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The use of complementary and alternative medicine among surgical patients: a cross-sectional study

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Abstract

Background The use of complementary and alternative medicine (CAM) has increased substantially around the world; various global studies have documented the use of CAM by surgical patients in the preoperative period, with rates of herbal medications and other nonherbal treatments ranging from 12 to 69%. This study aimed to identify the prevalence of CAM and its patterns of use among surgical patients.

Methods From December 2020 to April 2021, a descriptive cross-sectional study was undertaken in Palestine. A face-to-face interview questionnaire was used. The participants were asked questions regarding sociodemographics, clinical information, CAM usage, reasons for its use, and opinions on its efficacy.

Results Among the 300 surgical patients who were interviewed in this study, 252 (84.0%) reported that they had ever used CAM, while a total of 122 (48.4%) had used CAM before their surgery, 81.7% of the respondents used herbal methods, and 64.7% of them used nonherbal methods. CAM use among our study population was not linked to specific demographics or other characteristics, except health insurance ($p=0.004$). The most commonly used herbs among surgical patients are *Salvia officinalis* L. (Sage) (84.1%) and *Pimpinella anisum* L. (Anise) (75.5%). The highest percentage was found among patients with university qualifications (73.2%), who used more than three methods ($p<0.001$). In addition, 59.4% of the females used more than three therapies, whereas 45.9% of the males did ($p=0.032$).

Conclusions The herbal methods used are common among surgical patients in Palestine and are consistent with the enormous increase in the use of CAM. Therefore, awareness should be raised among the public regarding the risks and benefits of CAM use.

Keywords Complementary and alternative medicine, CAM use, Prevalence, Reasons, Herbs, Surgery

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Introduction

Complementary and alternative medicine (CAM) is a group of various medical and health-related beliefs, habits, and products that are not currently assumed to be part of standard medical treatment (Sawalha 2007; Yazici et al. 2019). Complimentary therapy is defined as therapy that can be used in conjunction with standard medical treatment. However, alternative therapies are commonly used to replace standard medical treatment (Shraim et al. 2017). CAM users typically consume various items after being recommended by family, friends, herbalists, pharmacy assistants, and others (Shraim et al. 2017).

CAMs are divided into five categories by the National Center for Complementary and Alternative Medicine: mind–body medicine (biofeedback, meditation, hypnosis, neuro-linguistic programming, relaxation, yoga, and Tai-Chi), alternative medical systems (Indo-Ayurveda medicine, traditional Chinese medicine, and homeopathy), biological therapies (aromatherapy, plants, and vitamins), manipulative body orientation, and energy therapies (Yazici et al. 2019).

People in both developed and developing countries have recently consumed herbal medicines for better health (Jaradat et al. 2016a). This was due to their dissatisfaction with standard medical treatment and the escalating costs of these drugs. It has also been suggested that a patient's intention to use CAM before or in addition to standard medical treatment is influenced by sociodemographic factors (Shraim et al. 2017). In general, there is no single reason for the present popularity of CAM (Sawalha 2007).

CAM, particularly herbal medicinal plants, plays a vital role in primary health care in Palestine, as in other Arabic countries (Alrowais and Alyousefi 2017). According to a prior study, 18–20% of surgical patients consume CAMs in the postoperative period for the treatment of pain, nausea and vomiting, and wound healing (Yazici et al. 2019), as various CAM products have been confirmed to have anti-inflammatory and antioxidant properties (Kaplan et al. 2007).

The areas where herbal medicines are consumed should be covered by medical personnel, in addition to their side effects, their possible interactions with other drugs, and how long herbal medicines should be stopped before surgery, as well as guiding healthy and sick people on how to use complementary therapies effectively and correctly (Yazici et al. 2019).

Although the use of CAM is considered an integral part of therapy in Palestine, few methods, such as physiotherapy, are available in medical facilities, while others are not granted certification nationally. Furthermore, the use of CAM is increasing dramatically (Yazici et al. 2019), and several studies have been conducted on CAM

use among the Palestinian population (such as end-stage renal disease patients, cancer patients, geriatric patients, and pregnant women) (Zyoud et al. 2016, 2014; Ali-Shtayeh et al. 2016; Quzmar et al. 2021); however, no studies have been published among Palestinian surgical inpatients. Therefore, patients are, in general, unaware of the potential side effects of CAM. Because of the potential for serious interactions and side effects with prescription medicines (Yilmaz and Çıfci 2018), it is necessary to be cautious in the preoperative evaluation of the potential use of CAM. The present research was performed to determine the knowledge, attitudes, and practices of Palestinian surgical patients with respect to CAM. In addition, it aims to determine the prevalence of CAM use, sources of information, and reasons for using CAM and to determine factors associated with CAM use and the number of CAM methods used.

This study seeks to raise awareness regarding CAM use among patients themselves and medical staff since different CAM patterns may affect surgical patients' pre, intra- and postoperative management, in addition to encouraging patients to disclose their use of CAM. This study implies that asking about CAM should be included when talking to patients about their medical history, including the period during which they used it and when they quit, side effects, drug interactions, and surgical implications.

Methods

Study context

As a result of the expanding interest in CAM therapy among Palestinian people in general and surgical patients in particular and the lack of knowledge regarding these products and their proper use, either among medical staff or among surgical patients themselves, the need for this study has emerged.

Study design and setting

This cross-sectional study evaluated the prevalence and patterns of CAM use among Palestinian surgical patients. The study was conducted at Rafidya Hospital and An-Najah National University Hospital (NNUH) in Palestine between December 2020 and April 2021 on inpatients in surgery wards who were scheduled for surgery during the given period.

Sample size and calculation

The estimated average number of surgical patients visiting both hospitals during the study period was 1,100. This number was used as a reference to determine the sample size required for this analysis. Using the Raosoft sample size calculator, a sample size of 285 was calculated by setting the response distribution to 0.50, the error margin to

5%, and the confidence interval at 95%. The target sample was increased to 300 participants to reduce erroneous outcomes and improve reliability.

Data collection form

Between December 2020 and April 2021, to acquire information about CAM use, structured face-to-face interviews were carried out at Rafidya Hospital and NNUH via a questionnaire in the native Arabic language on the basis of a literature review and was introduced to the participants in five sections (Yazici et al. 2019; Sha-keel et al. 2008; Çulha et al. 2016; Velanovich et al. 2006; Schieman et al. 2009).

The first section of the questionnaire collected information on patients' sociodemographic characteristics, including age, sex, education status, residency status, marital status, health insurance status, working status, and monthly income status. The second section recorded the type of surgery, comorbidities, and traditional medicine use. The third section consisted of ten statements about knowledge and attitudes toward CAM, with answers of yes/no to the statements given to the participants. The fourth section focused on methods of herbal usage. Finally, the last section collected detailed data about CAM use, including five items with yes/no responses and two questions about the duration and frequency of CAM use.

When interviewing participants, the researchers filled out the questionnaires themselves. Each interview lasted approximately 10–20 min.

Reliability and validity

A group of three specialist pharmacists who are experts in the field of CAM assessed the final questionnaire's face and content validity. They evaluated the organization, clinical terminology, completeness, appropriateness, logical sequence, and accuracy of the statements and modified some questions as needed. To test its readability and reliability, the questionnaire was piloted with 10 patients. However, the results of the pilot test were not included in the final data analysis. The survey instrument was improved on the basis of the feedback received during the pilot review. The Cronbach's alpha for the knowledge questions was 0.762.

Inclusion and exclusion criteria

During the study period, all patients aged ≥ 18 years and admitted for surgery were invited to participate in the study. Patients who had to undergo emergency surgery and those with cognitive disabilities were excluded from the study.

Ethical considerations.

The Institutional Review Board (IRB) of An-Najah National University and the local health authorities approved all aspects of the study procedure. In addition, verbal informed consent was obtained from each patient before they were interviewed.

Statistical analysis

The Statistical Package for Social Sciences (SPSS) version 21.0 was used to analyze the data. To investigate the use of CAM and demographic data, such as age, sex, marital status, and educational level, as well as clinical data, descriptive statistics were utilized. Correlations were investigated via the chi-square test, with a P value of less than 0.05 considered statistically significant.

Results

Sociodemographic characteristics of the study participants

A total of 307 participants were interviewed for our study over a period of 4 months, and seven were excluded according to the inclusion and exclusion criteria. Our study included 166 (55.3%) females and 134 (44.7%) males, with a male to female ratio of 1:1.2. More than half of the patients ranged in age between 40 and 65 years (57.3%, $n = 172$), with a mean age of 45.9 years. Most of the participants (82.7%) underwent general surgery, and only 17.3% underwent specialized surgery (Table 1).

Comorbidities of the participants

When the comorbidities of the surgical patients were reported, 153 (51.0%) patients were free from comorbidities, and 49% had comorbidities. With respect to comorbidities, 63.3% of patients had hypertension, 51.7% had diabetes mellitus, and 35.4% had dyslipidemia (Table 2).

Knowledge and attitudes regarding CAM among surgical patients

A total of 252 (84.0%) participants used CAM methods; 245 (81.7%) participants used herbal methods, which constituted 97.2% of CAM users; and 64.7% of the participants used nonherbal methods. Surprisingly, only 76 (25.3%) participants stated that doctors did ask about CAM use. Furthermore, 164 (54.7%) patients believed that CAM had fewer side effects than conventional therapy did. Finally, 90.0% of the participants believed that CAM centers need governmental supervision. Table 3 represents the knowledge and attitudes of surgical patients toward CAM.

A total of 86.4% of patients with health insurance used CAM, whereas 69% of patients without health insurance did ($p = 0.004$). With respect to other patient characteristics, such as sex, residency, monthly income, and education level, no significant associations were identified (Table 4).

Table 1 Characteristics of the participants (N = 300)

Characteristics	Total (%) N = 300
Gender	
Male	134 (44.7)
Female	166 (55.3)
Age	
< 40 years	80 (26.7)
40–65 years	172 (57.3)
> 65 years	48 (16.0)
Residency	
City	105 (35.0)
Village	173 (57.7)
Camp	22 (7.3)
Marital status	
Not married	85 (28.3)
Married	215 (71.7)
Occupation status	
Employed	114 (38.0)
Nonemployed	149 (49.7)
Student	37 (12.3)
Monthly income	
< 1000 NIS	65 (21.7)
1000–3000 NIS	157 (52.3)
> 3000 NIS	78 (26.0)
Education level	
None	21 (7.0)
School qualifications	192 (64.0)
University qualifications	87 (29.0)
Health insurance	
Yes	258 (86.0)
No	42 (14.0)
Comorbidities	
Present	147 (49.0)
Absent	153 (51.0)

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Table 2 Comorbidities of the participants (N = 147)

Comorbidities	N = 147 (%)
Hypertension	93 (63.3)
Diabetes mellitus	76 (51.7)
Dyslipidemia	52 (35.4)
Cardiovascular disease	15 (10.2)
Malignant disease	15 (10.2)
Thyroid disease	14 (9.5)
Chronic kidney disease	4 (2.7)
Rheumatic disease	3 (2.0)
Other diseases	31 (21.1)

Source of information about CAM

A total of 110 (43.7%) CAM users stated that their source of information about CAM use was other people who are using CAM, whereas 92 (36.5%) stated that they obtain their information from internet websites, and 85 (33.7%) stated that family members are their source of information. The lowest percentage was attributed to health care providers and books as a source of information, with a percentage of 2.8% for each (Table 5).

The purpose of CAM use among surgical patients

The majority of patients used CAM to relieve pain (73.0%), whereas 182 (72.2%) of them used CAM for gastrointestinal disturbances, such as diarrhea, constipation, and flatulence (Table 6).

Characteristics of the participants by number of CAMs used

A significant correlation was found between patient educational level and the number of CAM used, with a *p* value of < 0.001, where 10 (8.5%) illiterate patients, 88 (75.2%) school-qualified patients, and 19 (16.2%) university-qualified patients used fewer than three therapies.

Sex was also significantly associated with the number of CAM used (*p* = 0.032); 59 (50.4%) males had used fewer than three therapies, and 50 (37.0%) had used ≥ three therapies. On the other hand, 58 (49.6%) female participants had used fewer than three therapies, whereas 85 (63.0%) had used ≥ three therapies (Table 7).

Herbal products used by surgical patients

The most commonly used herbs were *Salvia officinalis* L. (sage) (84.1%), *Pimpinellaanisum* L. (anise) (75.5%), *Menthapiperita* L. (peppermint) (70.6%), *Matricaria chamomilla* L. (chamomile) (70.2%), *Olea europaea* L. (olive oil) (65.3%), *Thymus vulgaris* L. (thyme) (62.4%), *Citrus limon* (lemon) (60.0%), and *Zingiber officinale Roscoe* (ginger) (53.9%) (Table 8).

CAM methods used by surgical patients

Hot and cold compresses are among the most commonly used (42.5%), honey beeswax (37.7%), natural oils and creams (25.0%), vitamin supplements (22.2%), fasting (21.4%), therapeutic massage (19.4%), and Hijama or cupping at least once in their lives (19.0%). The rest of the CAM methods used by surgical patients are shown in Table 9.

Practices of surgical patients regarding CAM use

Among those using CAM, 134 (53.2%) were found to be using CAM for their current disease, 122 (48.4%)

Table 3 Knowledge and attitudes regarding CAM among surgical patients (N= 300)

Statements	N= 300 (%) (Yes responses)
CAM is more effective than conventional medicine	92 (30.7)
CAM is able to treat incurable diseases	182 (60.7)
CAM has few side effects	164 (54.7)
CAM has a major role in treating diseases	153 (51.0)
The ability of CAM to treat diseases	217 (72.3)
CAM is more familiar than conventional medicine	47 (15.7)
CAM should be combined with conventional medicine	239 (79.7)
CAM centers need governmental supervision	270 (90.0)
Healthcare providers view CAM as an inferior therapy	187 (62.3)
It is recommended to use CAM without specialist consultation	156 (52.0)

Table 4 Characteristics of the participants by CAM (N = 300)

Characteristics	Total (%) N= 300	Patients who use CAM (%) n = 252	Patients who don't use CAM (%) n = 48	P value
Gender				0.259
Male	134 (44.7)	109 (43.3)	25 (52.1)	
Female	166 (55.3)	143 (56.7)	23 (47.9)	
Age				0.516
< 40 years	80 (26.7)	70 (27.8)	10 (20.8)	
40–65 years	172 (57.3)	141 (56.0)	31 (64.6)	
> 65 years	48 (16.0)	41 (16.3)	7 (14.6)	
Residency				0.250
City	105 (35.0)	92 (36.5)	13 (27.1)	
Village	173 (57.7)	140 (55.6)	33 (68.8)	
Camp	22 (7.3)	20 (7.9)	2 (4.2)	
Marital status				0.364
Not married	85 (28.3)	74 (29.4)	11 (22.9)	
Married	215 (71.7)	178 (70.6)	37 (77.1)	
Occupation status				0.637
Employed	114 (38.0)	93 (36.9)	21 (43.8)	
Nonemployed	149 (49.7)	128 (50.8)	21 (43.8)	
Student	37 (12.3)	31 (12.3)	6 (12.5)	
Monthly income (NIS)				0.452
< 1000	65 (21.7)	54 (21.4)	11 (22.9)	
1000–3000	157 (52.3)	129 (51.2)	28 (58.3)	
> 3000	78 (26.0)	69 (27.4)	9 (18.8)	
Education level				0.790
None	21 (7.0)	18 (7.1)	3 (6.3)	
School qualifications	192 (64.0)	163 (64.7)	29 (60.4)	
University qualifications	87 (29.0)	71 (28.2)	16 (33.3)	
Health insurance				0.004
Yes	258 (86.0)	223 (88.5)	35 (72.9)	
No	42 (14.0)	29 (11.5)	13 (27.1)	
Comorbidities				0.427
Present	147 (49.0)	126 (50.0)	21 (43.8)	
Absent	153 (51.0)	126 (50.0)	27 (56.3)	

Table 5 Sources of information about CAM (N=252)

Sources of information	N= 252 (%)
People who are using CAM	110 (43.7)
Internet	92 (36.5)
Family	85 (33.7)
TV	33 (13.1)
CAM specialists	30 (11.9)
Books	7 (2.8)
Health care providers	7 (2.8)

Table 6 Reasons for CAM use among surgical patients (N=252)

Reasons	N= 252 (%)
Pain relief	184 (73.0)
Gastrointestinal disturbances	182 (72.2)
Respiratory symptoms	146 (57.9)
Genitourinary problems	91 (36.1)
Skin problems	65 (25.8)
Chronic diseases	55 (21.8)
Obesity	48 (19.0)

patients had used CAM before surgery, and 235 (93.3%) patients who had ever used CAM did not consult a specialist before using it. Furthermore, 226 (89.7%) patients reported that their health condition improved after CAM therapy (Table 10).

Discussion

CAMs are used to supplement standard medical treatments and are still widely used worldwide as well as in Palestine. In this cross-sectional study, we focused on observing the patterns of CAM use among surgical patients at Rafidia Hospital and NNUH in Nablus city in Palestine over a period of 4 months.

Since Palestinians consider CAM to be one of the integral parts of health practices, many national studies have been carried out on the use of CAM in settings and diseases other than surgical patients, including eye disease (Jaber et al. 2021), coronary heart disease (Salah et al. 2020), hypertension (Ali-Shtayeh et al. 2013), diabetes mellitus (Ali-Shtayeh et al. 2012), hemodialysis (Zyoud et al. 2016), cancer (Ben-Arye et al. 2015), or the general population (Sawalha 2007). In addition, multiple investigations on herbal remedies have been undertaken among various groups, such as cancer patients (Ali-Shtayeh et al. 2011; Jaradat et al. 2016b), university students (Sawalha et al. 2008), geriatric patients (Zyoud et al. 2014), and pregnant women (Ali-Shtayeh et al. 2015; Al-Ramahi et al. 2013). Owing to the paucity of data regarding the

Table 7 Characteristics of the participants by number of CAMs used (N=252)

Characteristics	< 3 therapies N= 117	≥ 3 therapies N= 135	P value
Gender			0.032
Male	59 (50.4)	50 (37.0)	
Female	58 (49.6)	85 (63.0)	
Age			0.113
< 40 years	29 (24.8)	41 (30.4)	
40–65 years	63 (53.8)	78 (57.8)	
> 65 years	25 (21.4)	16 (11.9)	
Residency			0.311
City	38 (32.5)	54 (40.0)	
Village	71 (60.7)	69 (51.1)	
Camp	8 (6.8)	12 (8.9)	
Marital status			0.078
Not married	28 (23.9)	46 (34.1)	
Married	89 (76.1)	89 (65.9)	
Occupation status			0.341
Employed	40 (34.2)	53 (39.3)	
Nonemployed	65 (55.6)	63 (46.7)	
Student	12 (10.3)	19 (14.1)	
Monthly income			0.636
< 1000 NIS	28 (23.9)	26 (19.3)	
1000–3000 NIS	59 (50.4)	70 (51.9)	
> 3000 NIS	30 (25.6)	39 (28.9)	
Education level			< 0.001
None	10 (8.5)	8 (5.9)	
School qualifications	88 (75.2)	75 (55.6)	
University qualifications	19 (16.2)	52 (38.5)	
Health insurance			0.170
Yes	107 (91.5)	116 (85.9)	
No	10 (8.5)	19 (14.1)	
Comorbidities			0.528
Present	56 (47.9)	70 (51.9)	
Absent	61 (52.1)	65 (48.1)	

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use of CAM among surgical patients, we decided to conduct the present study.

In our study sample, a significant number of surgical patients used CAM (252 out of 300, 84.0%), which is higher than the percentages reported in other studies conducted on surgical patients (Yazici et al. 2019; Kilper et al. 2020; Khan et al. 2019; Ilori et al. 2024). The reasons behind this high percentage could be cultural differences, a lack of awareness, and poor doctor–patient relationships due to insufficient time with doctors and long waiting lists. Among those using CAM, 97.2% preferred herbal methods. The herbs that are most commonly used among our study population are *Salvia officinalis* L.

Table 8 Herbal products used by surgical patients (N=245)

Herbs	N=245 (%)
Salvia officinalis L. (Sage)	206 (84.1)
Pimpinellaanisum L. (Anise)	185 (75.5)
Menthapiperita L. (Peppermint)	173 (70.6)
Matricariachamomilla L. (Chamomile)	172 (70.2)
Olea europaea L. (Olive oil)	160 (65.3)
Thymus vulgaris L. (Thyme)	153 (62.4)
Citrus limon (Lemon)	147 (60.0)
Zingiber officinale Roscoe (Ginger)	132 (53.9)
Cuminum cyminum L. (Cumin)	112 (45.7)
Cinnamomum zeylanicum (Cinnamon)	104 (42.4)
Allium sativum (Garlic)	93 (38.0)
Carum petroselinum (Parsley)	89 (36.3)
Nigella sativa (Black caraway)	82 (33.5)
Allium cepa L. (Onions)	82 (33.5)
Camellia sinensis (Green tea)	82 (33.5)
Hordeum vulgare (Barley)	76 (31)
Syzygium aromaticum, L. (Clove)	73 (29.8)
Ceratonia siliqua L. (Carob)	70 (28.6)
Foeniculum vulgare (Fennel)	65 (26.5)
Rosmarinus officinalis L. (Rosemary)	58 (23.7)
Punica granatum L. (Pomegranate)	57 (23.3)
Aloe barbadensis Miller (Aloe Vera)	45 (18.4)
Ficus carica L. (Figs)	43 (17.6)
C. acutifolia (Senna)	41 (16.7)
Curcuma longa (Turmeric)	37 (15.1)
Trigonella foenum graecum (Fenugreek)	35 (14.3)
Teucrium chamaedrys (Germander)	35 (14.3)
Crataegus oxyacantha L. (Hawthorns)	29 (11.8)
Herbal diet	16 (6.5)
Others	46 (18.8)

(sage) 84.1% (n=206), *Pimpinellaanisum* L. (anise) (75.5%), *Menthapiperita* L. (peppermint) (70.6%), *Matricaria chamomilla* L. (chamomile) (70.2%), *Olea europaea* L. (olive oil) (65.3%), *Thymus vulgaris* L. (thyme) (62.4%), *Citrus limon* (lemon) (60.0%), and *Zingiber officinale Roscoe* (ginger) (53.9%). In a Turkish study, 14.5% of surgical patients used herbal medications. Among the herbs, garlic and fish oil are the most commonly used (Yilmaz and Cıfci 2018). In another study, 7.2% of surgical patients used herbs (Soós et al. 2015). Similar to a prior study, we found that females (56.7%) tended to use CAM more than males did (43.3%), although the difference was not statistically significant ($p=0.259$) (Yazici et al. 2019).

In terms of other sociodemographic characteristics, contrary to our expectations in previous studies (Yazici et al. 2019; Khan et al. 2019; Lederer et al. 2021), no significant differences were found between CAM use and age, residency, monthly income, or education level. This

Table 9 CAM methods used by surgical patients (N=252)

Methods	N=252 (%)
Herbs	245 (97.2)
Compresses (hot or cold)	107 (42.5)
Honey beeswax	95 (37.7)
Natural oils and creams	63 (25.0)
Vitamin supplements	56 (22.2)
Fasting	54 (21.4)
Therapeutic massage	49 (19.4)
Hijama	48 (19.0)
Omega-3 fatty acid (fish oil)	48 (19.0)
Physiotherapy	33 (13.1)
Detoxification	26 (10.3)
Sauna Jacuzzi	14 (5.6)
Acupuncture	9 (3.6)
Aromatherapy	8 (3.2)
Art therapy	7 (2.8)
Traditional Chinese medicine	2 (0.8)
Hypnosis	1 (0.4)
Reiki energy healing	1 (0.4)
Moxibustion	1 (0.4)

Table 10 Practices of surgical patients regarding CAM use (N=252)

Statements	N=252 (%) (Yes responses)
CAM use for current disease	134 (44.7)
CAM use before surgery	122 (48.4)
Consulting a specialist before CAM use	17 (6.7)
Status improved when using CAM	226 (89.7)
Adverse side effects of using CAM	31 (12.3)
Period of CAM use	
Short	187 (74.2)
Extended	65 (25.8)
Frequency of CAM use	
Regular	52 (20.6)
When needed	200 (79.4)

might be explained by the fact that CAM use in Palestine is widely popular and easily accessible and affordable across different categories of society (Velanovich et al. 2006).

Our study data revealed that among the CAM methods used by surgical patients are hot and cold compressors (42.5%) and therapeutic massage (19.4%), which is somewhat different from the previously published findings among surgical patients, where hot and cold applications were found to be the most commonly used nonherbal

CAM (63.7%), while therapeutic massage was 25.9% (Yazici et al. 2019).

When asked about their attitudes toward CAM use, 60.7% of our study population believed in the ability of CAM to treat incurable diseases, and 54.7% agreed that CAM has fewer side effects than traditional medicine does, according to their experience. This may be due to the massive cultural and social media impacts on our community. Similar to what was published in previous data, when respondents were asked about the source of information regarding their CAM usage, people who used CAM, the internet, and family members were among the most commonly stated, with only 2.8% mentioning their health care providers as their source of information (Jaber et al. 2021; Ali-Shtayeh et al. 2013). Because most people learn about CAM via media, acquaintances, and family, their understanding is typically limited, biased, and incorrect. As a result, it is critical to obtain information about their use from healthcare specialists.

Importantly, there are still many doubts about CAM safety and whether it may have a harmful effect on both healthy and ill people. Considering this, some of the herbs used by the participants in the current study have been linked to anesthetic and surgical complications. *Zingiber officinale Roscoe* (ginger), for example, which was used by 53.9% of the patients in our study, is known, according to previous studies, to be a possible cause of perioperative complications, including prolonged bleeding time (because of inhibition of thromboxane synthesis), hyperglycemia, and prolonged prothrombin time (PT) if taken with warfarin (Tessier and Bash 2003; Kaye et al. 2000). Another herbal product consumed but with a lower percentage (38.0%) among our study population is *Allium sativum* (garlic), which is also found to cause increased bleeding as its most prevalent side effect due to its antiplatelet properties (Tessier and Bash 2003; Kaye et al. 2000). There is a scarcity of evidence-based information regarding herbal medications, and the existing data provide little information on herbal remedies. However, certain herbal products, such as garlic, which are widely used in Palestine, are associated with postoperative bleeding according to previous studies (Petry 1995; Burnham 1995). Therefore, surgeons and anesthesiologists must inquire about their patients' use of herbs in general and ginger and garlic specifically.

The current study revealed that there is a communication gap between health care professionals and patients in terms of reporting herbal medication use. Only 25.3% of the surgical patients in our study reported that their physicians routinely ask them about CAM use (including herbs). This finding might be explained by the fact that physicians themselves lack basic knowledge regarding the

composition of these herbs and their possible impact on the health of their patients (Bhamra et al. 2019). Moreover, most surgical patients do not disclose their herb use even when they are asked by their doctors. This could be attributed to their lack of awareness regarding herbal side effects and their underestimation of their use, as they consider it part of their normal practice. This is strongly supported by what we found in this study; only 6.7% of the participants reported consulting a specialist (doctor, pharmacist) before using CAM.

Strengths and limitations

This is the first Palestinian study to assess the use of CAM among surgical patients. In addition, this study assessed the current (within two weeks before surgery) and lifetime use of CAM. However, our study has several limitations. First, this study was only performed in two centers; the findings cannot be generalized. Second, the study's cross-sectional design and small sample size were based on the assumption that the cause-effect relationships of the variables could not be determined. Third, the data provided by our participants may have been prone to recall or desirability bias. Fourth, the attitudes and practices of physicians and other healthcare providers regarding CAM were not assessed in this study, and we did not examine what patients use after surgery. Fifth, the therapeutic significance of probable anesthetic interactions or complications was not studied.

Conclusions

To summarize, in our study population, the use of CAM was quite prominent among surgical patients. However, given that the ability to use CAM is not linked with any specific sociodemographics, doctors should be more aware that their patients may have used or are using CAM, so they need to discuss their possible risks and benefits routinely to prevent any potential complications.

Abbreviations

CAM	Complementary and Alternative Medicine
NNUH	An-Najah National University Hospital
IRB	Institutional Review Board
SPSS	Statistical Package for Social Sciences
PT	Prothrombin time

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Authors' contributions

A.E., A.O., and N.A. performed data collection, reviewed the literature, and wrote the draft manuscript. F.A. and A.B. performed the literature review, reviewed the data interpretations, revised the manuscript critically for enhancement of intellectual contents, and assisted in the final write-up of manuscript. A.K. performed data analysis, reviewed the literature, revised the results' explanation critically, and assisted in the final write-up of the manuscript. S.Z. conceptualized and designed the study, analysed the data, revised the manuscript

critically for enhancement of intellectual content, and assisted in the final write-up. Then, all authors reviewed and accepted the final manuscript.

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Data availability

The datasets analyzed in the present study are not publicly available due to strict rules and regulations from the IRB of An-Najah National University and the Palestinian Ministry of Health but are available from the corresponding author upon reasonable request.

Declarations

Ethics approval and consent to participate

The Institutional Review Board (IRB) of An-Najah National University and the local health authorities approved all aspects of the study procedure. Before the beginning of the study, the interviewer provided each participant with an explanation of the study's aim. The interviewer also received verbal informed consent from all patients who agreed to participate in this study. We confirm that the gathered data were only used for clinical research and that the provided information will be confidential and be used only for this research. Because we did not collect any identifying information during the interviews and our study did not pose a major risk to participants, the IRB of An-Najah National University approved only verbal informed consent from the study participants. Furthermore, we confirm that all the experiments and methods were performed in accordance with the relevant guidelines and regulations.

Consent for publication

All interview participants were approached for consent to publish anonymous quotes from their interviews.

Competing interests

The authors declare no competing interests.

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