ABSTRACT Medicinal plants have been used by the Moroccan population from ancient times. They have an important role in traditional healing practices. Patients use CAM for different purposes and due to several factors, such as low economic and financial income and/or cultural and religious beliefs. However, proof of efficacy and safety of the vast majority of traditional and herbal medicine have not been fully established through an evidence-based approach. During the current Covid 19 pandemic, the long-term implementation of national emergency and lockdown measures resulted in difficulties accessing healthcare services. Therefore, cancer patients at Hematology and Oncology Hospital of Marrakech showed an increased interest in using traditional herbal medicine. The present study attempts to determine the prevalence and the aim of using each method of CAM by cancer patients during the Covid-19 pandemic in Marrakech.

KEYWORDS Covid-19, cancer, complementary and alternative medicine, herbal medicine

Introduction
At the end of December 2019, the world known the COVID-19 pandemic, also known as the coronavirus pandemic, caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) [1]. The disease was first identified in Wuhan, China. It became a Public Health Emergency of International Concern in January 2020 and was subsequently recognized as a pandemic in March 2020 [2-6].

On March the 2nd, 2020, the Moroccan Ministry of Health announced the first coronavirus case. Until October the 6th, 2020, Morocco has confirmed more than 133,272 cases of the infection, including 2330 deaths and 111,036 recoveries [7].

This pandemic had a major impact on cancer patients [8]. Liang et al. have reported that cancer patients might have a higher risk of COVID-19 infection. They have also shown that this particular population presents a higher risk of severe events such as admission to the intensive care unit, requiring invasive ventilation and death, especially if they have received chemotherapy or undergone surgery in the past month [9].

In Morocco, patients use CAM for preventive and/or curative purposes due to low economic and financial income and/or cultural and religious beliefs. According to the literature, the methods often used are medicinal plants and spiritual practices [10]. During the ongoing pandemic, the Moroccan population used traditional herbal medicines to prevent this disease. Medicinal plants have been used by the Moroccan population from ancient times. They have an important role in traditional healing practices. Today herbal medicine is practiced in all parts of Morocco. It is still the primary healthcare system for a large fraction of the population, especially in rural communities [11]. However, the long-term implementation of national emergency and lockdown measures resulted in difficulties accessing healthcare services. Therefore, cancer patients at Hematology and Oncology Hospital of Marrakech showed an increased interest in using traditional herbal medicine.

However, proof of efficacy and safety of the vast majority of traditional and herbal medicine have not been fully established through an evidence-based approach, inducing a dilemma for physicians regarding the use of Complementary and Alternative Medicine (CAM) among their patients. Therefore, the present study attempts to determine the prevalence and the aim of using each method of CAM by cancer patients during the Covid-19 pandemic in Marrakech.
Materials and methods

Study Design and setting
The present study is a cross-sectional study; data were collected using an anonymous questionnaire filled by cancer patients who visited the Marrakesh haematology-oncology Hospital (HOH) during the first six months of the Covid-19 pandemic in Morocco.

Participants and sampling Method
The sample size was calculated by the Yamane simplified formula, using a 95% confidence level. A minimum sample of 285 was calculated. Therefore, 300 participants were included in this study. They were randomly selected through the "Random Sample Generator" from the cancer centre database.

Study questionnaire
We used an anonymous questionnaire to collect information from the participants between March and June 2020. Participants were interviewed by phone using dialectal Arabic as a language (response rate: 100%). We asked them about their socio-demographic characteristics, cultural variables, type of cancer, ongoing treatment, and CAM methods.

The participants could choose the relevant used CAM method either from the list, or they could specify any unlisted methods and score as “others”.

Some sections of the questionnaire aimed to appreciate how our participants perceived the use of CAM and whether they sought advice from their health care providers regarding CAM use.

Statistical Analysis
We used descriptive statistics to calculate frequencies and percentages for each variable. The statistical analysis was performed using IBM SPSS Statistics version 24.0.

Results

Demographic and social characteristics of our patients
The current study included a total of 300 participants. The prevalence of CAM use was 70% (210 participants); 52% had used at least one CAM method over a lifetime, 13% had used CAM after their cancer diagnosis, and only 7.3% had begun to use CAM during the COVID-19 pandemic. Half of the patients who used CAM were above the age of 50 years. 76% of them were married, and 70% of them were females, illiterates in 64.29% of cases and from a low socioeconomic level in 88.5% (table-1).

CAM methods used by our participants
Our results showed that natural honey was the frequent biological modality used, followed by medicinal plants, especially Clove and Eucalyptus. Although, interestingly, spiritual modalities are widely used in our sample (57%), they included the practice of prayer, the reading of the «Qur'an», and fasting (table-2).

Reasons for use and perceived effectiveness
In our study, CAM users believed CAM use could improve the immune system against viral infection, increase the efficacy of prescribed treatment and improve the general health condition. However, a quarter of them believed that CAM should be taken with conventional cancer treatment, and 12% think it should be used alone.

Reasons of non-use
61% of the participants reported that they do not believe in the effectiveness of CAM, and 39% worried about the adverse effects of CAM use and the possible interactions with cancer treatment.

Sources of information received by CAM users
Different sources of information were observed, dominated by the entourage (55.71%) and social media (28%). On the other hand, none of our patients has sought information from their health care providers.

Discussion
Morocco has one of the oldest and richest traditions of herbal medicine, and local people possess valuable knowledge of medicinal plants. The researchers counted more than 600 plants used in herbal medicine in this North African country [12].

Complementary and alternative medicine has become more frequently used in the routine practice of cancer patients worldwide [13-16]. The prevalence of use of CAM in our study was 70%, which is in accordance with what was reported in previous studies exploring CAM use in Morocco [17]. Although the international data showed variable results, in a meta-analysis by Ernst E and al the prevalence of CAM use across the literature ranged from 7% to 85% [18-23]. We also found a little increase in CAM use in cancer patients during the pandemic (5%). This increased use may be explained by gender, age, and socioeconomic level factors. Previous studies found that the use of CAM is associated with female gender, younger age and tertiary education level. In our research, over 50% of CAM users were females over 50 and from a low socioeconomic range. In the African and Arabic series, the profile of CAM users is identical to ours [24-29].

In our study, 90% of users reported at least one benefit from CAM. Natural products (NPs), such as plants and honey, are invaluable sources of new chemical entities with innovative chemical profiles and key biological properties [30]. Their importance is shown by the fact that about 40 to 80% of drugs approved by the FDA during the period 1981–2014 were directly or indirectly derived from NPs, with antimicrobials and anticancer drugs having the highest percentages[30]. Medicinal plants were used by 70% of our patients; the majority of these plants are usually used to treat respiratory diseases causing symptoms and signs similar to coronavirus disease, according to several studies [31-37]. Anserine and Marrubium, for example, are two traditional Moroccan treatments for fever and flu, the significant symptoms similar to those of coronavirus disease [38]. Our patients also used them to prevent and treat fever and cough. Honey has a known potential to soothe the throat and provide relief for symptomatic cough [39-40]. This product was used by 50% of our patients in this pandemic period showing increased levels of consumption compared to what was reported in a previous study in Marrakesh [17].

Many researchers claim antiviral properties in CAM, but the choice of its use in COVID-19 is still in the experimental stage.
| Characteristics     | Variables (years) | Total population N=300, n (%) | CAM Users N=210, n (%) |
|---------------------|-------------------|-------------------------------|------------------------|
| **Groups of age**   |                   |                               |                        |
| 18-30               | 8(2.67%)          | 2(0.95%)                      |                        |
| 31-40               | 29(9.67%)         | 11(5.24%)                     |                        |
| 41-50               | 130(43.33)        | 99(47.14)                     |                        |
| 51-60               | 64(21.33%)        | 47(22.38%)                    |                        |
| ≥ 61                | 69 (23%)          | 51 (24.28%)                   |                        |
| **Gender**          |                   |                               |                        |
| Male                | 111(37%)          | 63(30%)                       |                        |
| Female              | 189(63%)          | 147(70%)                      |                        |
| **Marital status**  |                   |                               |                        |
| Single              | 59 (19.67%)       | 30 (14.28%)                   |                        |
| Married             | 212 (70.67%)      | 159 (75.72%)                  |                        |
| Divorced            | 21 (7%)           | 15 (7.15%)                    |                        |
| Widow/ widower      | 8 (2.67%)         | 6 (2.85%)                     |                        |
| **Educational status** |               |                               |                        |
| Illiterate          | 172 (57.33%)      | 190 (90.48%)                  |                        |
| Koranic school      | 7(2.33%)          | 20 (9.52)                     |                        |
| Primary             | 61 (20.33%)       | 135 (64.28%)                  |                        |
| Secondary           | 39 (13%)          | 3 (1.43%)                     |                        |
| University          | 21 (7%)           | 39 (18.57%)                   |                        |
| **Work status**     |                   |                               |                        |
| Not working         | 236 (78.67%)      | 24 (11.42%)                   |                        |
| Working             | 64 (21.33%)       | 9 (4.28%)                     |                        |
| **Monthly income:** |                   |                               |                        |
| ≤1000(≤101.41)      | 150 (50%)         | 123 (58.57%)                  |                        |
| 1001-2699(102,15-276) |                   |                               |                        |
| 2700-5000(276.1-510,23) |                 |                               |                        |
| ≥5001(≥510,33)      | 15 (5%)           | 9 (4.28%)                     |                        |
| **Ethnicity**       |                   |                               |                        |
| Arabic              | 220 (73.33%)      | 159 (75.71%)                  |                        |
| Berber              | 80 (26.67%)       | 51 (24.29%)                   |                        |
| **Residential area**|                   |                               |                        |
| Rural               | 179 (59.67%)      | 156 (74.29%)                  |                        |
| Urban               | 121 (40.33%)      | 54 (25.71%)                   |                        |
| **Covid-19 status** |                   |                               |                        |
| Affected            | 0 (0%)            | 0 (0%)                        |                        |
| Not affected        | 300 (100%)        | 210 (100%)                    |                        |
Table 2  CAM methods used by our participants

| Products and practices | N   | %    |
|------------------------|-----|------|
| Natural Honey          | 105 | 50   |
| Propolis               | 6   | 2.86 |
| Medicinal plants       |     |      |
| Eucalyptus             | 69  | 23   |
| Fitches (black seed)   | 22  | 10   |
| Fenugreek              | 30  | 14.3 |
| Watercress alenois     | 6   | 2.86 |
| Hoerhound              | 12  | 5.6  |
| Rosemary               | 13  | 6.19 |
| Oleander               | 1   | 0.48 |
| Turmeric               | 9   | 4.3  |
| Marjoram               | 4   | 1.9  |
| Anserine               | 21  | 10   |
| Marrubium              | 7   | 3.33 |
| Aristolochia           | 1   | 0.48 |
| Thyme                  | 17  | 8.1  |
| Wormwood               | 29  | 13.81|
| Clove                  | 87  | 41.43|
| Sage                   | 3   | 1.42 |
| Lavender               | 10  | 4.76 |
| Spiritual              |     |      |
| Prayer                 | 175 (65)* | 83.33 (31)* |
| reading of the «Qur’an»| 146 (120)* | 69.52 (57.14)* |
| Fasting                | 17  | 8.1  |
| nutritional supplements|     |      |
| vitamin C              | 83  | 27.67|
| Multivitamin           | 5   | 1.67 |
| Magnesium              | 3   | 1    |
Despite this, Herbal medicine is practiced in all parts of Morocco. It is still the primary healthcare system for a large fraction of the population during this pandemic [42].

Elsewhere, many countries are also trying CAM, including traditional, Herbal treatment, alone or in combination with standard management, as an option for the prevention or treatment of COVID-19 [43]. For example, homoeopathic medicine was used in Cuba for high-risk COVID-19 patients to prevent severe respiratory symptoms. At the same time, Zimbabwe permitted using herbalists for COVID-19 treatment. In Madagascar, the government promoted herbal medicine used to treat Malaria as an immunity booster against COVID-19 [44-45]. And in Saudi Arabia, a considerable proportion of the population reported using herbal products or food supplements to protect themselves from Covid-19 [46].

This pandemic has also underscored the need to recommit spiritual care as an essential component of whole-person palliative care. Imams, priests, rabbis, and other spiritual care providers frantically sought to offer prayers, blessings, pardons, and chants during this pandemic disease [47]. Furthermore, this COVID-19 crisis has increased Google searches for prayer to the highest level ever recorded. More then half of the world prayed to end the Coronavirus pandemic [48]. In our study, 31% of our patients practice prayer to be protected from Covid-19. Moreover, Islamic psychotherapy, which originates in the Koran and hadiths, is a wealth enhancer that helped to deal with anxiety disorders during Covid-19 [49].

Only 6.66% of CAM users in our study discussed CAM use with their physicians. This small percentage in our series may suggest a lack of communication between healthcare providers and their patients. In the literature, 60 to 63% of patients do not inform their oncologist of this use [50-51]. It was mainly because the attending physician did not ask about the use of other therapies [52-53].

**Conclusion**

Currently, CAM is practiced in all parts of Morocco and remains an important healthcare system for a large fraction of the population, especially in rural communities. It must benefit, in the same way as conventional medicine, from scientific studies evaluating its potential benefits, toxicity, and interactions with traditional oncology treatment. Our study highlights the high prevalence of CAM use in cancer patients, especially since the outbreak of the Covid 19 pandemic. Cancer care professionals need to be able to discuss CAM with their patients based on evidence-based medicine. For that, we need a strategy for research and education modalities to integrate CAM modalities with beneficial value in routine practice and to avoid possibly harmful CAM. In the particular context of Covid 19 Pandemic, CAM could be a complementary preventive therapy. However, these hypotheses require experimental validation in SARS-Cov-2 infection models and COVID-19 patients.

**Study Limitations**

Our study results should be interpreted with the following limitations in mind. First, data collection was based on self-report; participants knew that the interviewer was one of OHC healthcare providers, which might have affected their answers.

**Conflict of Interest**

The authors state that they do not have any conflict of interest.

**Submission declaration**

The authors state that this work has not been published previously.

**Figure 1 Reasons of CAM use and perceived effectiveness by cancer patients.**

**Funding**

This work did not receive any grant from funding agencies in the public, commercial, or not-for-profit sectors.

**Conflict of interest**

There are no conflicts of interest to declare by any of the authors of this study.

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