








## ORIGINAL RESEARCH

# Knowledge Level and Opinions of Secondary School Students about Traditional and Complementary Medicine

Onur Ozturk<sup>1</sup>  Mustafa Unal<sup>2</sup>  Muhammet Ali Oruc<sup>3</sup>  Ali Timucin Atayoglu<sup>4\*</sup>   
Mustafa Yasin Selcuk<sup>2</sup>  Gulsah Ozturk<sup>5</sup>  Muhammed Emin Goktepe<sup>1</sup> 

<sup>1</sup> Department of Family Medicine, Samsun Education and Research Hospital, Samsun, Turkey,

<sup>2</sup> Department of Family Medicine, Faculty of Medicine, Ondokuz Mayıs University, Samsun, Turkey

<sup>3</sup> Department of Family Medicine, Faculty of Medicine, Ahi Evran University, Kırşehir, Turkey

<sup>4</sup> Department of Family Medicine, International School of Medicine, Istanbul Medipol University, Istanbul, Turkey

<sup>5</sup> Clinic of Family Medicine, Gokberk Family Healthcare Center, Samsun, Turkey

\*Corresponding Author: Ali Timucin Atayoglu e-mail: atatayoglu@medipol.edu.tr

Received: 28.03.2021

Accepted: 13.04.2021

### Abstract

**Objective:** The place of traditional and complementary medicine (T&CM) practices in modern health services has been under intensive debate over recent years. Currently, integrative medicine is not included in the curricula across educational levels below the bachelor's degree. In this study, the level of awareness and opinions about T&CM were investigated among secondary school students.

**Material-Method:** In this cross-sectional study, the level of awareness and opinions about T&CM were examined among secondary school students. A survey was administered to students attending the 9th-12th grades at randomly selected schools in the Asarcık and Canik districts of Samsun.

**Results:** This study included 459 students. Most of the participating students were males (59.7%). It was determined that; of the approaches in T&CM, the highest level of awareness was about 'hypnosis' (67.7%). It was found out that information about T&CM approaches was mostly acquired from the media (32.0%). Of the student opinions about T&CM, 40.7% were positive. The percentage of students thinking that conventional medicine and T&CM can be integrated and complement each other was 32.5% (n=149). Most of the students with a family member utilizing T&CM were wishing to work in the health sector in the future (32.1%) (p=0.02) and aiming to have an integrated medicine related occupation more than other participants (32.7%) (p=0.001).

**Conclusion:** The level of awareness about T&CM was found to be low among secondary school students. If health literacy education in schools is organized better, awareness of evidence-based integrative medicine may grow.

**Keywords:** Evidence-Based, Traditional Medicine, Complementary Medicine, Integrative Medicine

### INTRODUCTION

In Turkey, 15 forms of T&CM therapies were authorized by the Regulation on Practices of T&CM; which was put into force in 2014 by the Ministry of Health of Turkey <sup>1</sup>. The regulation legitimized T&CM treatments and started forestalling inappropriate practices.

The secondary school system in Turkey is an intermediate process to follow the preceding eight-year compulsory primary school period and serve as the path to university. The secondary school system in Turkey covers all generalist,

vocational, and technical education in institutions that provide at least a four-year program that can be compulsory, formal, or non-formal <sup>2</sup>. Although the secondary school curriculum includes topics about general health, nutrition, healthy lifestyle, and addictions; it does not contain any topics about integrative medicine. However, there is information pollution about this topic, which is often regarded positively or negatively in the social and national media in routine daily life. It is important that secondary school students, too,

should acquire information about integrative medicine and have an evidence-based opinion on T&CM.

## MATERIALS AND METHODS

This is a cross-sectional survey study. An 8-item sociodemographic data form and a 13-item questionnaire that inquired about the awareness and opinions on T&CM were administered in the period between May 2019 and June 2019 to students attending the 9th, 10th, 11th, and 12th grades as the grades of the secondary school education. The secondary schools were selected out of the schools in the Asarcık and Canik districts of Samsun. Of the questions regarding T&CM; one was designed as a 2-point Likert-type scale, 8 were designed as a 3-point Likert-type scale, and 3 were designed as a 4-point Likert-type scale. One question had 15 options and one participant could select more than one option to respond. Body mass indexes (BMI) of the students were calculated using the height and weight information reported by the students. A student having a BMI value below 18.5 kg/m<sup>2</sup> was accepted as underweight, students with BMI values of 18.5-25 kg/m<sup>2</sup> were accepted as normal weight, and students with BMI values more than 25 kg/m<sup>2</sup> were accepted as overweight<sup>3</sup>.

Questionnaires were administered after obtaining permission from the respective institutions and teachers. Percentage (%) and mean  $\pm$  standard deviation values were used in descriptive statistics. The chi-square test was used in comparative analyses. The statistical analysis was performed using the SPSS 20.0 package software. A p-value of less than 0.05 was accepted as significant. To carry out the study, ethics committee approval was obtained from 19 Mayıs University's Clinical Research Ethics Committee (OMU KAİK 2019/154).

## RESULTS

The study included 459 students. Of the participants, the mean age was 15.75  $\pm$  1.26 years, the mean height was 165.75  $\pm$  9.06 cm, and the mean weight was 56.47  $\pm$  11.30 kg. Of the participants, 68.6% (n=315) were in the normal

BMI range. Of the male and female students, 26.6% and 9.7% were smokers, respectively (Table 1).

**Table 1.** Demographic data

	Parameter	Frequency (n)	Percentage (%)
Grade	9	178	38.8
	10	74	16.1
	11	133	29.0
	12	74	16.1
Gender	Girls	185	40.3
	Boys	274	59.7
BMI	<18,5 kg/m <sup>2</sup>	116	25.3
	18,5-25 kg/m <sup>2</sup>	315	68.6
	>25 kg/m <sup>2</sup>	28	6.1
Desired occupation sector	Health	56	12.2
	Non-health	403	87.8
Chronic Disease	Yes	29	6.3
	No	430	93.7
Smoking	Girls	18	9.7
	Boys	73	26.6

Of the T&CM practices, the highest level of awareness was about hypnosis followed by music therapy and the least known practice was chiropractic with the following numbers (rates) of students as 311 (67.7%), 218 (47.4%), and 16 (3.4%), respectively (Table 2).

**Table 2.** T&CM awareness

T&CM Practices	Frequency (n)	Percentage (%)
Hypnosis	311	67.7
Music therapy	218	47.4
Wet cup	212	46.1
Homeopathy	95	20.6
Acupuncture	84	18.3
Reflexology	83	18.0
Mesotherapy	69	15.0
Apitherapy	52	11.3
Ozone	50	10.8
Osteopathy	42	9.1
Larva Application	40	8.7
Prolotherapy	35	7.6
Phytotherapy	31	6.7
Hirudotherapy	20	4.3
Chiropractic	16	3.4

It was found that information about T&CM practices was mostly acquired from the media (32.0%). Of the participants wishing to choose an occupation in the health sector, 35.7% were

aiming to do so in integrative medicine. While 40.7% (n=187) of the students had a positive opinion about T&CM, 21.6% (n=99) of them had a negative opinion. The rate of those, who thought that conventional medicine and T&CM could be integrated and complement each other, was 32.5% (n=149). The rate of those who had a family member that benefited from T&CM was 20.7% (n=95). The rate of those, who thought that the number of T&CM centres in Turkey needed to be increased, was 46.4% (n=213). According to 38.6% of the students, everyone completing the respective training could perform T&CM practices. The rate of those; who heard positive news about T&CM approaches in the media was 40.7% (n=187); while the remaining participants heard about T&CM in negatively commenting news in the media or they did not hear about T&CM in the news at all. Those, who heard T&CM practices in positive news, had a more positive opinion regarding such practices (p=0.003). The rate of those, who thought that T&CM could boost student success, was 35.5% (n=163). About spiritual practices such as amulet, prayer, and magic; 12.6% (n=58) of the participants thought that these were among T&CM practices but 24.0% (n=110) of the participants were hesitant.

There was not a difference by gender in terms of wishing to have an occupation related to T&CM; however, the wish of having an occupation in the field of conventional medicine was higher in females and female students had more positive opinions on T&CM (p=0.39, p<0.001, p=0.02; respectively) (Figure 1).

By the BMI categories, no differences were observed in terms of wishing to have an occupation related to T&CM or conventional medicine, or in terms of having a different opinion on T&CM (p=0.45, p=0.79, p=0.34; respectively). In terms of being a smoker or not, no differences were observed in terms of wishing to have an occupation related to T&CM or in the field of conventional medicine (p=0.38 and p=0.80. However, the opinions of non-smokers on T&CM were more positive (p=0.03).

Wishing to have an occupation related to T&CM or conventional medicine was not different in the student group having the misconception that spiritual approaches such as amulet, prayer, and magic were authorized T&CM practices (p=0.52, p=0.26). However, the students thinking the opposite had more positive opinions regarding T&CM (p<0.001) (Figure 2).

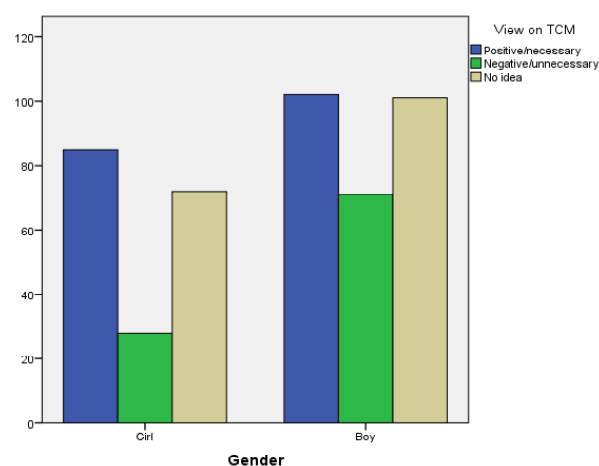


Figure 1. View on T&CM by gender

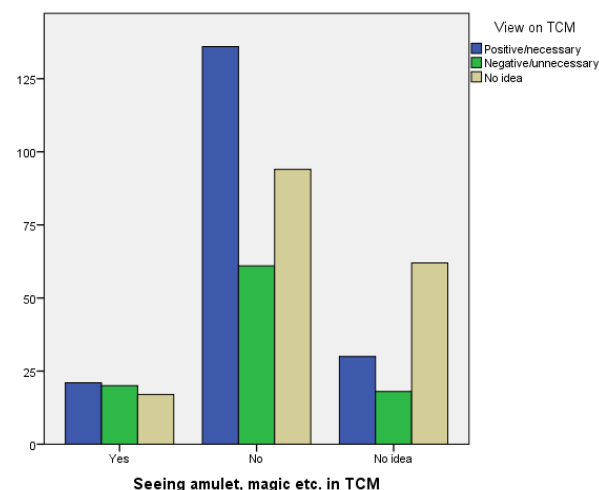


Figure 2. View on T&CM by seeing amulet, magic etc. in T&CM

The opinions about T&CM among the participating students with a chronic disease were not different from those not having a chronic disease (p=0.66). When the participating students were compared by the wish of having an occupation in the health sector or not, no differences were observed between the two groups in terms of participants' opinions on T&CM

( $p=0.55$ ). The percentage of students wishing to have an occupation in the health sector was significantly higher (32.1%) in the group of students having family members utilizing T&CM compared to the group of students with family members, who did not utilize T&CM (19.1%) ( $p=0.02$ ). In the group of students having a family member utilizing T&CM, the rate of students wishing to have a T&CM-related occupation was higher (32.7%) compared to the students, who did not wish to have such an occupation (14.4%) ( $p=0.001$ ).

## DISCUSSION

Concerning the study participants, this study is the first in the literature to the best of our knowledge. Therefore, the study may potentially shed light on future studies. Information pollution in the field of T&CM places a major hurdle in front of individuals wishing to utilize integrative medicine practices<sup>4</sup>. Patients usually suffer from a lack of information and unrealistic expectations.

A significant issue is to create awareness on the potential health protection benefits of knowing and utilizing integrative medicine starting from the early years of life. Establishing a general culture of health would provide many benefits in more than one aspect.

When the literature is reviewed, it is seen that studies about the awareness and practices of T&CM were conducted on medical students, medical doctors, students/professionals from other fields of medicine, and patients. Our findings will be compared with those of other studies that included different groups of participants since no other study included secondary school students. The number of studies from Turkey, conducted on physicians and medical students to investigate awareness levels and attitudes about T&CM practices, is increasing<sup>5-9</sup>. It has also been shown that the interest of students varies according to age, gender, and the type of school and the grade that the student was currently attending<sup>10-13</sup>. If an appropriate curriculum is developed about evidence-based integrative medicine, it will not be wrong to expect the occurrence of a certain interest among secondary school students.

However, studies are available showing low levels of knowledge of evidence-based T&CM among medical students despite their high levels of interest<sup>6,14</sup>. This finding should be considered as a natural consequence since no universally accepted curricula are available regarding integrative medicine.

In the study conducted by Altan et al., it was determined that "media" was the most frequently used tool among medical students to gather information about T&CM. That study found out that "massage" and "herbal therapy" were the most commonly known T&CM practices<sup>8</sup>. In many studies, it has been seen that the media, especially the internet, is the most frequently used tool<sup>14,15</sup>. Consistent with the information in the literature, we found in our study that the media was the most commonly used source of information. As is known, the reliability of information to be acquired from the media is not absolute in any discipline, not even to mention controversial ones such as T&CM. Therefore, it is necessary to educate people.

Because most studies on T&CM were conducted before the respective regulation that was put into effect in 2014, studies conducted in our country are not adequate to provide information about the rates of the use of the currently authorized T&CM methods. In the study conducted by Sonmez et al. in 2018, it was found that medical students most frequently used phytotherapy and cup therapy practices among T&CM methods<sup>9</sup>. In our study, we found out that hypnosis and music therapy were the most commonly known methods. However, this is not a commonly reported finding in the literature and might have occurred in our study depending on the emergence of popular social media topics followed by secondary school students.

Chiropractic has been found as one of the least known T&CM methods in many studies<sup>6,8,14,15</sup>. Sönmez et al., too, obtained a similar result in their study in 2018, reporting that the participants had never heard of mesotherapy, osteopathy, larva treatment, and chiropractic<sup>9</sup>. In our study, chiropractic was found to be the least known

practice consistent with the information in the literature.

In the study by Doğanay et al., the rate of those reporting that T&CM methods could not be applied without the supervision of a certified health professional was only 47%. In that study, the rate of those thinking that T&CM methods could be as successful as conventional medical practices was 29%<sup>14</sup>. In our study, the percentage of participants was lower reporting that T&CM methods could be applied in the presence of a supervising certified health professional. This result can be explained by the lack of awareness and experience among secondary school students. Furthermore, it was observed in our study that participants mostly did not have an idea about the adequacy of T&CM or conventional medicine therapies alone or in combination.

When the studies conducted on different participant groups were examined, it was seen that 37% of medical students, 50% of nurses, and 27% of physicians used T&CM methods<sup>14,17</sup>. In another study, the rate of using an alternative medicine method in people aged 18 and older in Turkey was determined as 70%<sup>16</sup>. The usability of T&CM was not questioned in our study. Furthermore, it was not expected that secondary school students would have a clear opinion about treatment methods. Therefore, a future study that will include not only students but also their family members may reflect the actual percentages better. In the study conducted by Cook et al., the negative attitude towards T&CM was found to increase with increasing age in adult patients admitted to an inpatient internal medicine unit<sup>18</sup>. According to Erci, attitudes were found to be significantly negative in males and singles<sup>19</sup>. Featherstone et al. found that positive attitudes in females were significantly higher compared to males<sup>20</sup>. In some studies conducted on patients, the rate of positive attitudes was found out to be high in higher education levels<sup>21,22</sup>. In our study, it was observed that female students had more positive opinions about T&CM compared to male students but they wished to have an occupation in conventional medicine more than males. This shows that female

students are more interested in and informed about the health sector. The awareness of T&CM among our participants was low and the most commonly known practices were associated with the topics in the popular culture. These findings might have occurred because students were not educated about evidence-based integrative medicine and it appears that they searched for information about T&CM in association with their areas of interest. Considering the high rate of positive opinions regarding T&CM among students, who did not think of some spiritual approaches such as amulet, prayer, and magic as methods of T&CM; it can be suggested that perceptions of these students were based on science rather than belief. As scientific aspects of T&CM come to the forefront, evidence-based integrative medicine may be taken more seriously.

Secondary school students are under significant pressure because of the upcoming local and national exams. The majority of students in the study believed that T&CM could contribute to their academic achievements. Apitherapy has been shown to improve children's athletic abilities. Aromatherapy and music therapy have calming effects. These are examples of how T&CM can help<sup>23,24</sup>. Basic education can promote the use of T&CM in younger age groups by increasing awareness.

Topics about bodyweight are popular today. In our study, we calculated the BMI values of participating students and found out that the distribution of BMI values in our study was similar to that of the Turkish population. Individuals wishing to lose or gain weight often search for different methods. Therefore, individuals with high or low BMI values may acquire more information about T&CM practices. However, our findings did not support this assumption. Young people may be concerned about body image, but they may not have adequate information about T&CM to consider such practices to obtain benefits for their concerns.

The multifaceted fight against smoking continues. Smokers often feel desperate and seek different

methods. Therefore, smokers can be expected to become more interested in T&CM. However, according to the results of our study, non-smokers think more positively about T&CM. This relationship is promising and may become stronger as health awareness increases.

It is not surprising that people with a chronic disease have expectations about T&CM. However, in our study, the opinions of students with chronic diseases were not different and these students were not more likely to wish to have a T&CM-related occupation. This finding can be associated with the small sample size and inadequate acquisition of information about T&CM.

Today, the health science courses in the curriculum are mandatory in Turkey; comprising 20 hours to be completed in the 9th grade. The main titles of the health science courses in the curriculum are as follows: i) Personal and social health, ii) Adolescence, iii) Nutrition and physical activity, iv) Mental-emotional and social health, v) Harmful habits for health and substance use, vi) Basic first aid knowledge<sup>25</sup>. In the curriculum change put into force by the Ministry of National Education on July 18, 2017; acquisitions named as the 21st-century skills were specified among the basic competencies and skills aimed to be acquired by students. In addition to the curriculum components that are implemented in line with the course contents and requirements; personal, interpersonal, and cognitive skills such as sociocultural awareness and literacy (health literacy, scientific literacy, environmental literacy, financial literacy, technology literacy, information literacy, media literacy, etc.) were included under the title of the 21st-century skills<sup>26</sup>. According to the results of our study, it may be an appropriate revision to include the provision of information

about T&CM under the health literacy skill category. Thus, evidence-based information can be provided to students about what T&CM is, what it deals with, and how it deals with. In the study of Gardiner et al., it was shown that a high health literacy level was associated with more T&CM experience in all participant groups<sup>27</sup>. Evidence-based integrative medicine literacy will not only contribute to health and forestall inappropriate use but will also open up new prospects for career planning and planning higher education accordingly. Having acquired the integrative medicine literacy previously, medical students will have the option to ask for education on the evidence-based T&CM, which is not provided by all medical schools currently.

## CONCLUSION

It was observed that awareness and attitude levels about T&CM were low in secondary school students. The media is obviously the most powerful tool to gather and acquire information. Students, who have family members having experienced T&CM practices, are more interested in such methods. It is important that health literacy education at schools should include the evidence-based integrative medicine content and that information pollution should be fought against.

## ACKNOWLEDGEMENTS

This article is an extension of a research presented at the 5th International Eurasian Congress on Natural Nutrition, Healthy Life & Sport, on the dates 02-06 October 2019, in Ankara, Turkey. The authors are extremely grateful and sincerely acknowledge the experts who attend that presentation and gave a useful feedback.

## CONFLICT OF INTEREST

There is no conflict of interest.

## REFERENCES

1. Ministry of Health. Traditional and Complementary Medicine Practices Regulation. Official Newspaper.
2. Türk E, ed. Türk Eğitim Sistemi ve Ortaöğretim. Ortaöğretim Genel Müdürlüğü; 2015.
3. Ergün A, Erten SF. Öğrencilerde Vücut Kitle İndeksi ve Bel Çevresi Değerlerinin İncelenmesi. Ankara Üniversitesi Tıp Fakültesi Mecmuası. 2004;57(2):1.
4. Şahin S. Geleneksel, tamamlayıcı, alternatif tıp uygulamalarına genel bir bakış. Turkish Journal of Family Practice. 2017;21(4):159-162.

5. Yildirim Y, Parlar S, Eyigor S, Sertoş O, Eyigor C, Fadilolu C, Uyar M. An analysis of nursing and medical students' attitudes towards and knowledge of complementary and alternative medicine (CAM). *Journal of Clinical Nursing*. 2010;19(7-8):1157-1166.
6. Ergin A, Hatipođlu C, İhsan Bozkurt A, Mirza E, Kunak D, Karan C, Özçelik G, Teđin C, Pazır Y, Pırtı İ. Uzmanlık ve tıp öğrencilerinin tamamlayıcı-alternatif tıp hakkındaki bilgi düzeyleri ve tutumları [Knowledge and attitudes of residents and medical students on complementary-alternative medicine]. *Pamukkale Tıp Dergisi*. 2011;(3):136-143.
7. Akan H, Izbirak G, Kaspar ET, Kaya, ÇA, Aydın S, Demircan N, Bucaktepe PG, Özer C, Şahin HA, Hayran O. Knowledge and attitudes towards complementary and alternative medicine among medical students in Turkey. *BMC Complementary and Alternative Medicine*. 2012;12.
8. Altan S, Rahman S, Çam S. Tıp Fakültesi Öğrencilerinin Tamamlayıcı ve Alternatif Tıp Yöntemleri ile İlgili Bilgi ve Tutumları. *Türkiye Klinikleri Tıp Etiđi-Hukuku-Tarihi Dergisi*. 2014;22(3):81-88.
9. Sönmez CI, Ayhan Başer D, Küçükdađ HN, Kayar O, Acar İ, Döner Güner P. "Evaluation of Knowledge and Behaviors of Traditional and Complementary Medicine of Medical School Students." *Konuralp Tıp Dergisi*. 2018;10(3):278-281.
10. Sahar T, Sallon S. [Attitudes and exposuer of Israeli medical students to complementary medicine-a survey]. *Harefuah*. 2001;140(10):907-910.
11. Lie DA, Boker J. Comparative survey of Complementary and Alternative Medicine (CAM) attitudes, use, and information-seeking behaviour among medical students, residents & faculty. *BMC Medical Education*. 2006;6.
12. Furnham A, McGill C. Medical students' attitudes about complementary and alternative medicine. *Journal of Alternative and Complementary Medicine*. 2003;9(2):275-284.
13. Yeo ASH, Yeo JCH, Yeo C, Lee CH, Lim LF, Lee TL. Perceptions of complementary and alternative medicine amongst medical students in Singapore - A survey. *Acupuncture in Medicine*. 2005;23(1):19-26.
14. Dođanay S. Tamamlayıcı ve Alternatif Tıp: Türk Sağlık Bilimleri ve Tıp Öğrencileri Arasında Bilgi, Tutum ve Kullanma Durumları. *Journal of Contemporary Medicine*. 2018;8(1):48-54.
15. Ayraler A, Öztürk O, Oruç MA. Knowledge Levels and Attitudes of Medical Faculty Personnel on Traditional and Complementary Medicine. *Education in Medicine Journal*. 2019;11(4):37-45.
16. Bal B. Hemsire ve hekimlerin tamamlayıcı ve alternatif tedavilere ilişkin görüşleri [The thoughts of the physicians and nurses related to the complementary and alternative therapies]. Published online 2009.
17. Uzun Ö, Tan M. Nursing students' opinions and knowledge about complementary and alternative medicine therapies. *Complementary Therapies in Nursing and Midwifery*. 2004;10(4):239-244.
18. Cook TF, Frighetto L, Marra CA, Jewesson PJ. Patterns of use and patients' attitudes toward complementary medications: a survey of adult general medicine patients at a major Canadian teaching hospital. *Can J Clin Pharmacol*. 2002;9(4):183-189.
19. Erci B. Attitudes towards holistic complementary and alternative medicine: A sample of healthy people in Turkey. *Journal of Clinical Nursing*. 2007;16(4):761-768.
20. Featherstone C, Godden D, Gault C, Emslie M, Took-Zozaya M. Prevalence Study of Concurrent Use of Complementary and Alternative Medicine in Patients Attending Primary Care Services in Scotland. *American Journal of Public Health*. 2003;93(7):1080-1082.
21. Buda Laslo, Lampek K, Tahin T. [Correlations of alternative medicine, health status and health care in Hungary]. *Orvosi Hetilap*. 2002;143(17):891-896.
22. Liu EH, Turner LM, Lin SX, Klaus L, Choi LY, Whirtworth J, Ting W, Oz MC. Use of alternative medicine by patients undergoing cardiac surgery. *Journal of Thoracic and Cardiovascular Surgery*. 2000;120(2):335-341.
23. Kumar Gupta R, Stangaciu S. Apitherapy: Holistic healing through the honeybee and bee products in countries with poor healthcare system. In: *Beekeeping for Poverty Alleviation and Livelihood Security: Vol. 1: Technological Aspects of Beekeeping*. Springer Netherlands; 2014:413-446.
24. Akın B, Karaca Saydam B. Algılanan Doğum Ağrısının Azaltılmasına Yönelik Yeni Bir Yaklaşım: Doğum Dansı. *Gümüşhane Üniversitesi Sağlık Bilimleri Dergisi*. 2017;6(3):218-224.
25. *Ortaöğretim Sağlık Bilgisi ve Trafik Kültürü Dersi Öğretim Programı*. T.C. Millî Eğitim Bakanlığı; 2018.
26. *Müfredatta Yenileme ve Deđişiklik Çalışmalarımız Üzerine...*; 2017.
27. Gardiner P, Mitchell S, Filippelli AC, Sadikova E, White LF, Paasche-Orlow MK, Jack BW. Health literacy and complementary and alternative medicine use among underserved inpatients in a safety net hospital. *Journal of Health Communication*. 2013;18(SUPPL. 1):290-297.