



ERRATUM



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ERRATUM: In the Medicine Science journal, Volume 10, Issue 2, published in 2021, the article titled "Evaluation of the use of alternative and complementary therapies and conception status of women receiving infertility treatment" (page number: 564-70) there is an error in the starting date mentioned under the "Abstract" text and "Material and Methods" section. The incorrect date, which was stated as October 1st to November 30th, has been corrected to 15th November 2020 and 15th January 2021.

Evaluation of the use of alternative and complementary therapies and conception status of women receiving infertility treatment

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Abstract

This study aims to evaluate the use of alternative and complementary therapies and conception status of women receiving infertility treatment. A total of 349 patients who applied to the infertility department of Medipol University and Private Nisa Hospital between 15th November 2020 and 15th January 2021 were included in the study on their consent in participating in the research. Data was collected through face-to-face interviews using an information form prepared in accordance with the literature review carried out by the researchers. The pregnancy status of the patients was recorded as a result of the treatment and their relationship with the use of alternative and complementary therapies was examined. Of the 349 patients who participated in the study. A statistically significant difference ($p < 0.001$) was detected between using assistive treatment methods and the length of infertility duration (year) and infertility treatment duration (month). Furthermore, the difference between using complementary therapies and age ($p = 0.011$), income status ($p < 0.001$), marriage duration ($p < 0.001$), infertility type ($p = 0.010$), and the source of infertility ($p = 0.009$) was also found to be statistically significant ($p < 0.001$). 103 (70.48%) women were found to be pregnant after the infertility treatment. The most commonly used alternative and complementary therapy in pregnant women was visiting shrine (38.05%, $n = 43$), while the most used Traditional and Complementary Medicine method was cupping (37.50%, $n = 27$). 90 (87.37%) of the pregnant women used an complementary method and this was statistically significant ($p < 0.001$). However, there was no relationship between acupuncture, cupping and conception ($p = 0.997$, $p = 0.090$, respectively). We found a significant relationship between the use of alternative and complementary therapy and conception; and the most successful Traditional and Complementary Medicine method was cupping but no relationship was found between cupping and conception so further studies needed to be done whether this method affects pregnancy.

Keywords: Infertility, complementary therapies, herbal medicine, acupuncture

CITATION

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Introduction

Infertility is a significant health problem that affects not only individuals but also communities [1]. It is a challenging process that is difficult to handle especially for couples as it could cause traumatic situations because of its psychosocial dimensions [2]. It is already a well-known fact that psychological factors play a crucially important role together with physical disorders and problems [3]. Infertility treatment processes could be highly demanding and exhausting due to factors such as its high costs, monthly treatment programs, and uncertainty of successful results [4].

Moreover, applications during treatment causing extra burden on especially women's physical wellbeing affect their quality of life negatively [5,6]. All these negative aspects cause people to use alternative and complementary therapies (ACT) during this demanding period.

In addition to traditional and complementary medicine (T&CM) methods, religious actions such as praying or paying visits to shrines – tombs of religiously important historical figures – are also among alternative and complementary therapies used during this process. T&CM is defined as all explained and unexplained applications that are mainly based on various beliefs, traditions or experiences, which are used not only to diagnose and treat physical and psychological illnesses but also to maintain good health. Methods such as acupuncture, cupping, and phytotherapy are called as T&CM applications [7]. Approximately 30-60% of infertile couples have been found to use complementary therapies to increase their chance of success [8].

This study aims to evaluate the use of alternative and complementary therapies and conception status of women receiving infertility treatment.

Material and Methods

A total of 349 patients who applied to the infertility department of Medipol University and Private Nisa Hospital between 15th November 2020 and 15th January 2021 agreed to participate in the study and were included in the study. The sample size of the study was calculated to be 349 subjects with 98% reliability taking 3800 as the average number of patients coming to the department in 2 months considering the yearly total number of applications to the department in one year. In collecting data, face-to-face interviews were used with an information form prepared in accordance with the literature review carried out by the researchers were used. In the first part of the form used, sociodemographic status of the subjects was investigated while in the second part, infertility and treatment histories together with the use of complementary therapies of participants were focused on. The ethical committee approval to carry out the study was granted with a written permission authorized by the decision number 840 dated November 12th, 2020 by Istanbul Medipol University Non-interventional Research Ethics Committee.

All the statistical analyses were performed using SPSS software version 25.0. Continuous variables were presented on the tables as mean, whereas categorical variables were reported as numbers

and percentages. Comparisons between groups were made using Mann-Whitney U Test for continuous variables and Fischer Exact Test for categorical variables. $p < 0.05$ was accepted as statistically significant.

Results

As shown with the sociodemographic data illustrated on Table 1, of the 349 women who participated in the study, 51.57% (n=180) were at the ages of 25-34 while 57.60% (n=201) of the husbands of the subjects were at the age of 35 and over. In terms of education levels of the subjects, the biggest group was high school and university graduates with 46.42% (n=162). The biggest group in terms of education levels of husbands was high school and university graduates with 58.18% (n=203).

Table 2 illustrates the evaluation of the infertility and treatment histories of the women who participated in the study. Of the couples who participated in the study, 51.86% (n=181) were primary infertile, and 47.85% (n=168) were identified to be in the secondary infertile group. Analyzing the etiology of the infertility of participants, it was found that 33.68% (n=135) of them were female fertility, 18.63% (n=65) were male fertility, 28.94% (n=101) were both female and male fertility, and 13.75% (n=48) were unexplained infertility – infertility whose causes are not known. The average length of infertility period of the female participants was 4.21 (year), and their average length of treatment was 21.16 (month).

Table 1. Sociodemographic characteristics of the participants

Variables	n (%)
Age	
15-24	32 (9.18)
25-34	180 (51.57)
35 and over	137 (39.25)
Husband's Age	
15-24	15 (4.29)
25-34	133 (38.11)
35 and over	201 (57.60)
Education Level	
Illiterate	26 (7.45)
Below high school	161 (46.13)
High school and over	162 (46.42)
Education Level of Husband	
Illiterate	10 (2.86)
Below high school	136 (38.96)
High school and over	203 (58.18)
Employment Status	
Employed	167 (47.85)
Unemployed	182 (52.15)
Income Level	
<2000 TL	27 (7.47)
2000-5000 TL	257 (73.85)
>5000 TL	65 (18.68)
Duration of Marriage	
1-5 year	116 (33.24)
6-11 year	181 (51.86)
12 year and over	52 (14.89)
TL: Turkish Lira	

Table 2. The evaluation of infertility and treatment histories of the participants

Variables	N(%) or Mean $\pm$ SD
Type of Infertility	
Primary Infertility	181 (51.86)
Secondary Infertility	168 (47.85)
Cause of Infertility	
Female Infertility	135 (38.68)
Male Infertility	65 (18.63)
Both Female and Male Infertility	101 (28.94)
Unexplained Infertility	48 (13.75)
Infertility Period (year)	4.21 $\pm$ 3.84
Infertility Treatment Period (month)	21.16 $\pm$ 29.04

SD: standard deviation

The use of ACT methods by the participants and its causes are evaluated on Table 3, and it has been found that 66.47% (n=232) of them reported using at least one ACT. When those who didn't use any ACT before were asked about the reasons why they didn't, 59.3% (n=206) reported that they didn't believe it to be helpful. On the other hand, 40.68% (n=143) of those who used at least one ACT said that they used it just because they believed it to be effective. The source of information about ACT was reported respectively to be 40.97% from relatives, 23.49% from media, 22.92% from internet, and 22.92% from medical personnel.

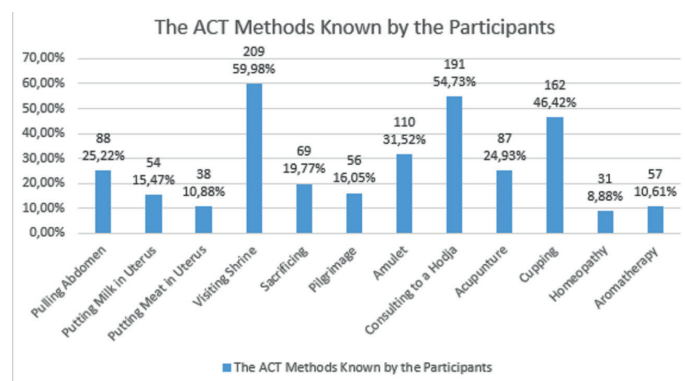
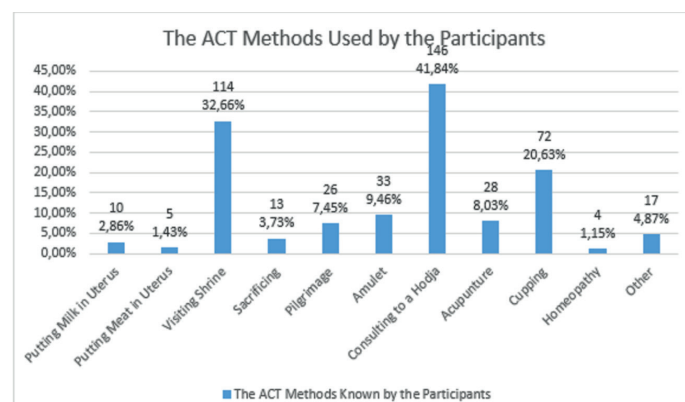
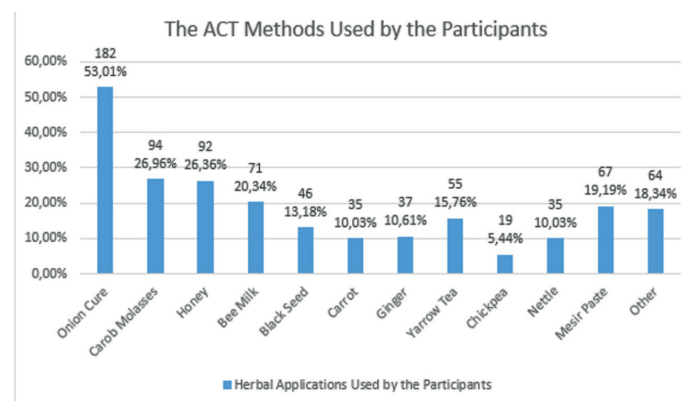
Table 3. Other defining variables about patients

Variables	N (%)	
	No	Yes
Reasons for Using T&CM		
Believe it to be helpful	206 (59.03)	143 (40.68)
To increase the number of sperms	284 (81.37)	65 (18.05)
Believe it to reduce stress	287 (82.23)	62 (17.76)
To heal yourself	333 (82.23)	16 (17.76)
To increase the chance of success	270 (77.36)	79 (22.64)
Information Source about T&CM		
Relatives	206 (59.03)	143 (40.97)
Media	267 (76.51)	82 (23.49)
Internet	269 (77.08)	80 (22.92)
Health Employee	336 (96.27)	13 (3.73)
Reason for not using T&CM		
I don't believe it	294 (84.24)	55 (15.76)
I haven't heard about it	273 (78.23)	76 (21.77)
I couldn't find time	273 (78.23)	76 (21.77)
Others	275 (78.79)	74 (21.21)

The ACT methods that the female participants knew and used are demonstrated on (Table 1) and 2. As can be seen on these tables, the most well-known ACT is shrine visits by 59.8% (n=209) while the most well-known T&CM application is cupping by 46.42% (n=162). It has been observed that the most preferred ACT is consulting with a hodja – a religious character generally thought to have healing powers using religious methods – by

41.84% (n=146), followed by visiting a shrine with 32.66% (n=114) of the participants. The most commonly used T&CM method is cupping with 46.42% (n=162) of the participants reporting to have used it at least once. When the practitioner of ACT was asked, 57.45% (n=135) of the participants reported religious people, 15.32% (n=36) certified practitioner, 13.62% (n=32) health professionals, and 13.62% (n=32) people with no specific expertise.

76.79% (n=268) of the participants expressed use of vitamin and mineral supplements. When their herbal remedy applications were asked, 53.01% of them reported using onion cures, 26.94% carob molasse, 26.36% consuming honey (Figure 3).

**Figure 1.** The ACT methods known by the participants**Figure 2.** The ACT methods used by the participants**Figure 3.** Herbal applications used by the participants

Evaluation of the factors that affect the use of ACT is illustrated on Table 4 and Table 5. A statistically significant relation was found between the use of ACT and age ($p=0.011$), income ($p<0.001$), the length of marriage ($p<0.001$), infertility type ($p=0.010$), and cause of infertility ($p=0.009$). It was found that ACT use was much more common especially among those who were secondary infertile and particularly in the group of female related infertility,

who were at the age of 35 and over, with middle income levels, and married for 6-11 years. Furthermore, the relation between ACT use and the length of the periods of infertility (year) ($p<0.001$) and infertility treatment (month) ($p<0.001$) was found to be statistically significant. It was recognized that ACT use was more common among those with longer periods of infertility and infertility treatment (Table 5).

Table 4. The evaluation of the factors affecting ACT use

	Using ACT N (%)		P
	Yes	No	
Age*			
15-24	15 (46.87)	17(53.13)	0.011*
25-34	116 (64.44)	64 (35.56)	
35 and over	101 (73.72)	36 (26.28)	
Husband's Age*			
15-24	7 (46.66)	8 (53.34)	0.208
25-34	87 (65.42)	46 (34.58)	
35 and over	138 (68.66)	63 (31.34)	
Education Level*			
Illiterate	18 (69.23)	8 (30.77)	0.085
Below high school	116 (72.05)	45 (27.95)	
High school and over	98 (60.49)	64 (39.51)	
Education Level of Husband*			
Illiterate	6 (60.00)	4 (40.00)	0.134
Below high school	99 (72.94)	37 (27.21)	
High school and over	127 (62.56)	76 (37.44)	
Employment Status*			
Employed	111 (66.47)	56 (33.53)	0.997
Unemployed	121 (66.48)	61 (33.52)	
Income Level*			
<2000 TL	13 (50.00)	13 (50.00)	<0.001
2000-5000 TL	191 (74.32)	66 (25.68)	
>5000 TL	29 (43.07)	37 (56.93)	
Duration of Marriage*			
1-5 year	52 (44.83)	64 (55.17)	<0.001
6-11 year	142 (78.45)	39 (21.55)	
12 and over	38 (73.07)	14 (26.93)	
Infertility Type*			
Primary Infertility	109 (60.22)	72 (39.78)	0.010
Secondary Infertility	123 (73.22)	45 (26.78)	
Cause of Infertility*			
Female Infertility	97 (71.85)	38 (28.15)	0.009
Male Infertility	46 (70.77)	19 (29.23)	
Both Male and Female Infertility	67 (66.34)	34 (33.66)	
Unexplained Infertility	22 (45.83)	26 (54.16)	
Pregnancy*			
Yes	90 (87.37)	13 (12.63)	
No	142 (57.72)	104 (42.28)	
*Chi-square Test			

103 (%70.48) women were found to be pregnant after the infertility treatment. The most commonly used alternative and complementary therapy in pregnant women was visiting shrine (38.05%, n=43), while the most used Traditional and Complementary Medicine method was cupping (37.50%, n=27). 90 (87.37%) of the pregnant women used an adjunct method and this was statistically significant ($p<0.001$). 72 (69.9%) of those who got pregnant tried consulting to a hodja, 43 (41.7%) tried visiting shrine; 27 (26.2%) tried cupping; 13 (12.6%) tried amulets; 10 (9.8%) tried going on pilgrimage; 8 (7.8%) tried abdomen pulling, 8 (7.8%) tried acupuncture; 6 (5.8%) tried sacrificing an animal; 1 (1%) tried putting milk into the uterus, 1 (1%) tried putting meat into the uterus, and 1 (1%) tried homeopathy. 90 (87.37%) of the pregnant women used an complementary method and this was statistically significant ($p <0.001$). However, there was no relationship between acupuncture, cupping and conception (p : 0.997, p : 0.090, respectively).

The most preferred food-based methods of the pregnant women were onion cure 27.32% (n=50), mesir paste 37.32% (n=25) and honey 33.69% (n=31). The most preferred food-based methods of non-pregnant women were onion cure 72.68% (n=133), mesir paste 62.68% (n=42) and honey 66.31% (n=61). There was no significant relationship between conception and onion cure, mesir paste and honey ($p=0.346$; 0.119; 0.305, respectively).

Table 5. The comparison of ACT use and duration of infertility

Variables	Using ACT		Not Using		P
	N	Using (Mean ± SD)	N	(Mean ± SD)	
Infertility period (year)*	232	4.85±4.21	117	2.94±1.73	<0.001
Infertility Treatment Period (month)*	232	25.68±33.13	117	12.21±14.95	<0.001

*Mann Whitney U test

Discussion

Infertility, with its already increasing prevalence, is a significant biological and sociological phenomenon that affects 10-15% of the couples at age of reproduction, and when considered in terms of etiological perspectives, the problem could be, on average, resulted from 40% male infertility and 40% female infertility [9]. This figure's being 33.68% (n=135) in our study could have something to with the fact that the participants were chosen from the women who applied to infertility department.

The desire to have children is considered to be crucial in terms of both instinctive and cultural aspects, and if not fulfilled, it might cause traumatic situations where people seek for various cures [10]. As a result of the expectations from their community and the feeling of failure resulted from these expectations, infertile couples find themselves in chaotic situation that negatively affects their relations in marriage, sexual lives, future plans,

self-respect, and quality of life [11]. When surgical operations for diagnosis and treatment are added to this already stressful psychological period, couples could experience emotional traumas accompanied by emotional outbreaks. Thus, couples experiencing this traumatic period end up with fighting in a psychological battle against themselves, which are resulted from anxiety, depression, fear, loss of social status, isolation, fear of being labelled in society, guilt feeling, and desperation [9,12].

Because of all these reasons, couples become more prone to search for and use various other alternative ways to increase their fertility. Although the use of ACT methods varies from one culture to another, it is stated in scientific studies that it is between 21% and 91% [13]. In a study carried out in Turkey, this rate was found to be 62% [8]. Our study has found it to be 66.47%, which is aligned with the literature.

When asked, infertile couples reported using ACT methods that they found more appropriate in terms of their cultural and religious beliefs [14]. Analyzing the world literature in this area, it can be observed that many women in Africa relate the cause of their inability to have children with the jealousy of the people around them and the voodoo made by their mother-in-law and consult generally with traditional healers [14]. Women in South Africa use herbal remedies grown in the area to increase their fertility or to find a cure for any problem related to their genital organ [15].

According to a study carried out by Papreen et al. in Bangladesh, women prefer traditional medicine more than modern medicine as they believe infertility problems are mostly caused by evil spirits and supernatural powers [16]. In China, the most common method used for this kind of purposes is to pray gods. Moreover, praying on the days between the 1st and 15th days of the heat period in menstrual cycle is commonly believed to be more effective [17]. It has been reported especially in Chinese medicine that some herbal approaches such as Wenshen Yangxue, Antai Decoction, Xiaoyao Powder considerably increase the chance of success [18].

It is a commonly expected and natural situation for individuals to search for appropriate remedies and cures according to their cultures and beliefs to get rid of infertility, since it is a long-lasting and exhausting process [19].

As for Turkish culture, infertile women reported especially using traditional methods, frequently visiting shrines, drinking supposedly divine healing water, and relieving themselves praying under old trees [20].

Another study carried out in this area has found out that religious practices such as saying the most special prayers and Quran verses or using special amulets prepared for this purpose are more commonly preferred in order to increase the chance of reproduction [21]. Similarly, our study found out that the most

commonly preferred ACT method was consulting with a hodja with 41.84% of the participants reported doing so, followed by 32.66% visiting a shrine.

Acupuncture (60.4%) and massage (40.9%) are reported to be the most frequently preferred T&CM methods according to another study [22]. In our study, it was observed that the most common T&CM method was cupping with 46.42% (n=162) participants reporting to have used at least once, which is thought to have resulted from cupping's role in Muslim belief and individuals' preference to use methods appropriate according to their religious beliefs.

Özkan et al. have suggested that it has been found in their study on the foods used for this purpose that the most famous applications among women are onion (81.9%) and fig (53.01%), and onion cures (53.01%) [23]. In another study, among the women who reported eating or drinking herbal mixtures, 37.9% preferred onion cures/drinks, 17.1% carob molasses, 8.3% fig cures/drinks, 7.1% Alchemilla cures/drinks [24].

Another study has pointed out that among infertile couples, especially males use such kind of dietary cures and they mostly (82.9%) use honey and dried nuts for this purpose. (25) In our study, the most common dietary cure was found to be onion cure with 53.01% (n=185), followed by carob with 26.94% (n=94).

The most important factor that affects the use of such dietary cures is patients' belief that the chance of success and the strength of their ovary will increase, and it has been observed that better results were achieved when these methods were combined [25].

Those who are more interested in ACT methods have been found to keep the treatment for longer periods compared to those who are less interested, and it has also been found that those who preferred ACT methods are generally people with lower level of education and from rural areas [26,27]. Another study has pointed out that those using supportive alternative methods together with modern medicine are mostly people working at a profession with a university degree, with a higher social status, and with a higher income rate [28]. In our study, no relation between the use of ACT methods and education level was observed; however, as the age increased, a relation was found in the secondary infertility and female infertility among those with middle income and married for 6-11 years. Moreover, infertility period (year) and infertility treatment period (month) were found to be longer among those using ACT methods compared to those not using them. Similarly, in one of the studies, it has been indicated that the patients whose infertility treatment lasted longer than one year searched for ACT methods more often, and they expressed the length of the treatment period as their reason for searching alternative ways [29]. However, patients generally hide this search from their doctors following their treatment and report negative reactions, criticism, the concern of not being supported as their reasons for hiding it [30]. Likewise, the source of information regarding

ACT methods are mostly reported to be internet, television, magazines, individuals with similar histories rather than health officials [31]. In our study, it was observed that the source of information the participants had reported using were respectively relatives (40.97%), media (23.49%), and internet (22.92%).

A significant relationship was found between the use of ACT and conception. In a study conducted with 1231 IVF patients in China, it was reported that transfer success and the number of live births increased in patients using ACT [32]. In our study, cupping was the most commonly used T&CM method in pregnant women, but there was no significant correlation with cupping and conception. In some studies, it has been observed that cupping has a positive effect on pregnancy outcomes [33,34]. The prevailing opinion is that acupuncture affects female fertility and promotes implantation with a general sympathoinhibitory effect through increased blood flow to the uterus and ovaries [35]. It also has positive effects on the luteal phase [36]. It has been shown that acupuncture on the day of embryo transfer increases pregnancy rates in women who have undergone IVF [37,38]. In our study, no relationship was found between acupuncture and cupping and conception. This may be because the methods have been evaluated regardless of the way in which they are applied, their number or the practitioner.

ACT could support the treatment as long as it is practiced by the right person in the right way, but as can be understood from our study, practices performed by those who have no professional background in the relevant field poses great risk. As ACT is believed to be harmless and so the practitioner is thought to play no important role, neither professional experience of the practitioners nor their certifications are generally investigated by patients. However, ACTs, especially T&CM methods, should be performed by certified health professionals. Furthermore, due to the common use of these applications, we believe possible risks could only be eliminated if doctors question their patients about the use of these practices and warn them properly about the health risks that might be resulted from inappropriate practices.

ACTs are commonly used in infertility treatments. In this study, a relation was detected between the use of ACT methods and secondary and female infertility of patients from middle income group who have 6–11 year marriages, and it has also been found that as the age, the period of infertility and infertility treatment increase, the use of ACT increase, as well.

Furthermore, it has been found out that the most common ACT is prayers while the most prevalent T&CM method is cupping, and the information about these practices has been found to be mostly from relatives. These practices have been reported to be carried out by individuals who have no professional expertise or certification. We believe that possible risks and damages could be handed by investigating about the use of ACT among infertile couples and by guiding them properly.

Conclusion

We found a significant relationship between the use of alternative and complementary therapy and conception; and the most successful Traditional and Complementary Medicine method was cupping but no relationship was found between cupping and conception so further studies needed to be done whether this method affects pregnancy.

Conflict of Interests

The authors have no conflicts of interest to disclose.

Financial Disclosure

All authors declare no financial support.

Ethical Approval

The ethical committee approval to carry out the study was granted with a written permission authorized by the decision number 840 dated November 12th, 2020 by Istanbul Medipol University Non-interventional Research Ethics Committee

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