Research Article

Lifestyles and Complementary Medicine: A Survey in the Region of Tuscany

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Abstract

Background: According to the international literature, users of Complementary Medicine (CM), Complementary and Alternative Medicine (CAM) and Complementary and Integrative Medicine (CIM) are physically more active, less overweight and have healthier lifestyles than the average Tuscan population.

Aim: To evaluate the socio-demographic characteristics and lifestyles of patients of CM public clinics in the region of Tuscany and to define their profiles in terms of physical

exercise, smoking habits, diet, intake of alcohol, drugs, food supplements and botanicals, and weight.

Methods: In 2014, the Tuscan Network of Integrative Medicine (now called the Tuscan Regional Center for Integrative Medicine) distributed a lifestyle questionnaire to 1,064 patients (age ≥18) in CM public clinics. The sample was organized according to the level of education (medium-low and medium-high), and survey items included questions regarding habits for exercise, smoking, diet, alcohol, etc.

Results: The Tuscan users of CM had a low percentage of sedentary habits (19% for those with a medium-high level of education; 32.1% for those with a medium-low educational level), and a high consumption of fruit and/or vegetables (40.2% and 35.4%, respectively). Smoking was low among CM users (19.3% in the group with medium-high education level, and 15.6% in the group with medium-low educational level). The percentage of drinkers at risk seemed to be quite high in CM users with a medium-low level of education. Lifestyles among the different CMs were also reported and discussed.

Conclusions: CM patients seemed to eat large quantities of fruit and vegetables, they were physically more active, and those in the medium-low education level smoked less in comparison to the general Tuscan population. The lifestyles of the individuals of our sample were not as healthy as generally reported in the literature, with particular regard to alcohol consumption and obesity.

Keywords

Lifestyles; complementary and integrative medicine; public regional healthcare system

1. Introduction

The World Health Organization (WHO) estimated that chronic diseases such as cardiovascular and respiratory diseases, cancer, diabetes, etc., are responsible for 86% of deaths in Europe. These diseases share four major risk factors: smoking, alcohol abuse, poor nutrition and physical inactivity [1].

According to a recent study [2], dietary factors are associated with a substantial proportion of deaths resulting from heart disease, stroke, and type-2 diabetes. It was also estimated that this group of diseases causes 75% of deaths and conditions of severe disability in Italy [3].

Several publications have pointed out the association between some types of cancer, especially breast cancer, and diet [4]; lifestyle and exercise [5]; obesity [6,7]; and alcohol consumption [8, 9].

Similarly, other papers have shown an association between colorectal cancer and diet/nutrition [10,11,12]. The WHO also indicates that an excessive consumption of red and preserved meat is strictly connected to an increased risk of colorectal cancer. The International Agency for Research on Cancer (IARC) classified processed meat as carcinogenic to humans (Group 1) [13]. The "Group 1" category is used when there is sufficient evidence of carcinogenicity in humans and convincing evidence of the agent causing cancer. Evaluation is usually based on epidemiological studies showing the development of cancer in exposed humans.

On the other hand, fresh fruit and vegetables play a relevant role in the protection from esophagus and stomach cancer [14].

Trama and co-workers [15] analyzed the incidence, survival and mortality trends of lung cancer in Italy using a 2017 survey on smoking behaviour. The decreased use of tobacco in men (from 60% in the 1960s to 24% in 2017) was most likely responsible for their lowered incidence and mortality. On the contrary, for women, although survival rates improved slightly, incidence and mortality were both on the rise, owing to increased smoking rates in the last few decades.

For these reasons, there is a broad convergence on the need to put in place concrete actions able to counteract these risk factors. Investment in prevention policies should be a priority objective for institutions, healthcare professionals, and society as a whole.

It is also crucial to promote public awareness on this issue, so that citizens may become proactive partners in improving their health.

European institutions support the aim of fostering healthy lifestyles in the population; the European Regional Office of the WHO - together with the European Commission and the European Union (EU) member States - approved the "Health in All Policies" statement in 2005. This statement intended to promote policies that could influence mortality rates and the burden of chronic diseases by addressing in particular "modifiable" behavioral risk factors such as hypertension, tobacco use, harmful use of alcohol, obesity, unhealthy diets, and physical inactivity [16].

1.1 Lifestyles and Complementary Medicine

Several studies of international literature have reported that users of CM/CAM/CIM usually tend to be more physically active and have a more balanced diet and overall healthier lifestyle than the general population.

According to Nahin and co-workers [17], "Those engaging in positive health behaviors and exhibiting fewer health risk factors are more likely to use CAM (…). The fact that users of CAM tend to pursue generally healthy lifestyles suggests that they may be open to additional recommendations toward optimizing their health."

A few years later, Garcia and his colleagues [18] suggested that as CAM use increases, positive lifestyle factors also increase. These findings highlighted the importance of CAM use as a method of increasing overall health as well as improving practitioners' understanding of and ability to assist patients in increasing overall well-being through non-traditional or non-conventional means.

This association between the use of complementary medicine and lifestyle is more evident in cancer research, where several studies have observed that the people who turn to CAM have a healthier lifestyles [19,20].

A publication in 2013 indicated that "a high proportion of breast cancer survivors report physical activity, following a specific diet and use of CM" [21].

Another study [22] analyzed the lifestyles of a sample of 155 children, in order to compare the characteristics and usage patterns of CAM and lifestyle therapies among survivors of pediatric cancer. The conclusion was that the data "reports a strong association between CAM and lifestyle therapies and may identify a population with commitment to general wellness. Use of one therapy may promote use of other therapies and this potential synergistic relationship can be targeted in future interventions."

Other publications [23,24,25,26] have reported positive associations between lifestyle factors and use of CM/CAM/CIM.

After analysing a nationally representative U.S. sample (2012 National Health Interview Survey) of adults aged over 50 years (n=14,849), Johnson et al. [27] concluded that Complementary Health Approaches (CHA) were used by nearly a third of midlife and older adults and were perceived to provide substantial benefit. Integrating CHA as part of a healthy lifestyle "has the potential to contribute to healthy aging among midlife and older adults."

More recently, Lauche et al. [28] observed that the use of CM was associated with body satisfaction and weight management methods in Australian women. Women using CM less likely wanted to lose weight and were more likely to cut down on fats and/or sugars, to use low glycemic diets, diet books and 'other' methods' compared to CM non-users.

1.2 Regional Tuscan Center for Integrative Medicine

Since 2005, four complementary medical practices (acupuncture and traditional Chinese medicine, herbal medicine, homeopathy and manual medicine) have been included in the regional essential levels of healthcare in Tuscany. Consequently, all citizens can access these medicines in the public healthcare system.

A 2017, regional survey reported 107 established public clinics (outpatient and hospital clinics) of complementary medicine in Tuscany: 67 for acupuncture and TCM; 22 for homeopathy; 12 for herbal medicine; and 6 for other non-conventional therapies (manual medicine, TCM techniques, etc.), accounting for more than 30,000 visits each year [29].

The Tuscan Regional Center for Integrative Medicine (TRCIM, previously Tuscan Network of Integrative Medicine), which was established in 2007, provides a unified system and coordinates a number of activities, to ensure integration, quality of healthcare services and patient safety with the framework of prevention, therapy, and rehabilitation. Since 2009, the TRCIM has become a regional structure of clinical governance [30].

The regional reference structure for complementary medicine consists of four regional reference centers. They are the Fior di Prugna Acupuncture and TCM Center of Camerata, Florence; the Herbal Medicine Clinic of the Careggi University Hospital, Florence; the Homeopathic Clinic, Cittadella della Salute - Campo di Marte Hospital, Lucca; and the Center for Integrated Medicine at Pitigliano Hospital, specifically dedicated to hospitalized patients [31].

1.3 First Pilot Study

A pilot survey conducted at Florence's Centre Fior di Prugna - Local Health Unit Tuscany Centre (Italy) in 2012 assessed the association between lifestyles and use of CM. Using responses to an anonymous self-administered questionnaire, the specific aim was to evaluate the lifestyles of adult patients (age ≥18) who accessed the outpatient clinics of traditional Chinese medicine (TCM) and homeopathy.

Four hundred and seventy questionnaires were filled out over a six month-period. Question items included socio-demographic data (age, gender, education, etc.) and lifestyle habits such as smoking, diet (especially use of alcohol, coffee, etc.), and physical activity/exercise.

The questionnaires were processed in collaboration with the Regional Health Agency (RHA) of Tuscany. This pilot study concluded that the lifestyles among the Tuscan citizens who used CM were healthy regards to smoking habits and physical activity [32].

1.4 Aim of the Survey

Two years later (from January to July 2014), the Tuscan Network of Integrative Medicine (now Tuscan Regional Center for Integrative Medicine) in collaboration with the Regional Health Agency of Tuscany developed a larger survey to further explore and analyze the data of the 2012 pilot study.

The aim was to evaluate the socio-demographic characteristics and lifestyles of citizens visited in the complementary medicine outpatient clinics of the Tuscan Regional Healthcare Service.

2. Materials and Methods

A specific 7-item questionnaire (Annex 1) was created in collaboration with the Regional Health Agency of Tuscany. The data included socio-demographic characteristics, questions on physical activity/exercise, habitual smoking, eating habits (consumption of meat and fish, fruit and vegetables, organic foods, etc.), alcohol (wine, beer, spirits, aperitifs, etc.), drugs, food supplements and botanicals, and weight.

The questionnaire was distributed to the adults (≥18 years) who accessed the Tuscan complementary medicine clinics at the time of their visit. Compilation of the questionnaire was optional and in the respect of anonymity. The survey was conducted in 23 clinics from January to July 2014. After that period, the data from 1,064 questionnaires was extrapolated.

The educational level of CM patients was also investigated in the survey. We selected five categories (university degree, high school, junior high school, primary school, no education) and divided the sample in 2 sections: medium-high level (university degree, high school graduation) and medium-low level (junior high school, primary school). The purpose was to evaluate whether socio-economic state could influence the lifestyles of CM users.

In 2013, the surveillance system Multiscopo (Istat) had explored a wide range of issues such as family relationships, housing and area of residence, lifestyles, free time and culture, use of technologies, etc., reporting on the daily life both of single people and families in Italy. It involved about 19,000 families and more than 46,000 people; a specific section investigated these items in the region of Tuscany.

The two samples (CM sample and Multiscopo Tuscan general population) were quite different in numbers (1,064 people vs more than 46,000), gender, age, and educational level and were not comparable even after statistical adjustment. Therefore, this study considered the data of Multiscopo only as a general reference of the lifestyles of the Tuscan population.

2.1 Statistical Analyses

Data management and statistical analysis were performed using Excel 2013 and Stata 14.

3. Results

According to the socio-demographic data, patients who accessed the clinics of CM in Tuscany were mostly women, 77.6% versus 22.4% of men, as reported in other surveys about CMs (Figure 1).

The ongoing treatments at the moment of the survey were the following: acupuncture 63%, homeopathy 27%, herbal medicine 8%, manual medicine 2.6%, Chinese massage 30.7%, conventional medication 4.9%, other 2.5%, as reported in Table 1.

Their age was as follows: the higher percentage was of patients between 56 and 70 years (31.6%), followed by the age-class 41 to 55 years (30.2%), the age-class 18 to 40 (21.3%) and finally by the patients who were older than 71 years (17.0%), as reported in Figure 2.

As to educational level, 37% of the sample had a high school degree, 26% a university degree, 20% a junior high school degree and 15% a primary school certificate, as reported in Figure 3.

Table 1 Type of treatment ongoing.

Type of treatment ongoing	Male (N=237)	Female (N=820)	Total (N=1,057)
Acupuncture	66.7	62.0	63.0
Homeopathy	22.4	28.3	27.0
Herbal Medicine	10.5	7.3	8.0
Manual medicine	1.7	2.8	2,6
Chinese massage	27.0	31.8	30.7
Conventional medication	5.5	4.8	4.9
Other	1.3	2.8	2.5
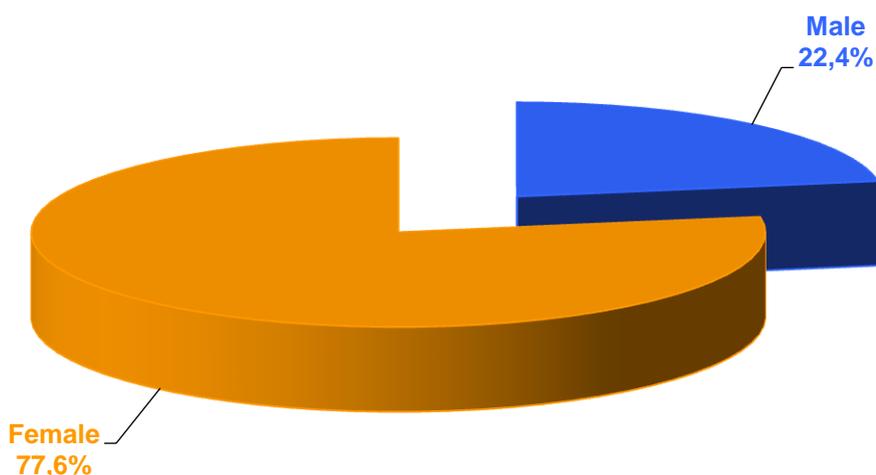
Figure 1 Sample of CM clinic patients. Gender.
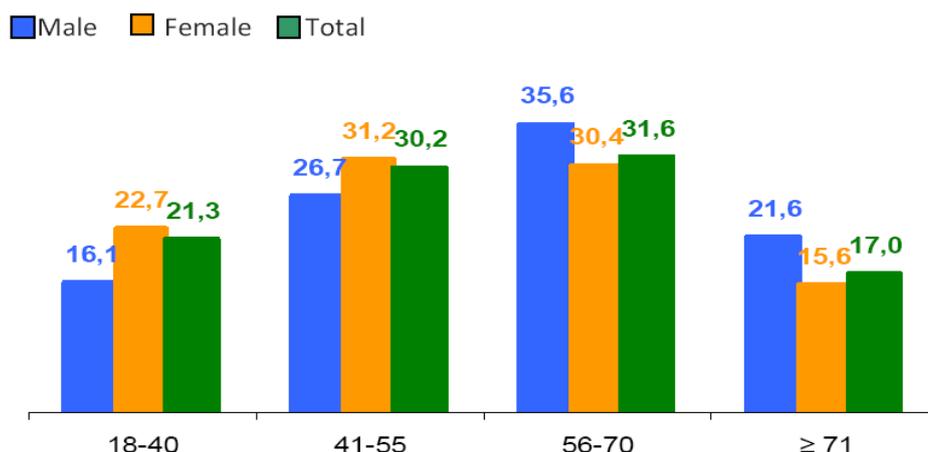
Figure 2 Sample of CM clinic patients. Age-class.
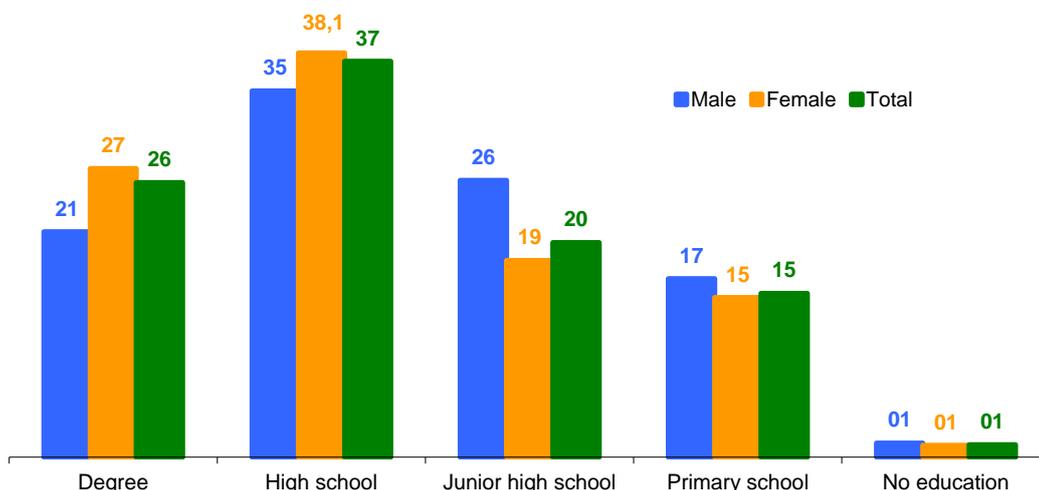
Figure 3 Sample of CM clinics patients. Educational level.

Table 2 reports the main data about lifestyle-related items, both "bad habits" such as smoking and drinking at risk, and "good habits" such as the consumption of fruit and vegetables (5 or more portions a day), and the effect of eating habits and sedentary life on Body Mass Index (BMI) expressed in terms of weight and obesity. The data concerns the two levels of education considered, i.e. medium-high and medium-low levels.

Patients with a medium-high level of education tended to smoke more (19.3% vs 15.6%) compared to those with medium-low level of education; they drank less (10.6% vs 21.6% of drinking at risk), were less sedentary (19.0% vs 32.1%) and ate larger quantities of fruit and vegetables (41.2% vs 35.4%).

Probably these healthy habits were also reflected in weight and obesity, which were lower in CM patients with a medium-high level of education, compared with those with a medium-low level of education, respectively 27.5% vs 41.5% and 6.3% vs 18.3%.

Considering as a general reference the Multiscopo survey, the general Tuscan population appeared to be more sedentary, both in the medium-low and in the medium-high level of education categories, and to consume much fewer fruit and vegetables compared to CM patients. The distribution of the other risk factors in the two populations was similar.

Table 2 Lifestyles of patients visited in the CM clinics: comparison between medium-high and medium-low level of education.

LIFESTYLES	Complementary Medicine					
	Medium-high level of education			Medium-low level of education		
	%	[95% CI.]		%	[95% CI]	
Smoking						
yes	19.3	14.8	23.9	15.6	10.7	20.5
former	32.6	27.6	37.5	41.0	34.9	47.2
never	48.1	42.5	53.6	43.4	37.5	49.3
Drinking at risk	10.6	7.0	14.1	21.6	15.4	27.8
Sedentary habits	19.0	14.8	23.2	32.1	26.7	37.5
Consumption of fruit/vegetables (5 or more portions)	41.2	35.8	46.6	35.4	30.0	40.9
Overweight*	27.5	22.5	32.5	41.5	35.4	47.5
Obesity*	6.3	4.1	8.6	18.3	13.6	22.9

*According to the BMI (Body Mass Index).

3.1 Differences among the CM therapies and techniques

The survey also investigated the differences between socio-demographic data and lifestyle-connected habits in the different types of CM treatment or therapies.

The people who used homeopathy in Tuscan CM clinics were on average younger and had a higher level of education (36.7% graduated).

Lifestyle-connected data are reported in Table 3. The lowest percentage of those who were overweight or obese was reported among homeopathic patients, 19.8% and 7.7% respectively. On the other hand, the consumption of fruit and vegetables was quite similar in the different CM therapies, and at-risk drinking was lower among patients who used herbal medicine. These patients also reported the highest percentage of smoking (23.8%).

Table 4 reports the use of some types of drugs among CM patients. Homeopathic patients used less conventional drugs; in 70.4% of the cases they never took anti-anxiety medication, anti-depressants or sleeping pills, and in 30.7% did not take analgesics. 51.9% of manual medicine patients declared that they did not need antibiotics, slightly less than homeopathic patients (49.8%), even though homeopathic patients are the most numerous in choosing not to use them (11.9%).

The percentage of sedentary habits (exercise in free time absent) was higher among citizens who used manual medicine and acupuncture, and lowest among those who used homeopathy (Figure 4).

**Table 3** Lifestyles of patients according to different types of CM.

LIFESTYLES HABITS	Acupuncture (340 out of 671)	Homeopathy (207 out of 287)	Herbal medicine (49 out of 85)	Manual medicine (13 out of 27)	Chinese massage (178 out of 327)	Conventional drugs (23 out of 52)
Smoking	17.2	16.4	23.8	16.0	17.6	10.4
Drinking at risk	79.8	77.6	68.2	81.5	81.0	84.6
Consumption of fruit and vegetables (5 or more portions a day)	42.0	43.3	45.9	44.4	42.5	46.2
Overweight*	30.4	19.8	40.5	29.2	25.4	35.3
Obesity*	12.0	7.7	1.3	8.3	15.2	5.9

* With reference to Body Mass Index (BMI).

Table 4 Use of some types of drugs - Comparison of the different CM therapies.

Have you taken antibiotics in the last year?	Acupuncture (657 out of 671)	Homeopathy (285 out of 287)	Herbal medicine (83 out of 85)	Manual medicine (27 out of 27)	Chinese massage (316 out of 327)	Conventional drugs (51 out of 52)
No, I did not need them	37.1	49.8	32.5	51.9	39.2	43.1
Yes, I needed them	59.2	38.3	56.6	44.4	56.7	54.9
No, by choice	3.7	11.9	10.8	3.7	4.1	2.0
Total	100.0	100.0	100.0	100.0	100.0	100.0
Have you taken anti-anxiety medication, antidepressants or sleeping pills in the last year?	Acupuncture (643 out of 671)	Homeopathy (284 out of 287)	Herbal medicine (84 out of 85)	Manual medicine (25 out of 27)	Chinese massage (316 out of 327)	Conventional drugs (51 out of 52)
No, never	56.6	70.4	53.6	60.0	62.7	4.1

Not in the last year, but in the past	7.6	9.2	4.8	4.0	8.9	5.9
Yes, occasionally in the last year	15.7	12.0	17.9	20.0	15.2	21.6
Yes, frequently in the last year	20.1	8.5	23.8	16.0	13,3	2.4
Total	100.0	100.0	100.0	100.0	100.0	100.0
Have you taken analgesics in the last year?	**Acupuncture** (658 out of 671)	**Homeopathy** (283 out of 287)	**Herbal medicine** (84 out of 85)	**Manual medicine** (27 out of 27)	**Chinese massage** (322 out of 327)	**Conventional drugs** (51 out of 52)
No, never	13.1	30.7	23,8	11,1	13,0	21,6
Not in the last year, but in the past	7.0	9.9	8.3	7,4	8.7	5.9
Yes, occasionally in the last year	46.7	45.6	50.0	44.4	52.2	37.3
Yes, frequently in the last year	33.3	13.8	17.9	37.0	26.1	35.3
Total	100.0	100.0	100.0	100.0	100.0	100.0
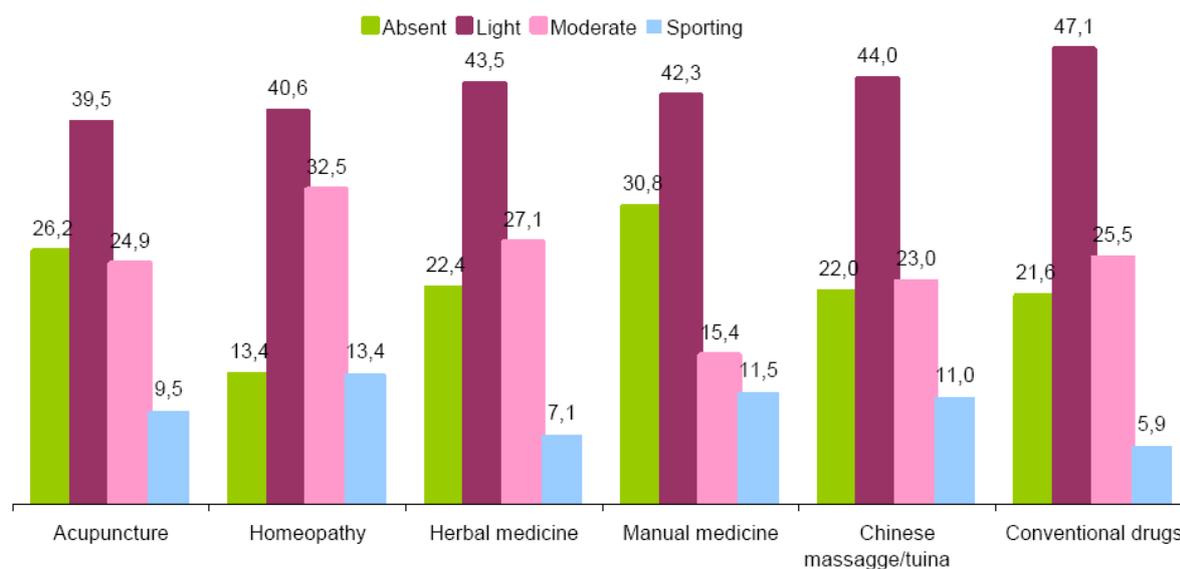
Figure 4 Exercise/physical activity practised in the different sections of the CM sample.

4. Discussion

The data reported by this survey highlighted some interesting issues, starting from the socio-demographic characteristics of the population who used complementary medicine in the public clinics of the public healthcare system of the region of Tuscany.

According to the international literature, CM users are mostly young/middle-aged, highly educated women. The systematic review conducted by Frass and his colleagues in 2012 [33] on 16 papers concluded that the users of CM were mostly women, middle aged, and more educated. In addition, the study conducted by Alwhaibi and Sambamoorthi [34] in 2016 reported a higher percentage of women compared to men (53.5% vs. 42.7%) among CAM users in the U.S.

The socio-demographic data of our sample confirmed the higher percentage of women compared to men (77.6% *vs.* 22.4%), as well as the higher level of education (see Figure 3). As our sample was derived from patients who accessed a CM public service, socioeconomic status (SES) was generally medium-low. This is where there are similarities in results between the two samples end.

Patients who accessed CM public clinics in Tuscany were older than those reported in the international literature. The older age reported in this survey can be partly explained by the fact that CM treatments in Tuscany are provided within the public Healthcare Service and are more affordable for the population than those usually provided by private practitioners. This facilitates access to these treatments also by low-income pensioners and elderly people. In fact, the percentage of pensioners in our sample is relatively high (26.4%). Similarly, acupuncture patients, who are generally elderly people receiving treatment for musculoskeletal disorders, amount to 63% of the total.

The older age could also explain the percentage of obesity reported among CM patients, and especially among those with medium-low educational level (18.3%). The fact that the users of acupuncture and manual medicine may be seeking help for musculoskeletal disorders or injuries might also explain obesity.

As regards to the comparison between the lifestyles adopted by high and low educational level CM patients, there was a significant difference in those that were overweight and obese [medium-high level (27.5% and 6.3%) and medium-low level (41.5% and 18.3%)] , as well as in sedentary lifestyle (19.0% vs 32.1%).

This data seems to indicate that social and cultural differences probably influence the choice of healthy lifestyles more than the choice of using CMs for personal well-being and health. This issue should be evaluated with specific studies.

Finally, the majority of CM users who participated in the survey had already used a complementary therapy (58.1%) and had come for a control visit, but some of them were going to CM clinics for their first visit. This aspect may have slightly influenced the results since a patient who has recently approached the field of complementary medicine has probably not yet adopted clear CM-oriented lifestyles.

We also wondered why acupuncture and manual medicine users' lifestyles were different from those of homeopathic or herbal medicine users. One hypothesis could be the higher strictness of homeopathy in lifestyles indications. The second hypothesis could be the type of diseases for which these patients ask for a visit in public clinics, i.e. mostly pain and musculoskeletal disorders

for acupuncture and manual medicine *versus* internal organ complaints for homeopathy and herbal medicine, which probably require higher attention in maintaining healthy lifestyles.

The difference of the complaints suffered by the patients of the different CMs probably also explains a more frequent use of analgesics by the patients of acupuncture and manual medicine.

The results of our survey partially confirmed what the international literature reported, namely that CM users generally have healthy lifestyles and can actively contribute to a new approach to health. It is worth highlighting that CM patients shared healthy choices with particular regard to the item of diet (fruit and vegetables, organic food, etc.).

There is also the possibility of a "reverse causality," or rather that CM users were attracted to "healthier lifestyles," which lead them to choose CM rather than CM directly influencing healthier lifestyle choices.

However, we consider that this phenomenon, if it exists, is not so relevant in our cases. Actually, patients usually access CM public clinics mainly through "word of mouth" and not through choice of ecological and natural lifestyles, as instead it happens more frequently in the private sector. They have chosen to treat themselves with CMs generally because their symptoms did not heal with conventional treatments or because they have had severe adverse effects and somebody, perhaps even their GP, told them that they may perhaps turn to CMs. [35]

Future interventions could target the potential and synergistic association between CM therapies and lifestyle therapies to increase overall wellness, symptom control, and clinical outcomes in at-risk populations, as pointed out by Karlik [22]. For instance, the rates of association between CM therapies and healthy lifestyle behaviors suggest that the concurrent use of the two modalities should be further investigated in multiple populations.

4.1 Study limitations

The first limitation of this survey was that the patients chose personally to go to clinics providing CM therapies; consequently the sample was strongly selected (self-selection bias). Secondly, the questionnaire was filled out on a voluntary basis and the CM sample cannot be considered a random representative sample.

Finally, there was not a reliable control group with characteristics comparable to the CM group.

5. Conclusions

Our data reported that CM patients ate a large quantity of fruit and vegetables, had moderately less sedentary habits compared with the general Tuscan population and smoked less (those of the medium-low educational level). Lifestyles of our sample were not as healthy as the literature usually reported especially regarding alcohol consumption and obesity.

Other surveys and studies are necessary for an in-depth investigation of these results in order to understand, for example, the high levels of alcohol consumption and high percentages of obesity. These findings may offer a potential translatable strategy to increase healthy lifestyle behaviors in the general populations, also through specific projects.

Information campaigns are necessary to improve the lifestyles of the population.

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Author Contributions

Di Stefano M. and Monechi MV drafted the manuscript and contributed to the bibliographic research; Baccetti S. conceived the survey and supervised the distribution in the regional Centre of integrative medicine; Rossi E. contributed to data collection and their critical interpretation; Cucca B. drafted tables and figures and co-ordinated the authors of the manuscript; Segantini S. participated in the lifestyle project and in drafting the questionnaire; Cortesi EB participated in the critical revision of the data; Voller F. contributed to designing the survey and supervised the statistical analyses; Fanti E., Berti A. and Bravi S. performed the analysis of the Multiscopo survey and statistical analyses.

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Competing Interests

No conflict of interest.

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