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RESEARCH ARTICLE

MIDWIFERY STUDENTS' KNOWLEDGE AND OPINIONS ABOUT, AND BEHAVIORS TOWARDS GENETICALLY MODIFIED FOODS.

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Abstract

Raising people's awareness of these genetically modified foods is very important. Therefore, to protect the members of the society against the risks of these foods, health professionals take great responsibility. This descriptive study was conducted with midwifery students attending the Faculty of Health Sciences, Cumhuriyet University. The population of the study comprised 307 students studying at a midwifery department during the 2015/2016 academic year. There was a significant relationship between their knowledge levels and views about genetically modified foods such as "I approve the production of foods with genetically modified seeds in Turkey", "Production of GM foods poses risks for all living creatures", "I think that GM crops have carcinogenic properties","I think that GM crops are harmful to the quality of life of people" ($p<0.05$). In conclusion, this present study shows that the participating midwifery students' knowledge of genetically modified foods was insufficient. However, their views on and behaviors towards genetically modified foods and consumption status were satisfactory. That midwifery students who are to provide people with education and counseling on nutrition in order to protect and improve mothers', infants' and communities' health have adequate and correct knowledge about genetically modified foods is of great importance.

Introduction:-

Food, one of the most important products of consumption, is essential to survive[1]. Although, genetically-modified foods are expected to be a solution for the food crises in the world, they are assumed to pose a danger for human health, environment and biodiversity[2].

Genetically modified organisms (GMOs) are defined as organisms whose genome is altered by the techniques of genetic engineering in a way that its DNA contains one or more genes not naturally found there. Such techniques are first used to create GM plants and then to grow (GM) food crops. Thanks to GM foods, many of the world's hunger and malnutrition problems seem to be solved. What is more, these foods will help protect and preserve the environment, because they increase yield and reduce the use of chemical pesticides and herbicides[3]. On the other hand, genetically modified foods (GMFs) can pose a threat for the environment or human health[4,5,6].

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Among the GMO-associated risks are toxic or allergic effects such as plants' becoming single type due to the loss of genetic diversity, loss of diversity in nature, transmission of modified genes to plants in the land where genetically modified plants are not grown, extinction of beneficial insects, resistance acquired by some insect species to toxins over time, resistance development to antibiotics due to environmental effects such as excessive pesticide use, transmission of the DNA to human cells through foods consumed, and transfer of these DNA transmissions to the next generations[7].

Worldwide, GMOs are cultivated in 125 million hectares of land. Of all the countries cultivating GMOs, the United States takes the lead. Of the GMO products, the ones grown most are soybean, corn and cotton[8]. The first legislation on GMOs in Turkey was made on 26 October 2009. According to this regulation, the cultivation of GM crops is banned in Turkey. If the amount of GMO in food is more than 0.9%, it is mandatory to state that the food contains GMO in the label[9].

Today, studies on GMOs whose importance is increasing with each passing day have revealed that people's attitudes and behaviors towards GMOs vary from one country to another[10]. Raising people's awareness of these genetically modified foods is very important. Therefore, to protect the members of the society against the risks of these foods, health professionals take great responsibility. They should warn ordinary people about the safe consumption and health risks of foods and precautions to be taken, and provide guidance for them[11]. This study aimed to determine midwifery students' knowledge and views about and behaviors towards genetically modified foods because they are to provide education and counseling about nutrition for people in the community in which they will work after graduation.

Materials and Methods:-

This descriptive study was conducted with midwifery students attending the Faculty of Health Sciences, Cumhuriyet University. The population of the study comprised 307 students studying at a midwifery department during the 2015/2016 academic year.

No sampling method was implemented; 270 students who agreed to participate in the study were included in the study. Before the study was performed, necessary permission was obtained from the school administration, and written consents were obtained from the participating students. Data were collected through face-to-face interviews using a questionnaire developed by the researchers after a literature review[12,13]. For the analysis of the data obtained, frequency distribution and chi-square analysis were performed by using the SPSS 22.0. P-values< 0.05 were considered to be statistically significant.

Results:-

The mean age of the students participating in the study was 20.8 ± 1.5. Of the participants, 38.9% were from the central Anatolia region and 95.6% had health insurance. Of the participants, 30.4% were knowledgeable about genetically modified foods. Of them, 69.6% obtained this information through the social media, and 92.2% were knowledgeable about the genetically modified foods included in the food they bought. While 10.7% of the participants thought that the safety of food additives was ensured, 76.7% of them thought that the main source of products including GMOs was agriculture. Some socio-demographic characteristics of the participating midwifery students and their knowledge and views about genetically modified foods are listed in Table 1.

Table 1:- Socio-demographic characteristics of the participants and their knowledge and views about genetically modified foods (n=270).

VARIABLES	n	%
Age	20.82±1.51	
Region of birth		
Marmara Region	17	6.3
Aegean Region	13	4.8
Central Anatolia	105	38.9
Black Sea Region	31	11.5
Mediterranean Region	50	18.5
Eastern Anatolia	23	8.5
South East Anatolia	31	11.5
Social Security		

Yes	258	95.6
No	12	4.4
Household monthly income($)		
≤$430	95	35.2
$431-$761	105	38.9
>$761	70	25.9
Knowledge of genetically modified foods		
Yes	82	30.4
No	188	69.6
Source of the Information about genetically modified foods		
Midwifery department	56	20.7
Social media	188	69.6
Printed media	26	9.6
Safety of genetically modified foods use is ensured		
Yes	29	10.7
No	241	89.3
Being aware of the genetically modified foods in the food purchased		
Yes	249	92.2
No	21	7.8
Continuation of Table 1		
Mainly sectors that it includes genetically modified foods		
Agriculture	207	76.7
Animals	17	6.3
Health	28	10.4
No comment	18	6.7
Total	270	100.0

Of the participating midwifery students, 80.7% agreed with the statement "Production of GM foods poses risks for all living creatures", 9.3% agreed with the statement "I do not mind consuming GM foods" and 82.6% agreed with the statement "I think that GM foods have adverse effects on human health". The midwifery students' knowledge and views on genetically modified foods are given in Table 2.

Table 2:- Knowledge and views about genetically modified foods (n=270).

Knowledge and views about genetically modified foods	**n**	**%**
I approve the production of foods with genetically modified seeds in Turkey		
Yes	24	8.9
No	246	91.1
I approve the feeding of animals with genetically modified feeds in Turkey.		
Yes	15	5.6
No	255	94.4
I approve Turkey's importing genetically modified seeds		
Yes	17	6.3
No	253	93.7
I think that the food I buy now would include genetically modified products.		
Yes	212	78.5
No	58	21.5
I think that society is adequately informed about genetically modified foods		
Yes	31	11.5
No	239	88.5
Production of GM foods poses risks for all living creatures.		
Yes	218	80.7
No	52	19.3
I approve of the genetic modification of food to eliminate hunger in the world		
Yes	28	10.4
No	242	89.6

I approve of the genetic modification of foods to enrich their nutritional content		
Yes	35	13.0
No	235	87.0
I approve that foods can be genetically modified in order to extend their shelf life and to make them more resistant to insects and pesticides		
Yes	36	13.3
No	234	86.7
I think that if a food contains GMOs, this should always be indicated on the label		
Yes	208	77.0
No	62	23.0
I do not mind consuming GM foods		
Yes	25	9.3
No	245	90.7
I do not mind other people's consuming GM foods		
Yes	26	9.6
No	244	90.4
I think that GM foods have adverse effects on human health		
Yes	223	82.6
No	47	17.4
I think that GM crops have carcinogenic properties.		
Yes	224	83.0
No	46	17.0
I think that GM crops adversely affect the natural environment.		
Yes	224	83.0
No	46	17.0
I think that GM crops are harmful to the quality of life of people.		
Yes	223	82.6
No	47	17.4

We investigated the participants' knowledge and views about the genetically modified foods that are hazardous to health and determined that they were not knowledgeable enough about genetically modified foods and consumption of genetically modified foods. However, there was a significant relationship between their knowledge levels and views about genetically modified foods such as "I approve the production of foods with genetically modified seeds in Turkey", "Production of GM foods poses risks for all living creatures", "I think that GM crops have carcinogenic properties","I think that GM crops are harmful to the quality of life of people" ($p<0.05$). The data related to the level of knowledge and views about genetically modified foods and consumption of genetically modified foods status are given in Table 3.

Table 3:- The participants' knowledge and views about genetically modified foods, and their consumption status

	Consumption status				**Pearson Chi-Square**
Genetically modified foods	**Yes (n=249)**	**%**	**No (n=21)**	**%**	
I approve the production of foods with genetically modified seeds in Turkey					
Yes	18	7.2	6	28.6	0.001
No	231	92.8	15	71.4	
I approve the feeding of animals with genetically modified feeds in Turkey					
Yes	12	4.8	3	14.3	0.069
No	237	95.2	18	85.7	
I approve Turkey's importing genetically modified seeds					
Yes	14	5.6	3	14.3	0.117
No	235	94.4	18	85.7	
I think that the food I buy now would include genetically modified products					
Yes	200	80.3	12	57.1	0.013
No	49	19.7	9	42.9	

I think that society is adequately informed about genetically modified foods					
Yes	28	11.2	3	14.3	0.675
No	221	88.8	18	85.7	
Production of GM foods poses risks for all living creatures.					
Yes	205	82.3	13	61.9	0.023
No	44	17.7	8	38.1	
I approve of the genetic modification of food to eliminate hunger in the world					
Yes	26	10.4	2	9.5	0.895
No	223	89.6	19	90.5	
I approve of the genetic modification of foods to enrich their nutritional content					
Yes	30	12.0	5	23.8	0.123
No	219	88.0	16	76.2	
I approve that foods can be genetically modified in order to extend their shelf life and to make them more resistant to insects and pesticides					
Yes	29	11.6	7	33.3	0.005
No	220	88.4	14	66.7	
I think that if a food contains GMOs,this should always be indicated on the label					
Yes	195	78.3	13	61.9	0.086
No	54	21.7	8	38.1	
I do not mind consuming GM foods					
Yes	20	8.0	5	23.8	0.017
No	229	92.0	16	76.2	
I do not mind other people's consuming GM foods					
Yes	20	8.0	6	28.6	0.002
No	229	92.0	15	71.4	
I think that GM foods have adverse effects on human health					
Yes	208	83.5	15	71.4	0.160
No	41	16.5	6	28.6	
I think that GM crops have carcinogenic properties					
Yes	210	84.3	14	66.7	0.039
No	39	15.7	7	33.3	
I think that GM crops adversely affect the natural environment					
Yes	211	84.7	13	61.9	0.008
No	38	15.3	8	38.1	
I think that GM crops are harmful to the quality of life of people					
Yes	211	84.7	12	57.1	0.001
No	38	15.3	9	42.9	

Discussion:-

Over the past years, reactions of the public to GM foods have varied to a great extent[14,15,16,17] , and not only potential positive attributes (e.g. lesser amounts of pesticides) but also negative attributes (e.g.unnatural) have been identified[18,19,20].

In a study, health college students' knowledge of GMOs was determined as inadequate[13]. In the same study, when the participants were asked why their knowledge of GMOs was not adequate, 72.2% of them said that they never read a scientific publication on this subject whereas 81.3% of them said that this topic was not included in their curriculum[13]. In another study, while the medical students' perceptions of risk of genetically modified foods were satisfactory, their knowledge of these foods was insufficient. When the participants were asked how they first heard of genetically modified organisms, of them, 67.8% said on TV or radio, and 8.4% said from this present survey. While 67.8% of the participants said they first heard of genetically modified organisms on TV or radio, 8.4% said they first encountered this concept in this present survey. In Demir's study, these rates were 42.0% and 29.0% respectively[21]. In Utkualp et al. study, while 90.6% of the participants said they first heard of genetically modified organisms on TV or radio, 7.1% of them said that the source of their knowledge of GMOs was their school[22]. In the present study, midwifery department students' knowledge of genetically modified foods was found to be low

(30.4%). While only 20.7% of them said that the source of their knowledge of GMOs was their school, 69.6% of them stated that their source was the social media.

In Turkey, the cultivation of GM crops is banned[23]. In a study, 62.4% of the medical students did not approve of the production of genetically modified organisms in Turkey[12]. In the present study, 91.1% of the midwifery students did not approve of the production of genetically modified organisms in Turkey.

In a study, 54.4% of the medical students did not mind consuming foods including GMOs. In Demir et al.'s study conducted with people from various professions, 85.6% of the respondents stated that they would not consume GMO products[21]. In Ergin et al.'s study, this rate was 66.7%[7]. In another study, the participating health college students were determined to have a negative perception of GMOs[22]. In the present study, while 90.7% of the students stated that they would not consume GM foods, 90.4% of them stated that they would not approve of other people's consuming GM foods, which suggests that the participating students' perception of risk of GM foods for individuals and the society was high.

In another study conducted with medical students, 83.2% of them assumed that the foods they currently consumed might include GMOs. This rate was 77.7% in Ergin et al.'s study[7], and ranged from 62% to 43.2% in several studies conducted in European Union countries, China and Indonesia[24,25,26]. The rates determined in Turkey were higher than were those determined in studies performed in other countries[12]. In the present study, of the participating students, 89.3% stated that they were not sure whether GM foods were safe, and 92.2% thought that they may have consumed GM foods. The high rate of people who think that they have consumed GMOs in Turkey can be explained by the fact that Turkish people are suspicious of GMOs.

Turkish people's perceptions of risk of GMO technology are also changing. In a study of medical students, 56.9% of them state that production of genetically modified food poses risk for all living things in nature. This rate is 65.3% in Ergin et al.'s study[7]. In Demir et al.'s study, 51.7% of the nurses and 31.6% of the physicians indicated that GMOs could lead to health problems[21]. While 60% of the respondents in Pardo et al.'s study considered that making genetic modifications in food products would pose a risk for people, about half of the European adults considered gene transfer between plant species would pose a risk[24]. In the present study, 80.7% of the midwifery students stated that the production of GM foods would pose risks for all living creatures.

With the use of the GMO technology, it has become possible to extend foods' shelf life and to produce products more resistant to insects and pesticides. Tomatoes with the extended shelf life were first introduced to the market in the US in 1996, but due to community's lack of interest and poor promotion, they were withdrawn from the market[27]. In a study of medical students, 27.3% of them approved that foods could be genetically modified in order to extend their shelf life and to make them more resistant to insects and pesticides. In Ergin et al.'s study, this rate was 21.8%[7]. In the present study, 13.3% of the participants approved that foods can be genetically modified in order to extend their shelf life and to make them more resistant to insects and pesticides.

The main point in dealing with morality and faith concerns regarding GM crops is the labeling of these products. According to relevant regulations in Turkey, if a product contains more than 0.9% of GMOs, this should be stated in the label[23]. The rate is the same in European Union countries, except for Norway where this rate is 2%[28]. Labeling GMOs products may not stop the production of GMOs but chance to people a choice between GM and non-GM foods. Nowadays more than 15 states in the United States are considering such legislation of food labeling[29]. A study conducted with 3002 participants in Belgium, France, the Netherland, Spain and the United Kingdom found that consumers are willing to pay a premium to avoid purchasing rice labeled as genetically modified[30]. In a study of medical students, 84.9% of them stated that if a food is genetically modified, this should be indicated on the label. In another study, 100% of the students of a health college think that if a food has GMOs, this should be stated on food labels[22]. In some studies conducted in Turkey, China and Indonesia, it has been reported that mandatory labeling would be appropriate[7,21,26,31]. In the present study, 77.0% of the midwifery students think that if a food contains GMOs, this has to be indicated on the label.

In a study, the majority of health college students think that GMFs and GMOs are harmful to human health and they have a negative perception of GMOs[22]. In another study, of the health college students, 74.3% think that GM crops are harmful to human health, 74.9% consider GMOs as potentially carcinogen materials, 66.3% state that limited consumption of GM crops would not pose a risk for human health and 61.5% consider that GMOs are harmful to the

natural environment[13]. In the other study, the majority of participants think that GMFs and GMOs are harmful to human health[32]. In another study, of the participants, 54% think that GMOs are harmful to human health, 33.3% state that GMOs are harmful to the natural environment[33]. In the present study, of the midwifery students, 82.6% think that GMO products have adverse effects on human health, 83.0% state that products with GMOs might be carcinogenic, 83.0% think that GMOs affect the natural environment negatively and 82.6% think that products including GMOs are harmful to the quality of life of people.

Inclusion of training activities in education plans aiming to improve students' knowledge of "GMOs" is considered appropriate[12]. A study purposed to assess knowledge related with GMOs and tendency to buy genetically modified food instead of natural food in 745 Polish medical students. The study found that the majority of students neither preferred GMOs food, nor had positive feelings. And it is stated that the students were also not satisfied with the knowledge about GMOs that they obtained from school or university[34]. It is also considered that it would be appropriate to organize campaigns under the leadership of experts to increase the community's awareness of consumption of foods consciously and safely, and to include health workers in these activities[12]. In one study, Xia et al., stated that alarm incident about the safety of GMOs were discussed. And it is stated that emphasize the prompt reaction of media[35]. In another study found that Italian students were not knowledgeable about products with GMOs and avoid to buy genetically modified food[36]. It can be said that health college students were not knowledgeable about products with GMOs and these products' long-term effects on human health. Therefore, it is recommended to conduct further studies aiming to enhance their knowledge of GMOs[13]. Increasing students' awareness of GMOs is also crucial. Therefore, it would be appropriate to give informative lectures about GMOs in schools. In addition, informative activities regarding global policies affecting health can be organized[13].

Conclusions:-

In conclusion, this present study shows that the participating midwifery students' knowledge of genetically modified foods was insufficient. However, their views on and behaviors towards genetically modified foods and consumption status were satisfactory. The participants' insufficient knowledge about the issue makes it difficult to giving advise to safety of genetically modified foods. Training of students on this issue who are younger consumers is important for the protection of public health. That midwifery students who are to provide people with education and counseling on nutrition in order to protect and improve mothers', infants' and communities' health have adequate and correct knowledge about genetically modified foods is of great importance.

References:-

1. Lueck A. M., Kreit B., Falcon R. Foodweb 2020,forces shaping the future of food. PaloAlto, CA:Institute for the Future, available at http://www. iftf.org/uploads/media/SR1255B_FoodWeb2020report_1_.pdf.:(2010).
2. Hellstein I. Focus on metaphors: the case of Franken food on the web. *Journal of Computer-Mediated Communication: 8*, available at http:// online library.wiley.com/doi/10.1111/j.1083-6101.2003.tb00218.x/full.: (2003).
3. Montuori P., Triassi M., Sarnacchiaro P. The consumption of genetically modified foods in Italian high school students. *Food Quality and Preference*: *26*: 246–251. http://dx.doi.org/10.1016/j.foodqual.2012: (2012).
4. Jones L. Science, Medicine, and The Future. Genetically Modified Foods. *British Medical Journal*: *318*: 581–584: (1999).
5. McLean M.R. The Future Of Food: An Introduction To The Ethical Issues In Genetically Modified Foods. The future of food:legal and ethical challenges. Available at http://www.scu.edu/ethics/practicing/focusareas/medical/conference/presentations/genetically-modified-foods.html.: (2005).
6. Whitman D.B. Genetically modified foods:harmful or helpful? April , available at http://www.csa.com/discoveryguides/gmfood/overview.php.: (2000).
7. Ergin I., Gursoy Ş.T., Ocek Z.A., Ciceklioglu M. Information About The Attitudes And Behaviors Of Genetically Modified Organisms In Health Vocational School Students.*TAF Prev Med Bull.: 7*: 503-508**:** (2008).
8. Meseri R. Nutrition and Genetically Modified Organisms (GMOs). *Armed Forces Medical Bulletin: 7*: 455-60: (2008).
9. Anonym.http://www.tarim.gov.tr/Files/mevzuat/yonetmelik_son/GDO_20100428.htm (available at: 15.06.2016).

10. Hıdıroglu S., Onsuz M. F., Kalafat C. E., Karavus M. Umraniye 1. the Health Care Of to Admitted Patients Knowledge, Attitude and Behavior of Genetically Modified Organisms . *Firat J. Med.: 18*(3): 176-181: (2013).
11. Karadag G., Aydın N., Kayaaslan H. Sensitivity On The Gaziantep University Of Medicine And Nursing Student In The Department Of Food Safety And Read Feedback. *TAF Prev Med Bull.: 11*(4): 439-446**:** (2012).
12. Kocak N., Turker T., Kılıc S., Hasde M. Information about the faculty of medicine of genetically modified organisms students, to determine attitudes and behavior. *Gulhane Medical Journal: 52*: 198-204: (2010).
13. Adana F., Gezer N., Ogut S. Knowledge and Opinions Regarding Genetically Modified Organisms of Health School Students. *Journal of the Acibadem University of Health Sciences: 5*(4): 276-280**:** (2014).
14. Gaskell G., Bauer M. W., Durant J., Allum N. Worlds apart? The Reception Of Genetically Modified Foods In Europe And The US. *Science: 285*: 384–387**:** (1999).
15. Magnusson M. K., Koivisto H. U. K. Consumer Attitudes Towards Genetically Modified Foods. *Appetite.: 39*: 9–24**:** (2002).
16. Moses V. Biotechnology Products And European Consumers. *Biotechnology Advances: 17*: 647–678: (1999).
17. Staff . U.S. Consumer Attitudes Toward Food Biotechnology,International Food Information Council Foundation. 2000, Retrieved October , from http://www.ific.org.: (2003).
18. Bredahl L. Consumers' Cognitions With Regard To Genetically Modified Foods. Results Of A Qualitative Study In Four Countries. *Appetite: 33*: 343–360: (1999).
19. Cook A. J., Kerr G.N., Moore K. Attitudes and Intentions Towards Purchasing GM Food. *Journal of Economic Psychology: 23*: 557–572: (2002).
20. Siegrist M. The Influence Of Trust And Perceptions Of Risks And Benefits On The Acceptance Of Gene Technology. *Risk Analysis: 20*: 195–203: (2000).
21. Demir A., Pala A. Perspective Of The Community To Genetically Modified Organisms. *Journal Of Animal Production: 48*: 33-43: (2007).
22. Utkualp N., Ozdemir A., Bicer M., Ozdemir B. Attitudes to Genetically Modified Organisms and Food Among University Students, *Oxidation Communications: 39*,1(1): 384-395: (2016).
23. Anonym. Food and feed Genetically Modified Organisms and Import of Products, Processing, Export, Regulations on the Control and Audit. www. tarim.gov.tr., (available at: 15.06.2016).
24. Pardo R., Midden C., Miller J.D. Attitudes Toward Biotechnology In The European Union. *J Biotechnol.: 98*: 9-24: (2002).
25. Huang J., Qiu H., Bai J., Pray C. Awareness, Acceptance Of And Willingness To Buy Genetically Modified Foods In Urban China, *Appetite: 46*: 144-151: (2006).
26. Februhartanty J., Widyastuti T.N., Iswarawanti D.N. Attitudes Of Agricultural Scientists In Indonesia Towards Genetically Modified Foods. *Asia Pac J Clin Nutr.: 16* : 375-380: (2007).
27. Bayrac A.T., Baloglu M.C., Kalemtas G., Kavas M. Genetically Modified Organisms. Ankara: *METU Development Foundation Publishing: 9*: (2007).
28. Maekawa F., Macer D. How Japanese Students Reason About Agricultural Biotechnology. *Sci Eng Ethics: 10*: 705-716: (2004).
29. Wohlers A. E. Labeling of Genetically Modified Food: Closer to Reality in the United States? *Politics and the Life Sciences: 32*(1): 73-84: (2013).
30. Delwaide A.C., Nally L.L., Dixon B.L., Danforth D.M., Nayga R.M. van Loo E.J., Verbeke W. Revisiting GMOs: Are There Differences in European Consumers' Acceptance and Valuation for Cisgenically vs Transgenically Bred Rice? *PLos One: 10* (5): e0126060: (2015).
31. Lan L. Chinese Public Understanding Of The Use Of Agricultural Biotechnology. A Case Study From Zhejiang Province Of China. *Lü / J Zhejiang Univ Science B.: 7*:257-266: (2006).
32. Tas M., Balcı M., Yuksel A., Sahin Yesilcubuk N. Consumer Awareness, Perception And Attitudes Towards Genetically Modified Foods In Turkey". *British Food Journal: 117*: 1426-39: (2015).
33. Ozdemir O., Gunes M.H., Demir S. University Students Of Genetically Modified Organisms (GMOs) For Knowledge - Attitude And Be Evaluated In Terms Of Sustainable Consumption. *OMU Education Journal: 29*: 53-68: (2010).
34. Zajac J., Chomoncik M., Kolarzyk E., Ogonowska D. Controversial Issue in Bio-technology-Students' Opinions. *Przeglad Lek.: 69* (8): 459: (in Polish; English abstract): (2012).
35. Xia J., Song P., Xu L., Tang W. Retraction of a Study on Genetically Modified Corn: Expert Investigations Should Speak Louder during Controversies over Safety. *Biosci Trends: 9* (2): 134: (2015).
36. Montuori P., Triassi M., Sarnacchiaro P. The consumption of genetically modified foods in Italian high school students. *Food Quality and Preference: 26*: 246-51**:** (2012).