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Reasons, associated factors, and attitudes toward breastfeeding mothers' use of complementary medicine products: a study from Türkiye

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Abstract

Background The use of Complementary Medicine Products (CMPs) has been increasing worldwide, including among breastfeeding mothers. This study aims to investigate the reasons and associated factors of CMP use among breastfeeding mothers in Turkey, alongside their attitudes and experiences.

Methods A descriptive cross-sectional study was conducted using a self-administered, anonymous online survey between 17 December 2023 and 17 March 2024. Women from diverse regions across Türkiye, aged 18 years or older, with a child aged 36 months or younger, who were currently breastfeeding or had breastfed, were invited to participate in the survey.

Results Among 445 mothers who completed the survey, 334 (75.1%) reported using at least one CMP during breastfeeding, with vitamin D, iron supplements, and fennel being the most frequently used. Educational level, employment status, and being a health worker were found to be factors associated with CMP use during breastfeeding, with those having university or higher education, being employed, or working in healthcare showing higher usage rates. The most common reasons for CMP use were "staying healthy" (60.2%) and "supporting immunity" (59.3%). While 91.9% of mothers perceived at least one CMP they used as beneficial, 14.4% of mothers using CMPs experienced adverse effects with at least one product. Safety perceptions of mothers who used CMP varied, with 45.8% believing CMPs were generally safe during breastfeeding. Among CMP users, doctors were chosen as the most trusted ($n = 310$, 92.8%) information source. A majority of mothers (85.6%) reported that they would like to receive more information about the safety and effectiveness of CMPs.

Conclusions Breastfeeding mothers often use CMPs to stay healthy and support immunity. While healthcare providers are the most trusted source of information, many women get advice from family, friends, or herbalists, and some use CMPs without any recommendations. This underscores the importance of healthcare providers' role in guiding mothers on the safe and informed use of both prescribed and self-prescribed CMPs.

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Keywords Breastfeeding, Breast milk, Complementary medicine, Dietary supplements, Herbal medicine

Background

The use of Complementary Medicine Products (CMPs) has increased globally, not only in general medicine but also in the context of breastfeeding [1, 2]. Mothers frequently use CMPs during pregnancy and breastfeeding due to perceived benefits to maternal and fetal health, pregnancy support, and breast milk supply [3, 4]. It is reported that herbal galactagogues are frequently used to address breast milk insufficiency, and other herbal nutrients for strengthen postpartum health and recovery [1, 5, 6]. In addition, adequate nutrition during breastfeeding is very important for the health of both the mother and the baby. Breastfeeding mothers are particularly vulnerable to nutritional deficiencies [7], and nutritional supplements such as iron, vitamin D, and folic acid are widely recommended during pregnancy and breastfeeding [8].

In systematic review aiming to identify CMPs used in pregnancy and/or breastfeeding it is stated that only 9 out of 28 qualitative studies discussed CMP use during breastfeeding. Moreover it was noted that herbal medicines were the primary type of CMPs identified in the studies, with only three studies examined both herbal medicines and vitamin supplements [2]. The systematic review highlights significant research gaps regarding the use of CMPs during breastfeeding. In particular, there is limited information on women's self-prescription practices and the sources of information they rely on when using CMPs. Furthermore, there is a lack of knowledge about the reasons mothers use CMPs during breastfeeding and how they perceive the benefits of these products. The aim of this study was to investigate breastfeeding mothers' use of CMPs, reasons for use, and factors associated with their use, as well as mothers' attitudes and experiences with these practices. In addition to understanding the perceived benefits or side effects of CMP use, the study also examined whether mothers were informed about possible side effects. By addressing these gaps, this study contributes to a more comprehensive understanding of CMP use among breastfeeding mothers.

Methods

This is a cross-sectional, descriptive study conducted through a web-based survey between 17 December 2023 and 17 March 2024.

Sample size

The study targeted women with a child aged 36 months or younger, who had breastfed for any duration. According to Turkish Statistical Institute (TURKSTAT) data, the total number of live births in the last three years is

approximately 3,073,045 [9]. According to the 2018 Turkey Demographic and Health Survey (TDHS), 98% of children were breastfed for at least some period of time [10]. Therefore, the target population of women with children under 36 months of age who have breastfeeding experience is estimated to be approximately 3,012,564. Although a previous study [11] conducted in a single province in Türkiye reported a prevalence rate of 15.1% for nutritional supplement use among breastfeeding mothers, the most conservative estimated prevalence rate of 50% was used to maximize the sample size, considering the higher prevalence rates reported in studies from different countries. The sample size for the study was calculated for a prevalence study using a 95% confidence interval and a 5% margin of error. Based on this, the representative sample size required was calculated as 384, and to accommodate potential exclusions, a larger sample size was aimed for.

Participants, recruitment and data collection

The target participants for this study were women from diverse regions across Türkiye. Women aged 18 years or older, with a child aged 36 months or younger, and who were either currently breastfeeding or had breastfed their child for any duration were invited to participate in the survey.

A self-administered anonymous online survey was conducted using the Survey Monkey platform. The survey was distributed on various online platforms, especially Instagram posts, Facebook and WhatsApp groups, in order to reduce selection bias and collect data from different regions of Türkiye. Convenience sampling was employed due to the practicality and accessibility of this method in an online environment. Participation was open to any eligible individual who accessed the survey link. Once the desired sample size was reached, data collection concluded. Participants were given informed consent and provided with detailed information about the study on the questionnaire's first page. The mothers were informed that they had indicated their agreement to participate by responding positively to the first question. Ethical approval for the study was obtained from the Istanbul Medipol University Non-Interventional Clinical Research Ethics Committee (Approval Number: E-10840098-772.02-1).

Definition of CMP

CMPs are defined as dietary supplements (DS) and herbal medicines (HM). Dietary supplements are products intended to supplement the normal diet and include vitamins, minerals, proteins, carbohydrates, fibers, fatty

acids, amino acids, and other nutrients or substances with nutritional or physiological effects. They are prepared in various forms such as capsules, tablets, lozenges, single-use powder packets, liquid ampoules, dropper bottles, and other liquid or powder forms with specified daily intake doses [12–15]. Herbal medicines include herbs, herbal materials, and finished herbal products that contain active ingredients, parts of plants, other plant materials, or combinations thereof [16].

Survey design

The self-administered semi-structured questionnaire used in this study was developed in Turkish by the research team, drawing upon existing literature on CMP usage among breastfeeding mothers. Prior to implementation, the questionnaire underwent a pilot testing phase to assess clarity, comprehension, identification of defective questions, and the time required for completion. Five volunteers meeting the inclusion criteria participated in the pilot test. Feedback from the pilot study was used to make minor adjustments. Pilot data was excluded from the final data analyses. The final version of questionnaire comprised three sections and encompassed a total of 28 items. It took approximately 15 min to complete. The first section comprised eight questions focusing on participants' sociodemographic characteristics (age, level of education, employment status, occupation, household income, city of residence) and health-related attributes (the presence of chronic diseases and health service provider). The second section consisted of seven questions pertaining to child-related information (number of children, gestational age, mode of delivery, birth weight, gender and age of the youngest child, duration of breastfeeding). The third section encompassed 13 questions concerning CMP use including types of CMP used, reasons for usage, usage patterns (frequency and duration), age of the child when CMP was utilized, sources of recommendation and supply, experiences of side effects, perceived efficacy, as well as participants' perceptions of CMP usage during breastfeeding. The most frequently used CMPs in literature were listed, and participants were asked to indicate which ones they used during breastfeeding. Additionally, an open-ended option was provided for participants to specify any other products they used. Consumption-related questions were addressed separately for each product used, employing multiple-choice questions for all items. Participants were also asked about their opinions on the safety of CMP use during breastfeeding period and responses were categorized on a five-point scale (totally agree, agree, neutral, disagree, totally disagree).

Measurements and statistical analyses

The collected data from participants were analyzed using the Statistical Package for Social Sciences (SPSS) version 29.0.2.0. Continuous variables were described using mean $\pm$ SD, while categorical variables were presented using frequencies and percentages. Chi-square tests were employed to compare categorical variables. A significance level of $P < 0.05$ was considered statistically significant.

Results

Characteristics of participants

Of the 621 mothers who agreed to participate in the study, 445 completed the survey, and only fully completed questionnaires were included in the analysis. Mothers from different regions of Türkiye participated in the survey with the majority residing in the Marmara region ($n = 304$, 68.3%). The average age of the mothers at the time of completing the survey was 32.4 years (± 4.8 SD), and 86.3% ($n = 384$) had a university or postgraduate degree. 61.3% ($n = 273$) of the mothers were employed, and 16.6% ($n = 74$) reported having a chronic disease, the most common being thyroid disease (32.4%, $n = 24$). The characteristics of the participants are shown in Table 1. Additionally, the characteristics of the participants according to the product type they used are provided in Table 1 of the supplementary file. A significant difference was detected between CMP users and non-users in terms of education level ($p < 0.001$), employment status ($p = 0.023$) and being a healthcare worker ($p = 0.007$) (Table 1). Those having university or higher education, being employed, or working in healthcare showed higher usage rates.

Types of complementary medicine products used

Among participants, 75.1% ($n = 334$) reported using at least one CMP during breastfeeding. Most of these users ($n = 288$, 86.2%) took between one and five supplements, with a mean number of CMPs used of 3.2 ± 2.1 (median: 3.0, range: 1–12). It was determined that 29.9% ($n = 133$) of the participants used at least one HM product, 69.2% ($n = 308$) used at least one DS, and 24.0% ($n = 107$) used both. The most frequently used CMPs were vitamin D ($n = 194$, 43.6%), iron supplements ($n = 153$, 34.4%), fennel ($n = 95$, 21.3%), vitamin B12 ($n = 89$, 20.0%), and multivitamin/mineral ($n = 78$, 17.5%). The most commonly used herbal products were fennel ($n = 95$, 21.3%), garlic ($n = 21$, 4.7%), and ginger ($n = 17$, 3.8%). The usage rates of the products are shown in Table 2.

Reasons for using CMP

Participants' reasons for using CMP are shown in Table 3. The most common aim of use was found to be 'staying healthy' ($n = 201$, 60.2%) and 'supporting immunity'

Table 1 Characteristics of participants according to whether they reported use of complementary medicine products during breastfeeding

	n (%)	Users n (%)	Non-users n (%)	
Maternal age				
≤ 30	155 (34.8)	113 (33.8)	42 (37.8)	0.696
31–34	136 (30.6)	105 (31.4)	31 (27.9)	
≥ 35	154 (34.6)	116 (34.7)	38 (34.2)	
Education level				
Primary education	14 (3.1)	8 (2.3)	6 (5.4)	<0.001*
High School	47 (10.6)	26 (7.7)	21 (18.9)	
University and above	384 (86.3)	300 (89.8)	84 (75.6)	
Residential region				
Marmara region	304 (68.3)	76 (68.5)	228 (68.3)	
Aegean region	17 (3.8)	2 (1.8)	15 (4.5)	
Black sea region	24 (5.4)	7 (6.3)	17 (5.1)	
Central Anatolia region	48 (10.8)	10 (9.0)	38 (11.4)	
Mediterranean region	32 (7.2)	11 (9.9)	21 (6.3)	
Southeastern Anatolia region	8 (1.8)	1 (0.9)	7 (2.1)	
Eastern Anatolia region	12 (2.7)	4 (3.6)	8 (2.4)	
Employment status				
No	172 (38.7)	119 (35.6)	53 (47.7)	0.023*
Yes	273 (61.3)	215 (64.3)	58 (52.2)	
Healthcare professional				
No	235 (52.8)	164 (49.2)	71 (63.9)	0.007*
Yes	210 (47.2)	170 (50.8)	40 (36.0)	
Family income level				
Low	16 (3.6)	10 (2.9)	6 (5.4)	0.491
Medium	374 (84.0)	282 (84.4)	92 (82.8)	
High	55 (12.4)	42 (12.5)	13 (11.7)	
Chronic illness				
No	371 (83.4)	274 (82.0)	97 (87.3)	0.190
Yes	74 (16.6)	60 (17.9)	14 (12.6)	
Parity				
Primiparous	292 (65.6)	226 (67.6)	66 (59.4)	0.115
Multiparous	153 (34.4)	108 (32.3)	45 (40.5)	
Mode of delivery				
Vaginal delivery	104 (23.4)	76 (22.7)	28 (25.2)	0.594
Cesarean delivery	341 (76.6)	258 (77.2)	83 (74.7)	
Gestational age				
≥ 38 weeks	333 (74.8)	249 (74.5)	84 (75.6)	0.813
< 38 weeks	112 (25.2)	85 (25.4)	27 (24.3)	
Baby's age				
< 6 months	87 (19.6)	70 (20.9)	17 (15.3)	
6–11 months	93 (20.9)	68 (20.3)	25 (22.5)	
12–23 months	130 (29.2)	100 (29.9)	30 (27.0)	
24–36 months	135 (30.3)	96 (28.7)	39 (35.1)	
Total	445(100.0)	334(100.0)	111(100.0)	

*The Chi-square statistic is significant at the 0.05 level

(n = 198, 59.3%). Among HM users, the most popular reasons were 'to increase breastmilk' (n = 94, 70.7%) followed by 'to support immunity' (n = 46, 34.6%), 'to help the baby grow healthy' (n = 32, 24.1%), and 'stay healthy' (n = 31, 23.3%).

Source of recommendation and provision

While most of the mothers used CMPs based on recommendations from physicians, most commonly obstetricians (51.5%), it was determined that 25.7% of the mothers used them without any recommendation. The sources of product recommendations are shown in

Table 2 Complementary medicine products used by mothers during breastfeeding, stratified by type

	<i>n</i>	Percent of participants*	Percent of dietary supplement users*
Dietary supplements			
Vitamin D	194	43.6%	63.0%
Iron	153	34.4%	49.7%
Vitamin B12	89	20.0%	28.9%
Multivitamin/Mineral	78	17.5%	25.3%
Fish oil/ Omega 3	69	15.5%	22.4%
Magnesium	58	13.0%	18.8%
Brewer's yeast	45	10.1%	14.6%
Vitamin C	39	8.8%	12.7%
Calcium	38	8.5%	12.3%
Folic acid	35	7.9%	11.4%
Probiotic	29	6.5%	9.4%
Vitamin B complex	27	6.1%	8.8%
Zinc	17	3.8%	5.5%
Bee products	7	1.6%	2.3%
Other dietary supplements	6	1.3%	1.9%
Iodine	5	1.1%	1.6%
Sambucol	4	0.9%	1.3%
Selenium	3	0.7%	1.0%
Lecithin	2	0.4%	0.6%
Quercetin	1	0.2%	0.3%
Melatonin	1	0.2%	0.3%
Total	308	100%	100%
Herbal medicine	<i>n</i>	Percent of participants*	Percent of herbal medicine users*
Fennel	95	21.3%	71.4%
Garlic	21	4.7%	15.8%
Ginger	17	3.8%	12.8%
Fenugreek	16	3.6%	12.0%
Turmeric	13	2.9%	9.8%
African violet extract	6	1.3%	4.5%
Black seed	5	1.1%	3.8%
Elderberry	4	0.9%	3.0%
Flaxseed	4	0.9%	3.0%
Mint tea	3	0.7%	2.3%
Milk thistle	2	0.4%	1.5%
Other herbal medicine	2	0.4%	1.5%
Echinacea	1	0.2%	0.8%
Total	133	100%	100%

*Columns do not add up to %100 due to the selection of multiple answers

Table 3 Reasons for use

	Used any complementary medicine products	Type of complementary medicine product	
		Used dietary supplements	Used herbal medicine
	Cases <i>n</i> (%)*	Cases <i>n</i> (%)*	Cases <i>n</i> (%)*
Reasons			
Stay healthy	201 (60.2)	198 (64.3)	31 (23.3)
Support immunity	198 (59.3)	187 (60.7)	46 (34.6)
Help the baby grow healthy	166 (49.7)	156 (50.6)	32 (24.1)
Increase breastmilk	159 (47.6)	112 (36.4)	94 (70.7)
Support diet	68 (20.4)	65 (21.1)	8 (6.0)
Other	41 (12.3)	28 (9.1)	14 (10.5)

* The column does not add up to 100% because mothers were allowed to select multiple answers

Table 4. Mothers most frequently obtained products from the pharmacy (87.7%), followed by the herbalist (16.8%). Among mothers using CMP, 59.3% were not informed about the possible side effects of the product.

Experience with CMP use

A large proportion of mothers (91.9%, $n = 307$) perceived at least one CMP they used as beneficial. Specifically, 93.5% ($n = 288$) of those who used DS reported experiencing benefits, while 72.2% ($n = 96$) of those who used HM found benefits. Additionally, 26.3% ($n = 35$) of mothers who used HM indicated uncertainty regarding the benefits of some products they used, compared to 16.6% ($n = 51$) of those who used DS who reported uncertainty. Regarding side effects, 14.4% ($n = 48$) of all mothers using CMPs experienced adverse effects with at least one product, with varying rates observed among those using DS (14.6%, $n = 45$) and HM (6.8%, $n = 9$). Data on experience with CMP use are presented in Table 5. Considering the distribution of side effects, constipation ($n = 13$), diarrhea

($n = 2$), and nausea ($n = 2$) were reported due to iron use. Apart from these, the use of brewer's yeast has been reported to cause increased appetite ($n = 1$), weight gain ($n = 2$), and gas ($n = 1$).

Safety perceptions and information preferences

When participants were asked about their views on the safety of CMP use during breastfeeding, 45.8% ($n = 153$) of CMP users agreed with the statement 'I think it is generally safe to use dietary supplements or herbal products while breastfeeding', while 27.2% were not sure (no opinion).

Similarly, 46.4% of DS users and 45.9% of HM users agreed with the belief that it is generally safe to use dietary supplements or herbal products while breastfeeding. Physicians were the most trusted source of information chosen by 92.8% ($n = 310$) of CMP users, followed by literature ($n = 99$, 29.6%), and lactation consultants ($n = 74$, 22.2%). When looking at specific product types, 94.2% of DS users and 93.2% of HM users also trusted

Table 4 Source of recommendation and provision

	Any complementary medicine products	Type of complementary medicine product	
		Dietary supplements	Herbal Medicine
	Cases n (%)*	Cases n (%)*	Cases n (%)*
<i>Source of recommendation</i>			
Obstetrician	172 (51.5)	170 (55.2)	12 (9.0)
No one / Myself	86 (25.7)	63 (20.5)	34 (25.6)
Pediatrician	61 (18.3)	52 (16.9)	15 (11.3)
Family physician	49 (14.7)	45 (14.6)	8 (6.0)
Friends/Relatives	43 (12.9)	17 (5.5)	28 (21.1)
Another physician	38 (11.4)	34 (11.0)	5 (3.8)
Herbalist / Health food store staff	16 (4.8)	5 (1.6)	12 (9.0)
Another breastfeeding mother	15 (4.5)	9 (2.9)	8 (6.0)
Social media / Internet	15 (4.5)	10 (3.2)	7 (5.3)
Lactation consultant	13 (3.9)	6 (1.9)	7 (5.3)
Pharmacist	12 (3.6)	8 (2.6)	5 (3.8)
Dietitian	7 (2.1)	3 (1.0)	4 (3.0)
Midwife	6 (1.8)	2 (0.6)	5 (3.8)
Nurse	5 (1.5)	2 (0.6)	3 (2.3)
Other	4 (1.2)	3 (1.0)	1 (0.8)
TV/Radio	3 (0.9)	3 (1.0)	0 (0.0)
<i>Source of provision</i>			
Pharmacy	293 (87.7)	286 (92.9)	33 (24.8)
Herbalist	56 (16.8)	1 (0.3)	55 (41.4)
Grocery store	53 (15.9)	12 (3.9)	44 (33.1)
Internet	42 (12.6)	36 (11.7)	8 (6.0)
Other	22 (6.6)	15 (4.9)	7 (5.3)
Friends/Relatives	7 (2.1)	3 (1.0)	4 (3.0)
<i>Informed about the potential side effects of the product</i>			
Yes	174 (52.1)	150 (48.7)	63 (47.4)
No	198 (59.3)	178 (57.8)	73 (54.9)
Total	334 (100.0)	308 (100.0)	133 (100.0)

* The column does not add up to 100% because a mother can select a separate answer for each product she used

Table 5 Experience with complementary medicine product use

	Used any complementary medicine products	Type of complementary medicine product	
		Used dietary supplements	Used herbal medicine
	Cases n (%)*	Cases n (%)*	Cases n (%)*
<i>Did you benefit?</i>			
Yes	307 (91.9)	288 (93.5)	96 (72.2)
No	17 (5.1)	9 (2.9)	9 (6.8)
I don't know	80 (24.0)	51 (16.6)	35 (26.3)
<i>Did you notice any side effects?</i>			
Yes	48 (14.4)	45 (14.6)	9 (6.8)
No	315 (94.3)	292 (94.8)	124 (93.2)
Total	334 (100.0)	308 (100.0)	133 (100.0)

* The column does not add up to 100% because mothers can select a separate answer for each product they used

Table 6 Safety perceptions and information preferences of mothers

	Used any complementary medicine products	Type of complementary medicine product	
		Used dietary supplements	Used herbal medicine
	n (%)	n (%)	n (%)
<i>I believe that using supplements or herbal products during breastfeeding is generally safe.</i>			
Strongly agree	49 (14.7)	44 (14.3)	22 (16.5)
Agree	153 (45.8)	143 (46.4)	61 (45.9)
Not sure / No opinion	91 (27.2)	82 (26.6)	38 (28.6)
Disagree	37 (11.1)	35 (11.4)	11 (8.3)
Strongly disagree	4 (1.2)	4 (1.3)	1 (0.8)
<i>Would you like to learn more about the safety and efficacy of supplements or herbal products during breastfeeding?</i>			
Yes	286 (85.6)	267 (86.7)	110 (82.7)
No	48 (14.4)	41 (13.3)	23 (17.3)
Total	334 (100.0)	308 (100.0)	133 (100.0)
<i>Which source do you trust the most for information about supplements or herbal products use? *</i>			
Physician	310 (92.8)	290 (94.2)	124 (93.2)
Literature or journal articles	99 (29.6)	94 (30.5)	36 (27.1)
Lactation consultant	74 (22.2)	68 (22.1)	42 (31.6)
Midwife	45 (13.5)	40 (13.0)	25 (18.8)
Nurse	43 (12.9)	39 (12.7)	23 (17.3)
Books	27 (8.1)	23 (7.5)	13 (9.8)
Friends/Relatives	23 (6.9)	14 (4.5)	13 (9.8)
Internet (e.g., Google)	14 (4.2)	11 (3.6)	6 (4.5)
Social media	6 (1.8)	6 (1.9)	3 (2.3)
Other	5 (1.5)	4 (1.3)	3 (2.3)
Herbalist	4 (1.2)	4 (1.3)	3 (2.3)
Manufacturer	3 (0.9)	3 (1.0)	0 (0.0)
Health food store staff	1 (0.3)	1 (0.3)	1 (0.8)
Sellers	0 (0.0)	0 (0.0)	0 (0.0)

*Columns related to this question do not add up to %100 due to the selection of multiple answers

physicians. Lactation consultants were trusted by 22.1% of DS users and 31.6% of HM users. The majority of CMP users (85.6%) expressed a desire to receive more information about the safety and efficacy of CMPs during breastfeeding. This interest was consistent across product

types, with 86.7% of DS users and 82.7% of HM users indicated interest in further information. Data on the safety perceptions and information preferences of mothers is shown in Table 6.

Discussion

According to the World Health Organization's Traditional Medicine Strategy 2014–2023, the prevalence of Complementary and Alternative Medicine (CAM) use globally ranges from 23.0 to 82.0% [17]. CAM use is also common among pregnant and breastfeeding women; however, there is limited data specifically on CMP use among breastfeeding mothers.

Our study contributes significant information on the usage patterns, reasons for use, and the experiences of mothers regarding CMPs. We found that 75.1% of participants reported using at least one CMP during breastfeeding, with DS (69.2%) being more frequently used than HM products (29.9%). The most commonly used CMPs were vitamin D (43.6%), iron supplements (34.4%), and fennel (21.3%). The primary reasons cited for CMP use were 'staying healthy' (60.2%) and 'supporting immunity' (59.3%). Additionally, 59.3% of mothers using CMPs were not informed about potential side effects, indicating a gap in the communication in information. These findings highlight the widespread use of CMPs among breastfeeding mothers and the importance of understanding the factors influencing their usage.

Various sociodemographic factors are associated with CMP use. In the study conducted by Zheng et al., employment status, monthly income, and breastfeeding-related problems were associated with the use of traditional and complementary medicine (TCM) [18]. Kaygusuz et al. found that TCM use during breastfeeding was associated with younger age, high school education, perception of insufficient breast milk, and previous TCM use during pregnancy [19]. Sim et al. found that middle-income families use HM more frequently [20]. Also, there are studies reporting that high education level is associated with the use of HM [11, 21, 22]. Additionally, the age of the breastfed child, perceived health status [23], and race or ethnicity [20, 24] have been reported as factors associated with HM use while previous use of CMP [25, 26] has been noted as a factor associated with CMP use. In our study, educational level, employment status, and being a health worker were associated with CMP use during breastfeeding. These findings suggest that CMP use is influenced by a complex interplay of sociodemographic factors.

The rates of CMP use during breastfeeding vary across studies. The reported rate of TCM use during breastfeeding ranges from 52 to 97.1% [18, 25, 27], while HM use has been reported between 31.37% and 97% [20, 23, 27–29]. The higher proportion of dietary supplement use compared to herbal medicine use observed in our study aligns with some previous findings but differs from others. In the study of Kaygusuz et al., it was reported that the most frequently used TCM method was herbal products [19]. In a study from Italy, it was reported that herbal

preparations were used by 31.37% and dietary supplements by 32.35% of breastfeeding mothers [27]. In a study conducted by Orbatu et al. in which 312 mothers participated, it was found that 15.1% used CMPs during breastfeeding and 8.3% used non-vitamin/mineral (mostly in the form of herbal extract) products [11]. In our study, the widespread use of dietary supplements may be linked to their routine recommendation by healthcare professionals, particularly for vitamin D and iron, which are routinely prescribed postpartum and suggest that dietary supplements are more widely accepted among breastfeeding mothers. The differences in the prevalence of HM use across studies may be explained by the social acceptance of HM due to cultural influences [20, 23].

The most commonly used dietary supplements among CMP users in our study were Vitamin D, Iron, B12, Multivitamin and Fish Oil. Similarly, in a study from Australia [30] reported that the most popular dietary supplements among breastfeeding mothers were multivitamins, probiotics, iron supplements, Vitamin D, and omega-3. In a study from China, it was reported that lecithin, docosahexaenoic acid (DHA), omega-3 fatty acids were the most commonly taken TCMs other than herbal products [18]. Clinical studies support the benefits of vitamin D and iron supplements for both mothers and infants during breastfeeding, leading to their routine prescription as part of maternal care [8]. In Turkey, a complete blood count is requested for mothers suspected of anemia, while others are started on iron prophylaxis. For vitamin D, routine screening for deficiency during pregnancy or breastfeeding is not standard practice. Instead, it is recommended to administer 1200 IU/day of vitamin D from the 12th week of pregnancy until the end of the 6th month postpartum. While these supplementation programs may explain why vitamin D and iron were the most frequently used CMPs in this study, our findings also indicate suboptimal adherence to these recommendations in the postpartum period, with 56.4% of respondents not using vitamin D and 65.6% not using iron. Another important determinant of DS use could be nutritional deficiencies that may arise during the antenatal or postnatal period. Particularly postpartum anemia is a common condition, often caused by iron deficiency and peripartum blood loss [31] can lead to the need for iron supplementation [32, 33]. Our study did not account for these deficiencies, which may have influenced CMP use, especially the use of iron supplements. As a result, it is unclear whether the high use of DS observed in our study was for general supplementation or for therapeutic purposes.

Herbal medicines were the main complementary medicine products investigated in the literature during lactation [2, 3]. The herbal products most frequently used in our study were fennel, garlic, ginger and fenugreek.

Although the plants most mentioned in the studies are fenugreek, ginger, dong quai [20], chamomile [30], fennel, licorice root, and green tea [29], it is seen that different herbals appropriate to the cultural structure are used in studies conducted in different parts of the world. In some regions, *Tetrapanax papyriferus*, *Vaccaria segetalis* [18], black pepper, pumpkin seeds [22], *Cassia sieberiana*, *Luffa acutangula*, Roxb [23] are reported to be frequently used. In a study conducted in our country, the most commonly used herbal products among breastfeeding women were found to be fennel, anise, mint, linden, dill, and ginger [19].

A systematic review found that the two main reasons why women choose to use CMPs are to protect themselves or their babies from adverse events and to support the normal physiological processes such as pregnancy, birth and breastfeeding [2, 4]. In our study, the most common reasons for CMP use were maintaining general health and supporting immunity. These findings are consistent with previous research, highlighting the preventive role mothers attribute to CMPs during the breastfeeding period. Similar to studies reporting the frequent use of herbal medicines for lactation support and galactagogue purposes, the most popular reason among HM users in our study was 'to increase breast milk' [20, 22, 24, 34]. In a study of 810 women, the majority reported feeling that CMPs had been beneficial for their own and their children's health [4]. Likewise, in our study, the vast majority of mothers who used CMP reported experiencing benefits.

The decision to use CMP during breastfeeding is shaped by a complex network of information sources [3]. In our study, it was determined that mothers most frequently received advice from physicians about the use of CMP. A systematic review reported that the most frequently accessed sources of information about CMPs were healthcare professionals, followed by interpersonal relationships and media [3]. In a study conducted in Iran the most common reason for using TCIM products was advice from healthcare personnel or relatives [25]. However, there are also studies showing that health professionals play a less important role [19, 20, 23]. In a study from Türkiye, mothers primarily consulted their relatives for information about TCM methods [19]. In an online survey conducted among breastfeeding mothers, almost half of the participants reported learning about fenugreek through internet sources [34], while in our study, a low proportion of women indicated social media or the internet as a source of advice. Although it is thought the fact that mothers in rural and remote areas can easily access these drugs via the internet may have an effect in increasing the use of CMPs [4], in our study, the majority of mothers obtained products from pharmacies (87.7%), with a low rate from the internet (12.6%).

Herbal medicine products were most frequently obtained by mothers from herbalists (41.4%) and grocery stores (33.1%).

Mothers may seek information on health issues from various sources based on accessibility, their perception of the safety, and alignment with their health beliefs [2]. In a survey conducted in Australia, general practitioners, obstetricians and midwives emerged as the most trusted health professionals [4]. In our study, it was determined that doctors were the source that mothers trusted the most, which is consistent with previous research [35].

Previous studies have suggested that CMPs are frequently used during pregnancy and breastfeeding due to personal preference and perceived safety [18, 34, 36–38]. In our study, 45.8% agreed, and 14.7% strongly agreed that using CMP during breastfeeding is generally safe. In a study conducted in Türkiye [19], 34.9% of breastfeeding mothers perceived herbal medicines and TCM methods as safe. Similarly, in a study conducted in Italy, 73% of women reported that CAMs were equally safe or safer than conventional medications [27].

Informing breastfeeding women about the potential benefits and possible risks of CMP use is very important for the health of both mothers and breastfed babies. Participants of a study in Australia believed that there was lack of information regarding the use of herbal medicine during breastfeeding [20]. In a systematic review about safe and appropriate use of herbal products by nursing mothers, it was noted that pharmacists can play a role in providing necessary guidance to breastfeeding women [39]. In our study, despite products being most commonly recommended by health professionals and obtained from pharmacies, 59.3% of mothers using CMPs reported not receiving information about the potential side effects of the product. Additionally, 85.6% of mothers who used CMP indicated that they would like more information about the safety and efficacy of dietary supplements or herbal products during breastfeeding, underlining the importance of health professionals providing guidance on the use of CMP during breastfeeding.

Limitations

Our study has several limitations. One important limitation was the accuracy of self-reported product use. Mothers may have underreported their use for various reasons, such as not remembering, misremembering or under-remembering. Additionally, the lack of information on postnatal deficiencies, such as anemia, limits our ability to distinguish between supplementary and therapeutic use. The study was based on a self-administered online survey, which may introduce potential subject bias, as women with a particular interest in CMPs or those already using them are more likely to participate. Furthermore, while the study covered multiple regions,

the sample distribution was not proportional to the population, and the overrepresentation of well-educated women limits the generalizability of the results to the broader population of breastfeeding mothers in Türkiye. Despite widespread internet usage in Türkiye (85.4% among women according to official statistics), our findings may not fully capture the experiences of less active online users.

Conclusion

Breastfeeding mothers often use CMPs for a variety of health reasons, including staying healthy and supporting immunity. While physicians are reported as the most trusted source of information for mothers, many women use CMPs without any recommendations. However, many mothers also report a need for more guidance on the safety and effectiveness of these products. Therefore, it is clear that healthcare providers need to take a more active role in counseling mothers about both prescribed and self-prescribed CMPs to ensure informed decision-making and safe use of CMPs.

Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s13006-024-00687-0>.

Supplementary Material 1

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Author contributions

Conceptualization: D.D.B., N.K., H.B.Ç. Methodology: D.D.B., N.K., H.B.Ç., A.K. Investigation: H.B.Ç., Ö.Ö., Ö.B. Data curation: D.D.B., M.B. Formal analysis: D.D.B., M.B. Writing- Original Draft Preparation: H.B.Ç., Ö.Ö., M.B. Writing—review and editing: D.D.B., N.K., A.K., Ö.B. Visualization: D.D.B.

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Data availability

The anonymised data collected are available as open data via the Science Data Bank online data repository: <https://www.scidb.cn/en/s/Zbiyue>.

Declarations

Ethics approval and consent to participate

Ethical approval for the study was obtained from the Istanbul Medipol University Non-Interventional Clinical Research Ethics Committee (Approval Number: E-10840098-772.02-1).

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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