



# Emergency contraception knowledge level and e-health literacy in Turkish university students

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**Background:** Unwanted pregnancy is a serious problem, especially considering its impact on the lives of young people. Currently, emergency contraception (EC) is an effective method to prevent unwanted pregnancies that result in unsafe abortions and harm women's health. It is essential that university students, one of the risk groups for unwanted pregnancies, be familiar with this method. The aim of this study is to determine university students' knowledge of emergency contraception, influencing factors and e-health literacy levels. **Methods:** The cross-sectional study was conducted on 1003 senior undergraduate students at a public university. Data were collected via a Personal Information Form, Emergency Contraception Test, and e-Health Literacy Scale. For data analysis, descriptive analyses, *t*-test, ANOVA/Pearson correlation tests were used. **Results:** The e-HL score mean of students was found to be  $25.68 \pm 7.0$ . EC knowledge scores of students were  $5.7 \pm 2.8$  for female students and lower for male students ( $4.3 \pm 2.0$ ). There was a significant difference between the groups in terms of EC knowledge scores in favor of women ( $p < 0.05$ ). EC knowledge score of those who received reproductive health education was  $5.8 \pm 3.1$ , significantly higher than those who did not ( $p < 0.05$ ). The knowledge score of those whose EC information source was an advisor/lecturer was significantly higher than those receiving information from other sources ( $p < 0.05$ ). Scores on knowledge of emergency contraception were found to be significantly correlated positively with e-Health literacy scores ( $p = 0.00$ ). **Conclusion:** Improved e-health literacy of students can be key to improving their knowledge of emergency contraception.

## Keywords

Emergency contraception; E-health literacy; University students

## 1. Introduction

Adolescence is seen as important in the life cycle in terms of protecting and improving sexual health [1]. Starting to use birth control methods in youth is seen as effective in adopting these methods in the longterm [2, 3]. On the other hand, this age group presents risks of unintended pregnancies via lower use of contraceptives due to lack of information and difficulty in accessing family planning services [3, 4]. Beyond health and legal problems associated with the termination of unplanned pregnancy, problems arise of care, accommodation, financial hardship and dropping out of school following delivery [5]. The consequences of unintended pregnancy on

the physical, psychological, health and socioeconomic well-being of adolescent girls are far more detrimental than for boys [6, 7]. Young girls who experience unwanted pregnancies are frequently stigmatized, more likely to drop out of school and to die from unsafe abortion or (in certain countries) marriage [7, 8]. In conservative countries where sexuality is taboo, problems arise in societies that consider premarital sex religiously and culturally improper [9]. Sexuality is considered as a taboo in Turkish culture [10]. Women may face severe results such as being victims of honor killings; the term "honor" traditionally refers to women's attaining importance to virginity before marriage and refraining themselves from sexual relations outside marriage. In such cultures, fears of such retribution result in unwanted pregnancies occurring outside marriage. This social perspective pushes young people to conceal their sexuality and increases sexual problems [11].

National data in Turkey suggest that young people (15–24 years old) account for 15.6% of the total population; the mean age of first marriage is 24.6 for women and 27.7 for men [12], and the age of first sexual intercourse is reported as 17–24 [13, 14]. Such data indicate that young people are sexually active over a long period. A study by Erenel and Gölbaşı reported that 1/8 of the young people in Turkey who had sexual intercourse experienced unplanned pregnancy and 3/4 of these resulted in abortion [15]. Another study reported that 10.9% of young people had received an abortion [16]. These results reveal that the risks of sexual behavior such as pregnancy are high in Turkey [15].

The first choice in the prevention of unwanted pregnancies is the use of an appropriate contraceptive method. However, since premarital sex is not generally acceptable in Turkish society, the lack of a regular sex life and/or often unplanned sexual intercourse may be factors preventing young people from using contraception [17]. With this in mind, it is important for young people to know and use emergency contraception (EC) to prevent unwanted pregnancy due to unprotected sexual intercourse [17–19]. Methods are hormonal and mechanical, including EC pills (ECP), commonly referred to as morning after pills, and intrauterine device (IUD). Hormonal methods are levonorgestrel (LNG), ulipristal acetate

**Table 1. EC methods and usage in Turkey.**

ECP regimens	Formulation	Application time <sup>1</sup>	Providing status
The Yuzpe combined hormonal regimen	0.05 mg etinil estradiol and 0.25 mg, 2 times, every 12 hours	Within 72 hours after unprotected intercourse	By prescription
Levonorgestrel (LNG) regimen	0.75 mg (Levonorgestrel, 2 × 1, every 12 hours/or 1 times 2 dose at once	Within 72 hours after unprotected intercourse	>17 no restrictions for age
SPRM	30 mg Ulipristal acetate (1 dose)	Within 120 hours after unprotected intercourse	By prescription
Mifepristone	10, 25, 50 mg (1 dose)	Within 120 hours after unprotected intercourse	Not in Turkey
Copper intrauterine device (cu-IUD) <sup>2</sup>			The health institution should be consulted

<sup>1</sup>Emergency contraception should be started as soon as possible.

<sup>2</sup>The copper IUD is the most effective method of emergency contraception.

(UPA), combined oral contraceptives known as Yuzpe regimen (COC) and mifepristone, a medicine that is not authorized for use in many countries, including Turkey (Table 1) [20].

COC pills, obtained via primary health care (PHC), may be obtained at no cost. Moreover, they can be purchased from pharmacies without a prescription. UPA is available on prescription from pharmacies. IUD may be applied free of charge to married women as PHC. At present, however, IUD may not be provided when applied to health institutions for PHC. PHC was the most important source of contraceptive method procurement, provided free of charge by the government. However, the procurement rate of this method decreased from 35.6% in 2008 to 24% in 2018 [21]. This may be due to support of pro-natalist policies in the last 15 years and a family planning service approach that has changed within Health Reform [22, 23]. Insofar as other obstacles against access to services include stigma, embarrassment, prejudice and parental fear, the group benefitting the least from PHC in sexual health-related situations is the youth [24]. Another major problem with EC is its relative lack of recognition [13, 17, 25]. The most common information sources are reported as peers, school and media [26]. Healthcare personnel are expected to provide non-judgmental, objective and professional sexual counselling. In the Youth Counseling and Health Service Center, established within the scope of the European Union Turkey Reproductive Health Program between 2004 and 2007, the SHRH training, consultancy and service activities carried out by competent personnel were interrupted by the reform [27]. No service delivery or model has been developed to fill the gap, exposing a critical, unmet need for young people who comprise roughly one quarter of the population.

The payment for work done by the health workers is based on performance; with the reform, there have been disruptions in services such as contraceptive counseling that are not based on performance. Recent research shows that contraceptive services are limited to those who demand them, while no effort is made in outreach due to the new pricing system, increased workload of healthcare workers, and lack of sup-

port and supervision of PHC in terms of contraception provisions [23, 27]. Indeed, research indicates that young people get the most information about sexual health and EC from friends and the Internet [26]. The Internet increases availability of health information, but it requires an ability to access reliable information. In this regard, e-Health Literacy (e-HL), an ability to search, find, understand, evaluate, and apply health information from electronic sources to address and/or solve health problems, is an important skill [28]. Accordingly, determining EC knowledge and e-health literacy levels will serve as a guide in developing and planning education, guidance, and counselling programs. e-HL should be investigated to better understand factors that can affect EC information awareness in university students. The aim of this study is to determine university students' emergency contraception knowledge, the factors affecting it, and the relationship between e-health literacy and knowledge level. Research questions:

- (1) What is the level of EC knowledge in university students?
- (2) What is the level of e-health literacy in university students?
- (3) What factors are associated with the EC knowledge level of university students?
- (4) Is there a relationship between e-health literacy levels of university students and their level of EC knowledge?

## 2. Materials and methods

This cross-sectional study was conducted at a state university in a province in Western Turkey between February and June 2017. The university has 11 faculties, four institutes, four colleges and 13 vocational schools. It has a total of 36,339 students, 828 of whom are foreign nationals. The educational language is Turkish. Population of the research consisted of 3390 enrolled seniors. The sample size was aimed to reach at least 821 students with 50% unknown prevalence, 5% absolute deviation and 99.9% confidence level ( $n = [DEFF \times Np(1-p)] / [(d^2 / Z^2_{1-\alpha/2} \times (N-1) + p \times (1-p))]$ ). While a total of 1022 students participated in the study, 19 partici-

pants were excluded due to missing data; thus, the study sample consisted of 1003 students. This sample size was calculated using OpenEpi, Version 3 (<http://www.openepi.com>), an open-source calculator. All undergraduate departments within the university were listed in alphabetical order and a 1-week period was determined for each school in order to collect data. Data were collected and permissions obtained on days when students had compulsory courses by interviewing the school administrators. No fee was paid for completing the questionnaires which required 10–15 minutes for completion. The criteria for participation in the study were that the students are in their senior year and have agreed to participate in the study. After providing informed consent, individuals anonymously completed this survey form. The Personal Information Form, EC Knowledge Test, and e-Health Literacy Scale were used to collect data. Ethical codes and principles of Helsinki Declaration were followed during research. To conduct the study, written permission was obtained from and the Clinical Research Ethics Committee (Decision No.: 2017/15) and the Rectorship of State University (Date: February 20, 2017, No.: E.2187466).

The Personal Information Form, designed by researchers upon conducting a literature review, consists of questions to determine the socio-demographic characteristics of students [13–15, 17, 19].

For the EC Knowledge Test, a total of 13 questions were asked to determine students' EC usage knowledge. The questions are as follows: "EC should be used before the desired pregnancy"; "Using EC positively affects physical and psychological health of people by preventing unwanted pregnancies"; "Using EC method is the responsibility of only women"; "It is a sin to use EC methods"; "Only married couples should use EC methods"; "Every individual should have knowledge about EC"; "EC is a family planning method"; "It makes having children more difficult in the future"; "It may harm the baby when it is not effective"; "This method should be expensive"; "Defining EC"; "Time to use pills used for EC purposes"; "Time of use of the intrauterine device used for EC purposes". Correct answers were calculated as 1; incorrect and undecided answers were calculated as 0 and were evaluated over the total score. Scores of negative expressions were reversed to calculate EC knowledge scores (min = 0; max = 13) [13–15, 17, 19, 20, 25].

The e-Health Literacy Scale, containing 10 questions in total, was developed by Norman and Skinner and adapted into Turkish by Coşkun and Bebiş. The scale Cronbach's alpha score is 0.78 and for this study, 0.80. The Turkish version of the scale, reported to be used validly and reliably, was developed to measure overall literacy, health literacy, skills for obtaining knowledge, scientific research, media literacy and computing literacy. Scale items included the following options: 1 = strongly disagree to 5 = strongly agree. Scale score ranged between 8 and 40 points, where higher scores indicate higher levels of e-HL [29].

A Kolmogorov-Smirnov test was done to control whether the data had normal distribution. Data were analyzed using mean, standard deviation, minimum and maximum values, frequencies, and percentages. Independent *t*-tests and ANOVA test were performed to determine differences between socio-demographic variables and EC knowledge scores of participants. Spearman correlation test was performed to determine correlation between EC knowledge score and e-HL. Characteristics associated with the EC knowledge score were analyzed by linear regression analysis. *p* value was taken as <0.05 for the research.

### 3. Results

The mean age of students was  $21.42 \pm 2.39$ ; 71.4% of the students were females and 95.5% were single. The longest residing place was town-city centers for 54.3%, village for 11.9%; 45.4% of students stayed in dormitories (Table 2).

**Table 2. Socio-demographic characteristics of the students.**

Characteristics	n	%
Gender		
Female	716	74.6
Male	287	28.4
Marital status		
Married	45	4.5
Not Married	958	95.5
Longest living place		
Provincial Center	545	54.3
District	339	33.8
Village	119	11.9
Place of residence		
With Family	178	17.7
In a Dormitory	455	45.4
Alone	123	12.3
With Roommates	247	24.6
How do you get income?		
I am not working	126	4.7
I am working	121	39.8
Credit/Scholarship	412	23.2
Family Sending Money	331	23.6
Other	13	8.7

Other features are included in Table 1: 57.6% of the students stated that they did not take a course on reproductive health, 40.1% did not hear the concept of EC, and 70.4% did not know about EC (706). EC knowledge score mean of students who said they heard about EC (n = 402) was  $5.37 \pm 2.91$  points. Information sources for EC were found as Internet in the first place with 30.3%, instructor/consultant in the second place (27.6%) and friends in the third place (24.4%). 65.7% of the participants who had heard about EC believed that it may be purchased from a pharmacy, 22.4% thought it may be purchased from a primary health care institution and 78.9% thought it can effectively prevent pregnancy. 20.3% of the students stated they used EC method to prevent preg-

nancy, 41.5% used it once and 58.4% used it twice or more. A majority of students (61.9%) wanted to learn about EC and 55.3% wanted a counselling service on sexuality and reproductive health (SRH) issues to be founded at the university. Some 61.5% of the undecided students who did not want such a service to be founded and at the university stated they did not find it appropriate to establish a counselling center because it could encourage sexuality (Table 3).

The e-HL score mean of students was  $25.68 \pm 7.0$ . EC knowledge scores of students were  $5.7 \pm 2.8$  for female students, and lower for male students ( $4.3 \pm 2$ ). There was a significant difference between the groups in terms of EC knowledge scores in favor of women ( $p < 0.05$ ). EC knowledge score of those who received reproductive health education was  $5.8 \pm 3.1$ , significantly higher than those who did not ( $p < 0.05$ ). The knowledge scores of those whose EC information source was an advisor/lecturer were significantly higher than those receiving information from other sources ( $p < 0.05$ ). EC knowledge scores were found to be significantly higher in those who wanted to establish a reproductive health counselling unit at the university than those who did not ( $p < 0.05$ ) (Table 4).

Pearson correlation analysis was made to examine the relationship between students' EC knowledge scores and e-HL. There is a positive correlation ( $p = 0.00$ ) between EC knowledge and e-HL scores (Table 5).

#### 4. Discussion

We found that 59.1% of surveyed students were unfamiliar with the concept of EC, roughly two thirds had no knowledge about EC, while for those who had some knowledge, it was at lower levels. Gölbaşı *et al.* (2012) [17] determined that 71% of students had not heard of the concept of EC and 38.7% stated that they had no information about the methods used for EC. Another study conducted in Turkey determined that 67.4% of students stated they were unaware of contraceptive methods for use after unprotected sexual intercourse [13]. Research on adolescents found that 8.7% of them had not heard anything about EC, while 38.6% knew of its effectiveness; however, 12.7% did not know the exact periods of EC [30]. In research from Korea, 88.2% of students were aware of EC, while 35% were able to answer the question of usage periods of oral contraceptives; in contrast, 23.1% of university students in South India were reported to have heard of EC [31]. Research conducted with female students in Ethiopia reported that the knowledge score of 49.8% of students was "moderate" [32]. Among young people aged 13–25 in San Francisco, women had a higher rate of EC familiarity than men (86% vs. 70%), while 44% reported the time of use incorrectly [33]. Looking at the literature, prevalence of EC awareness and knowledge is higher in developed countries, though there are important knowledge gaps in EC usage periods, access and correct use of EC pills [17, 33]. In research conducted in Turkey, the rate of EC awareness and knowledge is very low. Variance in results of the research may be

due to differences in culture, time, region, sexual lifestyles and provision of reproductive health services.

Of the female students, EC knowledge scores were higher for those who took reproductive health lessons, received EC information at school, and who wished to be informed about EC and the opening of any reproductive health counselling unit. While more EC awareness in female students was demonstrated in some research, other reports found no significant difference [13, 25, 31, 34]. This disparity may be due to differing regional and cultural characteristics. About 57.6% of the students received no lessons about reproductive health, while top sources of knowledge about EC included the Internet, consultant/educator and friends, respectively. According to the studies, 55.6% to 88.3% of the students do not receive sexual education [24]. EC knowledge scores of those who have taken reproductive health courses were found to be higher in this research. Another study reported that 97.2% of the nursing students accessed information at school, while only 7.1% of the students in the social services department accessed it at school [13]. Some research suggests that education given to students had positive effects on EC knowledge, attitude and intentions [32]. Gölbaşı *et al.* (2012) [17] reported the sources as magazines (61.2%), friends (46.1%) school (39%), and Internet/TV (66.2%); Arslan (2014) reported the primary source of knowledge for reproductive health as the Internet [17, 24]. Joaquim *et al.* (2018) [35] reported sources of knowledge for EC as school, friends and Internet; Doving *et al.* (2014) [36] as friends (67%), TV (47%) and school. There exists no sexual health educational program in the national education syllabus in Turkey [24]. Research shows that support is not received from professional information sources. In this case, it suggests that the information sources used may be unreliable areas with uncontrolled information. As a result, young people face greater reproductive health risks.

In this study, a majority of the students (88.1%) stated that they knew of centers where they could obtain ECP methods, 78.9% stated that EC could prevent pregnancy effectively, 20.3% used the EC method, 41.5% of those who used it did so only once, while 58.4% used it twice or more. Other research found that 72.2% of university students knew they could get ECP from pharmacies, 88.4% from public health clinics, while 49% were unaware they could obtain ECP from school health centers [37]. Research conducted for the ECP knowledge and practices of young men in Turkey reports that 8.1% of them stated that their girlfriends used ECP [25]. Another study reported that 5.4% of female students used EC [38]. Research from Italy reported that 31.1% of university students used ECP and the rate of female students using it was 21.8% [39]. Research with female university students by Najafi *et al.* [40] reported quite different findings: only 1% of them stated that they used this method. Not knowing where to obtain ECP also reduces the possibility of using it when needed. In this context, it is important for young people to be informed about the possibilities of obtaining ECP. The results of the

**Table 3. Some information of students about emergency contraception.**

About emergency contraception	n	%
Hearing of emergency contraception (n = 1003)		
Yes	402	59.9
No	601	40.1
Having knowledge about EC (n = 1003)		
Yes	297	29.6
No	706	70.4
EC information resources (n = 402)		
Family	19	4.7
From friend	98	24.4
Internet	122	30.3
Health personnel	52	12.9
Consultant/Instructor	111	27.6
Received reproductive health education (n = 1003)		
Yes	425	42.4
No	578	57.6
Knowing where to get EC methods (n = 402)		
Pharmacy	281	69.9
Family Medicine	96	23.9
Other	25	6.2
Thinks EC is effective in preventing pregnancy (n = 402)		
Yes	337	83.8
No	65	16.2
You/your sexual partner using one of the EC methods (n = 378)		
Yes	77	20.37
No	301	79.63
How many times have you used EC methods? (n = 77)		
1 time	32	41.56
2 and more Times	45	58.44
Requesting information about EC methods		
Yes	621	61.9
No	382	38.1
Wants a reproductive health counseling unit to be established in university (n = 1003)		
Yes	555	55.3
No	184	18.3
Undecided	264	26.3
The reason for not wanting to establish a counseling and service unit in sexuality and reproductive health at the university (n = 265)*		
Let People Learn on Their Own	102	38.49
Cs/Base Information Can Promote Sexuality	163	61.51

\* Answer given by "No" and Undecided. 113 blank answers.

research show that less EC is used than stated in the literature. This situation arises from different social and cultural characteristics. In addition, there may be a lack of data due to the lack of studies on this subject in Turkey. In developing countries with a predominantly Muslim population such as Turkey, the concept of honor values the absence of premarital and extramarital sexual intercourse for women, and virginity is of great importance. While sexual intercourse before marriage translates to women being accused, condemned or even killed, it may be accepted as an experience for men and there may be difference between genders [5]. However, with a younger population in our country, sexual intercourse before marriage has increased compared to previous years [16].

As such, cultural structure, societal pressure, and sexuality being forced into secrecy carry a great risk for unwanted consequences.

Most of the students (61.9%) wanted to learn about EC and more than half wanted a counselling service on SRH issues at the university to be founded. Among the undecided students and the ones who did not want a SRH counselling and service center at the university, 61.51% did not find it appropriate to start a counselling center with the idea that sexuality may be encouraged. In a study conducted by Demir and Özsoy (2015) on young men (n = 697), half stated that they wanted to learn about Emergency contraception (EC) [25]. A separate study reported that university students need

**Table 4. Student characteristics and scores on knowledge of EC.**

Characteristics	Mean score on knowledge of EC		<i>p</i>
	n = 399		
Gender*			
Female	5.77 ± 2.89	<b>0.00</b>	
Male	4.38 ± 2.72		
Marital status*			
Married	4.39 ± 3.20	0.09	
Not married	5.43 ± 2.88		
Place of residence**			
With family	5.98 ± 2.82	0.12	
In a dormitory	5.50 ± 2.94		
Alone	4.73 ± 2.69		
With roommates	5.18 ± 2.96		
Received reproductive health education*			
Yes	5.84 ± 3.18	<b>0.00</b>	
No	4.85 ± 2.47		
Have knowledge of EC			
Yes	5.63 ± 2.91	0.05	
No	4.70 ± 2.82		
Information source**			
Family <sup>1</sup>	4.78 ± 2.71	<b>0.00</b>	
Friends <sup>2</sup>	4.47 ± 2.82	<b>4-2</b>	
Internet <sup>3</sup>	5.01 ± 3.05	<b>5-3</b>	
Healthcare Professional <sup>4</sup>	5.86 ± 3.13	<b>5-2</b>	
Consultant/Instructor <sup>5</sup>	6.45 ± 7.78		
Thinks EC is effective in preventing pregnancy			
Yes	5.65 ± 2.91	0.08	
No	4.89 ± 2.76		
Needs information about EC			
Yes	5.39 ± 2.91	0.89	
No	5.35 ± 2.07		
Would you like to establish a reproductive health advisory unit at the university **			
Yes <sup>1</sup>	5.90 ± 2.85	<b>0.00</b>	
No <sup>2</sup>	4.45 ± 2.82	<b>1-2</b>	
Undecided <sup>3</sup>	4.77 ± 2.82	<b>1-3</b>	

Note: One-way ANOVA test was applied to variables with more than three groups in the table. Variables were symbolized by numbers: <sup>1</sup> first rank variable, <sup>2</sup> second rank variable, <sup>3</sup> third rank variable, <sup>4</sup> fourth rank variable and <sup>5</sup> second rank variable.

\* independent *t* test. \*\* ANOVA test. Number of people who heard the concept of EC. Post hoc analysis was examined with Bonferroni test.

Those with *p* < 0.05 are indicated in bold.

**Table 5. Correlation of students' scores on knowledge of EC with their scores on e-health literacy scales.**

Score on knowledge of emergency contraception	Score on e-Health literacy
<i>r</i>	0.247**
<i>p</i>	0.000

*r* = Pearson correlation test \*\*. Correlation is significant at the 0.01 level (2-tailed).

a "Youth Counseling Unit (YCU)" or a "Reproductive Health Unit" which should be easily accessible and free of charge [41]. In a recent report in which Turkey's Sexual and Reproductive Health Services were evaluated, a physician working

in the health centers of universities stated the following about the SRH situation for young people: "In the past, when the - Youth Counseling Units here was established, the Ministry of Health in Turkey generally established Youth Friendly Health Service Centers (YFHSC) alongside Maternal Child Health and Family Planning Services as a project. I don't remember the number. YCU was opened in thirteen Universities. But now they don't know what happened. But we no longer have YCU here. It's gone back to the past; I guess there is no place for young people to go. They go to family health centers, maybe because everyone has a family doctor. Young people have access to all kinds of information on the Internet. Maybe that's why they don't ask anymore. Maybe they don't know about the services. Special services are no longer

offered to them anyway. They hesitate” (50-year-old physician). Another statement in the same report is as follows: “They don’t know about this place, because it wasn’t called a separate SRH Center; there used to be a sign; it doesn’t exist anymore. There is no promotion, it is incomplete; if only more patients would come. First, there is misinformation between each other. ‘I used the pill the next day, you can use it’: the friend factor is very important. Secondly, they will receive information about sexual health, there is a concern whether my family will see these records. This is the question in the minds of the children: there is an unwanted pregnancy, will my mother know if there is a suspicion of pregnancy?” (59-year-old physician) [42]. These results clearly reflect a need for reproductive health and EC counselling services for young people. The need is obvious for an easily accessible, privacy-based system with healthcare professionals serving clients with an unbiased youth-friendly approach. Existence of students who believe that the foundation of a counselling center may encourage sexuality suggests that religious and cultural structure of society is more effective than the enlightenment and knowledge-based perspective of university education.

Findings indicate that there is a significant and positive connection between EC knowledge score and e-HL. Health literacy has been reported as the main behavioral factor in preventing unwanted pregnancy [40]. According to Thongnopakun *et al.* [43], college students with low health literacy were more likely to engage in inappropriate pregnancy-prevention behaviors. Health literacy is the main behavioral factor when it comes to preventing unintended pregnancy. Our study, in which we found that e-health literacy is positively correlated to EC knowledge, is in line with studies in the literature that reveal the effect of health literacy on the prevention of unwanted pregnancies. The Internet is the most widely accessed source for sexual health information. The fact that the development of e-Health literacy provides an opportunity to obtain the right information and to show appropriate behaviors reveals the potential of preventing high risk situations.

## 5. Conclusions

Our research findings reveal a need to increase knowledge and awareness of EC among university students. In addition, the positive correlation between EC knowledge score and e-HL indicates that improving e-HL literacy will contribute to EC knowledge. There is a need for service provision that will contribute to the healthy living of the sexuality experienced in adolescence and young adults while providing solutions to any problems that arise. Counseling and support centers should be founded to meet the SRH needs of young people. Evidence to support the development of good health strategy and action is essential in creating an environment for young people to access SRH information and services. Our study has revealed information that will contribute to this. Our recommendation is for young people to be more enlightened and

science-based in their education, as well as in how they search for EC information in online environments, how they make their choices, and how they obtain information.

## 6. Limitations

When EC studies are examined, it is stated that in most of the studies, the taboos of the students on sexuality are directive, and therefore they do not give real and sincere answers to all survey questions. Another limitation is the use of literature-based tests by researchers since there is no standard scale to determine EC knowledge status. All studies on emergency contraception in college students in Turkey were attempted to be surveyed. However, the limited number of studies on this subject limits our own study. The limited number of studies on EC among university students in Turkey is a limitation of the discussion.

## Author contributions

FAÖ and MG designed the research study. FAÖ data collected and analyzed. All authors contributed to editorial changes in the manuscript. All authors read and approved the final manuscript.

## Ethics approval and consent to participate

In order to conduct the study, written permission was obtained from and the Clinical Research Ethics Committee of Faculty of Medicine at Balikesir University (Decision No.: 2017/15) and the Rectorship of Balikesir University (Date: February 20, 2017, No.: E.2187466).

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## Conflict of interest

The authors declare no conflict of interest.

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