices, and products that are not generally considered part of conventional medicine [12]. If CAM is used together with conventional medicine, it is considered *complementary,* and if used in place of conventional medicine, it is considered *alternative* [12]. In a study from 2018 [13], we reported that a little over one third (37%) of the Norwegian population has used one or several CAM modalities at least once during the previous year. The individual average cost for CAM was about NOK 5700. Twenty three percent received CAM from a CAM provider and/or authorized health personnel, within or outside the official healthcare system [13]. The five most frequently applied CAM modalities were massage, acupuncture, naprapathy, healing, and reflexology [13]. According to the latest survey [14], the use of CAM is even higher in specific patient groups. More than one third (33.4%) of the Norwegian cancer patients used some form of CAM, and 14% had visited a CAM provider. Cancer patients who used CAM applied these modalities complementary to conventional cancer treatment.

In Norway, the majority of CAM providers are members of a professional organization that demands ethical and professional standards among their members. Many of these organizations are registered in the Brønnøysund Register [15]. A national register for CAM practitioners was established in 2004 with the purpose of increasing patient safety, quality, seriousness, and professionalism in the CAM field. Today 40 CAM organizations with a total of 4130 providers are registered in the Brønnøysund Register [15].

1.3. Rationale for the study

Based on knowledge from respiratory illness pandemics in the last century, and the current situation in the USA and South America, it appears that the COVID-19 pandemic recurs in waves [16]. This might also very well be the case in Norway. Furthermore, sporadic increase of cases in connection with local outbreaks and clusters are likely to occur [3]. Therefore, it is of high importance to gain knowledge on how CAM providers in Norway are coping during the COVID-19 pandemic and how it has affected their clinical practice. This will provide essential information that is needed to ensure that the health needs of the Norwegian population regarding CAM use are met during pandemic times.

The present study was initiated to investigate the impact of COVID-19 on CAM providers in Norway. We investigated how COVID-19 affected their practice and consultations with patients, their recommendations to patients, their financial situation, and how CAM providers perceived their future practice.

2. Methods

A national cross-sectional survey was carried out in Norway from April to June 2020. The study protocol was reviewed by the Norwegian Centre for Research Data (NSD) and approved in April 2020 (NSD/ 287191). A modified version of the International Questionnaire to Measure Use of Complementary and Alternative Medicine (I-CAM-Q) was surveyed [17,18].

2.1. Setting and respondents

Norwegian residents receive healthcare within the public health care system, in which licensed conventional health care professionals treat and care for the patients [19]. CAM modalities are practiced outside this system, and are unregulated. Anyone can use the term CAM provider and treat patients [20]. However, most CAM providers are members of professional organizations. To ensure patient safety in cases of intervention-related health issues, CAM providers are required to obtain professional liability insurance. Generally, patients themselves pay for the visits to CAM providers.

Inclusion criteria for participation in the study were being a practicing CAM provider at the time the survey was completed and member of a professional CAM organization. Thirty-five CAM organizations received an email with a link to the questionnaire and were asked to forward the link to their members. Thirteen organizations did not respond to the invitation, but 22 organizations did. They forwarded the link to 2215 CAM providers that were a member of their organization. A total of 581 CAM providers (response rate 26%) completed and returned the questionnaire (Fig. 1).

2.2. Data collection

This study was a self-administered questionnaire-based cross-sectional survey.

2.2.1. Questionnaire content

The modified I-CAM-Q consisted of four parts, and all parts related to CAM practices during the past three COVID-19 pandemic months (March-May 2020). The first part included demographics. The second part included questions related to clinical practice and financial consequences of the COVID-19 situation. The third part included questions related to what modalities these providers recommended, such as dietary supplements, vitamins, herbals, and other over-the-counter remedies. The fourth part included questions related to the recommendation of self-care techniques. The last part of the survey included questions on the fear that CAM providers may have of getting infected with COVID-19, or that a family member gets infected, and how they evaluated the danger of COVID-19 compared to other influenza viruses. An open-ended question invited the respondents to give a final remark about the study. All data was anonymously collected and reported.

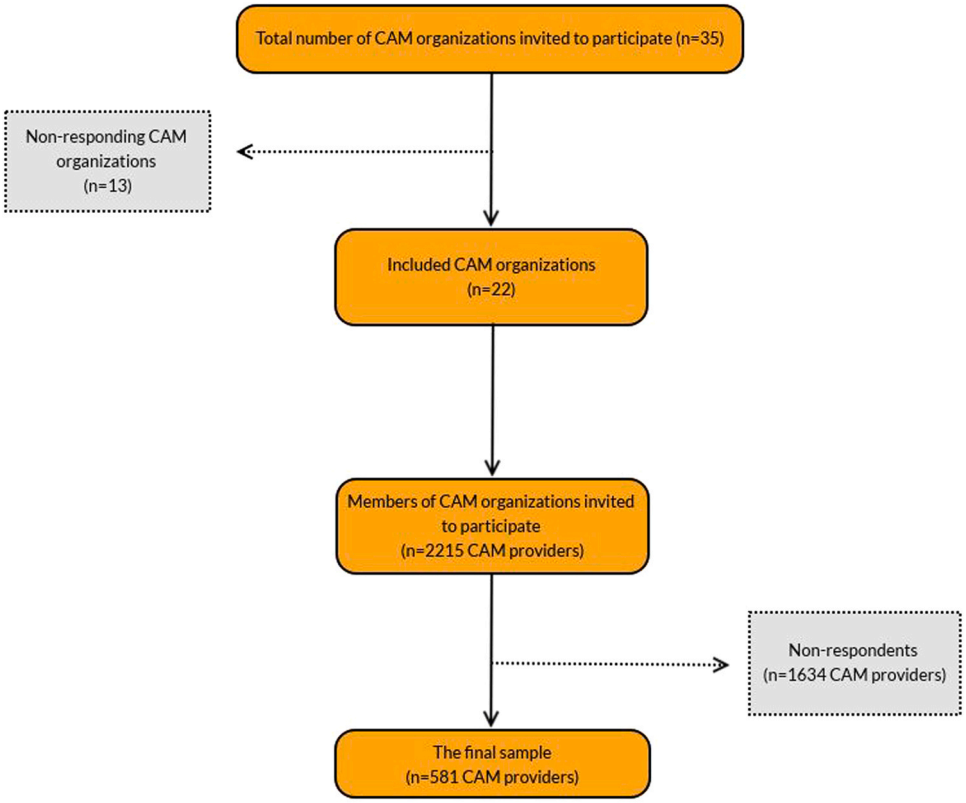

Fig. 1. The inclusion process in this study.

2.2.2. Data collection procedures

The data collection was based on the Dillman survey procedure [21]. By email, the CAM organizations were invited to participate in the study and informed that a new-email with a link to the online survey would be sent a week later. One week after the email with the link, a second email was sent as a reminder to the non-respondents and as a thank you to those that had already responded. Finally, after an additional week, a reminder with the link to the survey was sent to the non-respondents. The CAM organizations forwarded these emails following the same procedure subsequently to their members.

2.3. Measures

2.3.1. Personal characteristics

Household income was collected using the following categories (NOK < 100,000, 100,000–199,000, 200,000–299,000, 300,000–399,000, 400,000–499,000, 500,000–599,000, 600,000–799,000, 800,000–999,000, 1000,000–1500,000 and more than NOK 1500,000). These were categorized into low (<NOK 400,000), middle (NOK 400,000–799,000) and high (NOK ≥ 800,000) household income.

Level of education was recorded using six values; Primary education (up to 8 years); Lower secondary education (from 9 to 10 years); upper secondary education (from 11 to 13 years); lower levels at university/college (up to 4 years); higher levels at university/college (more than 4 years): and do not want to reply. These were merged into a measure with four categories (compulsive level; middle level; college/university less than 4 years; and college/university 4 years or more).

Age was obtained as an open question and assessed as a continuous variable. In the analysis, this was categorized into three levels (25–39 years; 40–59 years; and 60–83 years).

Other personal characteristics included sex (female, male), postal code (merged into the Norwegian regions East, South, West, Mid (Trøndelag), and North), location (city, town, village, rural area), and number in the household with income or responsible for the economy.

2.3.2. Financial management of the clinical practice during the COVID-19 pandemic

How the clinical practices were organized was surveyed using five categories: Individual practice organized as sole proprietorship; individual practice organized as private limited company; salaried employee in a practice without employer responsibility; other mode of operational business and other.

Whether the respondents had worked as a CAM provider after March 12, 2020 was measured by the dichotomous variable yes/no. In case the respondents responded yes to this question, they were asked if they had made any changes in the way their practice was organized during COVID-19 and what the changes included. This question had four response options: Video consultations; telephone consultations; physical consultations with patients with or without infection control measures; other.

To assess how the COVID-19 situation had affected their income had four response options: More than expected; as expected; less than expected; the practice is closed. Further, in case of decreased income, the respondents were asked how they managed financially. This measure had ten response options: using life savings; support from NAV (Norwegian Labor and Welfare Administration); live on the income of my spouse/cohabitant; other paid work; compensation from the state; borrow money from friends and family; take out loan from the bank; change terms on bank loans; other; do not want to reply. In the analysis, this was categorized into a measure of finances with seven levels: Savings; supported by my partner/cohabitant; compensation from the state/support from NAV; other paid work; loan, other, and did not answer.

The respondents were asked what the future prospects were for their practice. This variable had four response options: Optimistic

about the future due to minimal impacts on my practice; unsure about the future, do not know what will happen to my practice; pessimistic about the future due to devastating impacts on my practice.

2.3.3. CAM modalities recommended

The respondents were asked what CAM modalities they had recommended to patients to prevent COVID-19 infection after the national lockdown. The section included six CAM groups, with the following response options: *self-care techniques* included 13 modalities such as mindfulness, yoga, and coaching; *Herbs* included 12 different herbs, such as garlic, ginger and, turmeric; *Diets* included nine different regimes such as low carb diet, fasting, and macrobiotic diet; *Homeopathy* included two options such as individual homeopathic remedies, and complex remedies; *vitamins and minerals* had 11 response options such as C-vitamin, magnesium, and zinc; *dietary supplements* included five products such as omega 3, 6, and 9, cod-liver oil, and protein drink.

2.3.4. Perceptions of COVID-19 infection

Whether the respondents forwarded patients to their general practitioner (GP) on suspicion of COVID-19 was recorded by the dichotomous variable yes/no. One question measured whether the respondents were afraid of becoming infected with COVID-19. This variable had four response options: Not at all, somewhat, absolutely, and do not want to answer. Finally, the respondents were asked whether they perceived COVID-19 to be more dangerous than the common influenza virus. This variable had four response options: Not at all, somewhat, absolutely, and do not want to answer.

2.4. Statistical analysis

2.4.1. Quantitative analysis

We used descriptive analyses (frequency analyses) to characterize the demographic and work conditions for the CAM providers in the study. Pearson's Chi-square test and Fisher exact tests (if expected count were less than 5 in any of the cells) were performed to identify differences between men and women and between different age groups in categorical factors, while ANOVA tests and *t*-tests were used for continuous variables. All analyses were carried out using Statistical Package for Social Sciences (SPSS) v. 26.0.

2.4.2. Qualitative analysis

The open-ended question that invited the respondents to give a final remark about the study was analyzed by means of a content analysis [22]. A content analysis is a systematic examination of text by identifying and categorizing themes [23]. In addition, it classifies and develops categories, and performs the coding [24]. In this study, the codes were grouped according to the questions in the survey. The quotations were analyzed in Norwegian before being translated into English by a professional service. The first author read the data several times and performed the content analysis.

3. Results

3.1. Demographics

The average respondent was middle aged (65.4%), female (80.3%), and lived nearby the capital in the southeastern part of Norway (53.8%). They held a university degree (87.9%) and had high income (46%). The majority of the respondents lived with a spouse/cohabitant (69%), had children (31.3%) or both (22.4%). Twenty-one percent had a single person household (Table 1).

Table 1
Characteristics of the respondents ($n = 581$).

	N	%
Gender		
Male	110	19.0
Female	466	80.3
Did not answer	4	0.7
Age		
25–39	63	10.8
40–59	380	65.4
60–83	138	23.8
Education		
Compulsive level	10	1.7
Middle level	51	8.8
University up to 4 years	246	42.3
University more than 4 years	265	45.6
Household[a]		
Single household	120	20.7
Living with spouse or cohabitant	401	69.0
Living with children	182	31.3
Living with others	11	1.9
Did not answer	8	1.4
Number in household with income and responsible for the economy		
One	172	29.6
Two	372	64.0
Three or more	28	4.8
Did not answer	9	1.5
The total gross annual household income before taxes		
Low (<400,000NOK)	106	18.3
Middle (400,000–799,000 NOK)	172	29.6
High (≥800,000 NOK)	267	46.0
Don't know	21	3.6
Did not answer	47	8.1
Location of pracitice		
City	241	41.5
Town	176	30.3
Village	108	18.6
Rural area	48	8.3
Did not answer	8	1.4
Region of practice		
South East	313	53.8
South	84	14.5
West	85	14.6
Mid	69	11.9
North	29	5.0
Did not answer	1	0.2

[a] Respondents could check all that applied (more than one)

3.2. Age and gender differences in demographic characteristics

A higher percentage of female CAM providers had their practice in rural areas (9% vs. 5.5%), whereas men were more likely to practice in the city (45.5% vs. 40.6%, $p < 0.001$). The youngest age group (25–39 years) was more likely to have high income compared to the middle and higher age groups (68% vs. 58% and 49%, respectively, $p = 0.05$). An explanation for this finding may be that the majority of the respondents in the younger age group lived together with someone else who contributed to the household income (13% vs. 20% and 29%, respectively, $p = 0.023$). Respondents in the oldest age group (60–83 years) were more likely to live together with children compared to respondents in the younger and middle age groups (3.8% vs. 41.3% and 38.9%, respectively $p < 0.001$).

3.3. Qualitative data based on an open-ended question

A total of 134 CAM providers (27.3%) responded to the open question and wrote a remark that explained their current situation. Five themes were identified in these qualitative data: *CAM modalities, reorganization of clinical practice*, *finance management*, *vision of the future,* and *perceptions of COVID-19 infection*.

Table 2
Modalities in the clinical practice of respondents ($n = 581$)*.

	N	%
Acupuncture, acupressure, ear acupuncture, and/or cupping	175	30.1
Massage	143	24.6
Gestalt therapy	114	19.6
Reflexology	77	13.3
Muscle therapy	68	11.7
Coaching, health coaching	67	11.5
Conversation, psychotherapy, or psychosynthesis	58	10.0
Healing	44	7.6
Osteopathy	44	7.6
Trauma therapy	41	7.1
Mindfulness	34	5.9
Homeopathy	33	5.7
Aromatherapy	29	5.0
Herbal medicine	18	3.1
Holistic therapy	15	2.6
Kinesiology	15	2.6
Hypnosis	14	2.4
Natural therapy	14	2.4
Skin and body therapy	13	2.2
Art and expression therapy, imaging therapy	13	2.2
Quantum medicine	13	2.2
Rose therapy	13	2.2
Craniosacral therapy	12	2.1
Qigong	12	2.1
Dance therapy, creative body expression therapy	8	1.4
Bioresonance	7	1.2
Regression therapy	7	1.2
Shiatsu therapy	6	1.0
Biopathy, biological medicine	4	0.7
Feldenkrais method	3	0.5
Heilpractice	3	0.5
IKYA treatment	3	0.5
Naprapathy	3	0.5
Bowen therapy	2	0.3
Lightning Process	2	0.3
Anthroposophic medicine	1	0.2
Polarization	1	0.2
Did not reply	1	0.2
Other	82	14.1

*Respondents could check all that applied (more than one)

These themes are further explained and presented together with the quantitative data below.

3.4. CAM modalities

A wide range of CAM providers responded to the survey. Their clinical practice mostly included acupuncture/acupressure/ear acupuncture/cupping (30.1%). Other frequent CAM modalities reported were massage (24.6%), gestalt therapy (19.6%), reflexology (19.6%), muscle therapy (11.7%), coaching (11.5%), and conversation/psychotherapy/psychosynthesis (10%) (Table 2).

To prevent COVID-19 infection, the respondents recommended several CAM modalities to their patients. The most recommended modality was vitamin C (high and normal doses). This modality was recommended by 6.9% of the respondents. Other frequently CAM modalities recommended were relaxation techniques (3.1%), prayer for own health (2.1%), psychotherapy/counseling (1.9%), Ginger (1.9%), and Omega 3, 6, and 9 (1.2%).

In the free text, respondents emphasized the importance for their patients to take good care of themselves, as one respondent added: *During this period, I advised my patients about exercise, health, and diet.*

Another respondent wrote*: I am engaged in the clients' increased awareness of how they sleep, eat, and are physically active, and how this relates to mental health and their energy level. I am concerned about how they take care of themselves and others, and that there is a balance between these two factors.*

3.5. Reorganization of clinical practice

The majority of the responding CAM providers had a sole proprietorship practice (84.3%) followed by a private limited company practice (12%), and other modes of operation (1.7%). Only 7 (1.2%) of the providers were employed by others. During the lockdown of Norway (March 12 2020–April 22 2020), only 38.4% of the respondents provided CAM treatment to their patients. Of those, the majority (96.4%) had reorganized their clinical practice in accordance to COVID-19 hygiene regulations (not shake hands, proper hand hygiene measures, keep distance (1 m (adjusted from 2 m)) from other people, assess own health condition with regard to symptoms, if possible use video consultations, assess whether physical consultations were necessary, clean equipment after each patient) [25]. Furthermore, more than half of these CAM providers offered video consultations (57.4%), telephone consultations (46.6%), or physical consultations with or without infection control measures (43.5%) (Table 3). As one of the respondents expressed: *I have only had conversations and motivations by phone with my regular course respondents and clients. This has been free of charge as part of the voluntary work.*

One respondent wrote: *I have advised my patients by means of video consultations, focusing on physical activity, sleep and socializing, not to cure COVID-19 but to contribute to good physical and mental health.*

Another added: *I work as an EQ (emotional intelligence) therapist, and as time has passed and people's need for therapy has increased, I have used phone consultations. This has worked well, and is one of the reasons why I perceive the future as relatively bright. I have expanded my practice. From treating local patients only, I now treat patients from all over the country*.

3.6. The impact of COVID-19 on finance management

The majority of the respondents (91.6%) experienced that the income was less than expected during the lockdown. Only 1% responded to have increased their income. To manage financially, half of the CAM providers spent their savings (48.7%). Male CAM providers made use of their savings to a higher degree than female providers (60% vs. 46%, $p = 0.029$). More than one third (35.1%) was supported by their partner, and 26.7% received compensation from the state (including support from NAV). A total of 26.3% had other paid work that provided them with income. Nearly a fifth (18.6%) borrowed money from friends and family, changed the loan terms, or took out new bank loans (Table 3).

Respondents in the youngest age group (25–39 years) made significantly more use of their savings ($p = 0.006$) or loans from the bank or family/friends ($p = < 0.001$) compared to respondents in the middle and older age groups. This finding may be explained by the fact that the youngest respondents' appeared to be most affected by the lockdown. A significantly lower percentage of CAM providers in the youngest age group provided CAM treatment to their patients during the lockdown compared to the older age groups (25% vs. 42% and 35%, respectively, $p = 0.010$). Respondents in the oldest age group (60–83) on the other hand, were less likely to have other paid work compared to the youngest respondents (17.7% vs. 28.5%, $p = 0.049$).

The respondents expressed strong concerns about their finance. One of the respondents wrote: *I find this period very difficult financially. I do not have the finances to pay my bills due to the closedown, even though I have an agreement with the bank about an interest-only loan. Fortunately, I will start working again on April 27, but will struggle with wage backlog, and debt collection fees for several months. The summer vacation is canceled. I have to work.*

Another added: *After March 12, I am constantly considering discontinuing my practice. The turnover has fallen to such a low level that the costs of continuing are too large.*

Table 3
The impact of COVID-19 on clinical practice ($n = 581$)*.

	n	%
How is your practice organized?		
Sole proprietorship	490	84.3
Private limited company	70	12.0
Other mode of operation	10	1.7
Employee in a practice without employer responsibility	7	1.2
Did not answer	4	0.7
Have you worked as a provider after March 12?		
Yes	223	38.4
No	356	61.3
Did not answer	2	0.3
If Yes, have you made any changes in the way you organize your business?		
Yes	215	96.4
No	8	3.6
Did not answer	0	0.0
What are the changes?		
Video consultations	128	22
Telephone consultations	104	17.9
Physical consultations with patients with or without infection control measures	97	16.9
Other	20	3.4
Did not answer	0,00	0.0
In case of income decrease, how do you manage financially?		
Savings	283	48.7
Supported by my partner/spouse	204	35.1
Compensation from the state/support from NAV	155	26.7
Other work	153	26.3
Loan	105	18.2
Other	43	7.4
Did not answer	5	0.9
What are the future prospects for your practice?		
Optimistic about the future due to minimal impacts on my practice	159	27.4
Unsure about the future. Do not know. I do not know what will happen to my practice	364	62.7
Pessimistic about the future due to devastating impacts on my practice	44	7.6
Did not answer	14	2.4
Did you refer your patients to their GP on suspicion of COVID-19?		
Yes	27	4.6
No	251	43.2
No patients during this period	298	51.3
Did not answer	5	0.9
Do you see the need for updated knowledge of infection control and hygiene?		
Yes	262	45.1
No	314	54.0
Did not answer	5	0.9
Are you afraid of becoming infected by COVID-19?		
Not at all	209	36.0
Somewhat	335	57.7
Absolutely	30	5.2
Did not answer	7	1.2
Do you perceive COVID-19 as more dangerous than the common flue?		
Not at all	34	5.9
Somewhat	240	41.3
Absolutely	246	42.3
Did not answer	61	10.5

* Respondents could check all that applied (more than one)

One participant expressed: *I have another permanent job and can barely manage financially, even if I lose about 1/3 of my income. The compensation from the state, that someone gets, does not apply to me. That is disappointing and despairing. When the state orders me to close, I think the state behaves irresponsibly.*

3.7. Vision of the future

The majority of the respondents (62.7%) expressed uncertainty about the future and did not know what would happen to their practice. Nevertheless, 27.4% were optimistic about their future, mostly because they continue to see patients by means of video/telephone consultations. A minority (7.6%) was pessimistic due to devastating impacts on their practice (Table 3), illustrated by this note: *This does not look good. The clients are worried or broke, and it will be a long time before we can return to "normal". Considering finding another job.*

Another respondent was more optimistic: *I have not had income since the virus outbreak, but ongoing expenses. Small businesses will not receive compensation from the state, as far as I know. So this job is just a bad project now. However, I think this will pass and that the business will flourish again.*

3.8. Perceptions of COVID-19 infection

A total of 43.3% of the respondents did not refer patients to their GP on suspicion of COVID-19, probably because most CAM providers did not consult with patients during the lockdown. A total of 45.1% wanted updated information about infection control and hygiene measures. However, the majority (54%) did not see the need for such an update. One participant pointed out: *I assess the clients from a professional nursing perspective. I urge them to obey national guidelines. I also discuss good hygiene measures with the client, safe hygiene.*

A total of 42.3% of the respondents perceived COVID-19 to be absolutely more dangerous than common influenza. A total of 41% perceived COVID-19 to be somewhat more dangerous than common influenza (Table 3), which was illustrated by the following comment from one respondent*: I think COVID-19 is more dangerous than common influenza for those at risk. Not for those who are healthy, have a good diet, and a good nutritional status.*

The more than half of the respondents (57.7%) were not very concerned about becoming infected with COVID-19 themselves, as noted by one respondent: *I'm not worried for my own sake, but of infecting others.*

Another added: *I am mostly worried that someone will be infected in my practice, even though all hygiene measures have been followed.*

4. Discussion

The present study revealed that the majority of the CAM providers organized their clinics as sole proprietorships. They were uncertain or pessimistic about the future for their practice due to the financial impact of the pandemic. This is in line with current research suggests that also conventional health care providers encountered a considerable degree of stress, anxiety, depression, and insomnia due to the COVID-19 pandemic [26]. Results from a study conducted among 344 health care professionals in Sudan confirmed that most of the participants had minimal to mild anxiety, (35.2%) and (29.9%), respectively. More than half of healthcare professionals (54.9%) showed high levels of stress. The most common coping strategies used by healthcare professionals during the COVID-19 pandemic were "Praying more than usual and looking for something good in the situation [27].

A small number of CAM providers express the use of vitamin C, Ginger, and Omega 3, 6, and 9 in COVID management, however this may not represent the CAM population due to the small response in this study. To date, there is no evidence of effect for any CAM modality regarding the prevention or treatment of COVID-19 infections [28]. *Natural medicine* [29] recommends CAM providers to inform patients that there is no good data to support using any natural medicines for COVID-19 treatment or prevention. Additionally, López-Alcalde et al. [30] concluded in a recent overview that there is no current evidence to recommend any specific CAM modality for the treatment of patients with COVID-19. However, CAM may be used for several subjective symptoms such as discomfort before and after the infection, which is in accordance with the respondents in

this study, who advised patients to practice relaxation techniques, pray for own health and to use psychotherapy/counseling.

In this study, CAM providers also advised patients to take healthy life-style measures such as ensure sufficient sleep, stay physically active, and ensure healthy diets. These measures are in line with recommendations from the national health authorities [31] and trustworthy online resources, as to advice patients to focus on healthy lifestyle choices such as getting eight hours of proper sleep each night, eating a well-balanced diet, and exercising regularly [28,29,32].

4.1. Financial limitations

More than 70% of the respondents were uncertain or pessimistic about the future for their practice due to the financial impact of the pandemic. This seems to be a serious problem for the provision of CAM to patients in Norway. The respondents in the present study experienced that the income was less than expected during the lockdown, and only 1% reported increased income. To manage financially, the majority employed savings or was supported by their partner. Overall, respondents had high expectations regarding compensation from the state. However, less than one third received compensation from the state or support from NAV. The reason for this was that many businesses did not meet the compensation criteria [33]. Many respondents had small-scale businesses with low turnovers and therefore placed below the financial limit of compensation. For example, expenses below NOK 5000 were not covered by the system and the first NOK 10,000 was withdrawn from the total sum of compensation [33]. The current compensation criteria thus hit hard on small businesses with low turnovers. It is recommended that authorities consider removing the lower limit of compensation for health care providers and CAM practitioners, should a similar situation arise in the future.

4.2. Reorganization of clinical practice

In order for CAM practices to survive such a pandemic, this study demonstrates how important it is for CAM providers to be able to adapt their practice both to effectively implement infection control and hygiene measures, and also to shift their consultation online or via telephone, whenever possible. Online consultations have been a part of the official health care service in Norway now for some time. According to HelseNorge (The official health care services' web page for inhabitants in Norway) [34], online consultation is understood as consultation conducted via the web using audio, video, or text conversation. Patients can only use this service when it does not require physical attendance. The service should not be used for immediate help or emergency situations. The health care provider is responsible for ensuring patient rights and safety, confidentiality, privacy, and providing necessary information security throughout the web solution [35].

Many health care providers want to offer online consultations to patients, and HelseNorge provides information on how to facilitate this in collaboration with helsenorge.no. [36]. New online approaches for consultation of patients have improved practice in many ways, and is regarded an advantage for a specific group of CAM providers as it allows them to expand their practice by not only serving local patients but also patients across the country. The present study demonstrated that the latter contributed to an improved turnover for business for some CAM providers that responded to the survey. This was illustrated by one of the respondents who claimed that online consultations was the reason for perceiving the future relatively bright. This approach may also benefit CAM provision for chronically ill and elderly patients, since they are able to receive CAM care while staying at home. In addition, these consultations are timesaving for both CAM providers and patients. Online consultations are however not suitable for CAM providers who offer physical treatments, such as massage and acupuncture. Since the majority of the respondents in this study offered patients acupuncture, massage, reflexology, and muscle therapy, online consultations were not an option.

4.3. Practical implications

Based on the findings from this study, CAM organizations are recommended to facilitate online consultation options for their members, where applicable, with support from HelseNorge. Such consultations should ensure patient rights and safety, confidentiality, privacy and secure that the information obtained is safely stored. CAM organizations are also recommended to provide updated knowledge on infection control and hygiene in daily practice by offering seminars on the theme in collaboration with for example the National Institute of Public Health.

Hygiene control is a global issue. It is the responsibility of professional CAM organizations worldwide and their members to facilitate the accessibility of CAM services for patients in a therapeutic environment without the risk of being exposed to the COVID-19 virus for both patients and CAM providers.

CAM providers in this study contributed to the national discourse by promoting healthy life style advice to patients. As such, CAM providers can have a role as health promoters during these pandemic times. Further research is necessary to investigate the role of CAM in preventing and treating COVID-19 symptoms.

4.4. Limitations

The results of this study should be interpreted in light of its limitations. A limitation was the low response rate of 26%, which may hamper the generalizability of the findings. Even though, organizations were reassured by the researchers that CAM providers are allowed to advise patients on possible prevention of COVID-19 infection, some organizations did not want to participate in the study because according to Norwegian law [37], CAM providers are not allowed to treat infections. Other CAM practitioner organizations had decided to perform their own survey among members and did not want to bother them with another survey related to COVID-19. Although the findings from this study give a good indication of the impact of the national lockdown, it may not represent the situation for all CAM providers in Norway. However, the risk of non-response bias depends not on the response rate per se, but to what extent respondents differ from non-respondents [38,39]. Non-response bias can be assessed by examining changes in the prevalence of outcomes before and after, including late responders in the sample. In this study the outcomes from late responders did not differ significantly from the outcome of early responders with respect to age, education, income, organization of clinics, and how to manage financially. This finding suggests that the non-response bias may be limited [38,40]. Another limitation of this study was that CAM providers were surveyed during the first three months of the COVID-19 pandemic in Norway. The long-term effects of the lockdown are therefore not known, and should be further investigated.

5. Conclusion

The impact of COVID-19 on CAM providers was considerable. It adversely affected their clinical practice, financial situation, and view on their future practice. The majority of the providers did not meet the criteria for compensation. Consequently, the authorities should consider removing the lower limit of compensation should a similar situation arise in the future. To ensure that health care needs of the Norwegian population regarding CAM use are met during pandemic times like COVID-19, it is recommended to support and

train CAM providers in the development of online CAM services, as well as efficient implementation of infection prevention and control measures.

Authors' contributions

TS conceived the study and designed the Norwegian part of the questionnaire. She also collected the data, performed qualitative analysis and interpretation of data, and drafted the initial version of the manuscript. AEK was involved in the conception and design of the study, and performed quantitative analyses and interpretation of data. MCJ was involved in the conception and design of the study, interpretation of data, and critically revised the manuscript for important intellectual content. All authors reviewed subsequent versions and read and approved the final manuscript.

Funding

The publication charges for this paper have been funded by a grant from the publication fund of UiT The Arctic University of Norway. No additional funding was received.

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Availability of data and materials

The dataset this paper has been based on has not been deposited in any repository. All dataset and materials are available from the corresponding author upon reasonable request.

Ethics approval and consent to participate

The study protocol was reviewed, and the Norwegian Centre for Research Data (NSD) approved the study in April 2020 (NSD/287191). Written informed consent was obtained from the respondents' by means of completed and returned questionnaire.

Consent for publication

Consent to publication was obtained from the respondents.

Declaration of Competing Interest

The authors declare that they have no competing interests.

Acknowledgements

We acknowledge the CAM organizations and CAM providers who completed the questionnaire and participated in this study. We are also grateful to Jane Ekelund and Tine Lillegård Bergli, Ola Lillenes and Solveig Johansson for technical support.

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