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## Medical Doctors' Perceptions of Food Additives

### Tıp Doktorlarının Gıda Katkı Maddeleri Hakkındaki Algıları

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#### Abstract

##### Aim

This study of medical doctors perceptions of food additives, their level of knowledge, attitudes and behaviors are intended to be measured.

##### Materials and Methods

In this study, aged 23-65, 118 men (59%), 82 women (41%), including 200 medical doctors were on. Statistical analysis of the answers given in the survey of medical doctors, according to the perception of risk to food additives, knowledge, attitudes and behaviors were assessed.

##### Results

80 % of respondents qualify as food additives are harmful. In contrast, the level of knowledge about food additives 26.5 % of good reviewers ' tour. 40 years or older, in terms of disclosure and supervisory authorities more confidence ( $p < 0.05$ ).

##### Conclusion

Medical doctors perception of high risk to food additives, while the lowest was observed in the level of knowledge. Of food additives in medical education is seen not find enough space.

**Keywords:** food additives, medical doctors, risk perception

#### Özet

##### Amaç

Bu çalışma ile tıp doktorlarının gıda katkı maddesi algılarının, bilgi düzeylerinin, tutum ve davranışlarının ölçülmesi amaçlanmıştır.

##### Materyal ve Metot

Araştırma, 23-65 yaş arası, 118 Erkek (% 59), 82 Kadın (% 41) olmak üzere 200 tıp doktoru üzerinde yapıldı. İstatistiksel analiz sonucunda ankette tıp doktorlarının verdikleri cevaplara göre, gıda katkı maddelerine karşı risk algısı, bilgi düzeyi, tutum ve davranışları değerlendirildi.

##### Bulgular

Katılımcıların % 80'i gıda katkı maddelerini zararlı olarak nitelendirmektedir. Buna karşılık, gıda katkı maddeleri hakkında bilgi düzeyini iyi olarak değerlendiren oranı % 26,5'tur. 40 yaş ve üstünde olanlar bilgilendirme ve denetleme açısından yetkili kurumlara daha çok güvenmektedir ( $p < 0.05$ ).

##### Sonuç

Tıp doktorlarının gıda katkı maddelerine karşı risk algıları yüksek iken, bilgi düzeyleri düşük olarak gözlenmiştir. Tıp eğitimi içinde gıda katkı maddelerinin yeterli yer bulamadığı görülmektedir.

**Anahtar Kelimeler:** Gıda katkı maddeleri, tıp doktorları, risk algısı

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## Introduction

Food additives are natural or synthetic substances used to enhance the taste, colour, consistency and shelf life of foods, and they protect biological and nutritional values and prevent biological deterioration of foods<sup>1</sup>.

Food additives have become common since the World Health Organization (WHO) approved 114 synthetic and 50 natural colouring matters in 40 countries in 1956. Along with the official permission of WHO, technological advances allowing easy and rapid production have boosted the usage food additives considerably<sup>2</sup>.

The total amount of lifetime exposure and the number of food additives one gets exposed increase as food additives are now used more commonly and intensively. Moreover, food additives are known to cause many diseases and adverse effects, ranging from allergy to cancer. It has been shown that food additives increase neuropsychological disorder and hyperactivity in children and cause anaphylaxis, urticaria, angioedema, vasculitis, contact dermatitis in sensitive individuals. Some food additives has been demonstrated to cause fetal changes through DNA damage<sup>3-5</sup>. In an animal study, 11 different food additives used as food colours were shown to inhibit cellular mitochondrial respiration between 16% to 100% in liver and kidney<sup>6</sup>.

Perceptions and awareness of medical doctors', who deal with the diseases thought to be caused by these commonly used and health threatening food additives, are of high concern for the society. The aim of the present study was to measure medical doctors' perceptions, level of knowledge, attitude and behaviour regarding food additives.

## Materials and Methods

The present study was conducted on a total of 200 medical doctors aged between 23-65 years (118 males (59%) and 82 females (41%)). 5-point Likert scale was used in the scale prepared. Eleven questions were asked to participants that measure their attitudes, information and behaviors about food additives. This research was performed to doctors working in Isparta, Turkey, in 2013. The said survey was administered to the medical doctors through face-to-face interview upon getting their informed consent. In the statistical analysis carried out using SPSS 17.0, risk perception, knowledge level, attitude and behaviour related to food additives were evaluated using T-test, Chi-square test and ANOVA test. The statistical significance level was taken as 0.05.

**Ethical Issues:** The present study was conducted upon the approval (no, 168, date: 31.07.2013) of Süleyman Demirel University, Medical Faculty, Head of Clinical Research Ethical Committee

## Results

65% of those included to the study were aged between 23-29 years while 35% were aged between 40-60 years. 56% of the participants had children. The ratio of those defining their income level as very good and good was 65% while the ratio of those having an average or low income level was 33.5%. The ratio of those defining food additives as harmful was 80% (75.4% in males, 86.6% in females). The ratio of those thinking they had a good level of knowledge on food additives was 26.5% while the ratio of those thinking they had a bad level of knowledge was 35.5%. The ratio of those stating "I can consume food additives without hesitation" was 15.8% among those reporting their income level as good and very good and 13.4% among those reporting their income

level as average or low. 87.5% of the participants thought that some food additives were carcinogenic. 12.5% of the participants were thinking that food additives were sufficiently controlled during production while 69.5% thought the opposite. Those 40 years old or over stated that they were trusting authorized institutions in terms of the information conveyed and the audits carried out ( $p < 0.05$ ). Medical doctors' harm perceptions of food additives were shown in table 1.

**Table 1.** Medical doctors' harm perceptions of food additives

Food additives are harmful	Number of people	Percentage
I totally disagree	3	1.5
I do not agree	5	2.5
I neither agree nor disagree	32	16
I agree	65	32.5
I totally agree	95	47.5
<b>Total</b>	<b>200</b>	<b>100</b>

20% of the participants stated that they were deciding on which product to buy without checking the ingredients while 55.5% stated that they were checking the ingredients. The sources of knowledge for food additives were stated as internet (37.5%), media (21%), scientific publications (9.5%) and medical faculty (7.5%). Sources of knowledge of medical doctors for food additives were shown in table 2.

## Discussion

Food additives are substances or mixtures added to foods for purposes such as enhancing durability, consistency and colour during production, preparation, packaging and storage phases<sup>1</sup>. The total amount of lifetime exposure and the number of food additives one

gets exposed have increased as there are numerous areas of use and there are various food additives. It has been shown that food additives may cause urticaria, angioedema, vasculitis and cancer and also increase neuropsychological disorder and hyperactivity in children. Some food additives has been demonstrated to affect fetus through DNA damage<sup>4-6</sup>.

**Table 2.** Sources of knowledge of medical doctors for food additives .

Source of knowledge	Number of people	Percentage
Media	44	22
Internet	73	36.5
Scientific	19	9.5
Medical Faculty	15	7.5
I do not know	45	22.5
Other	4	2
<b>Total</b>	<b>200</b>	<b>100</b>

80% of the medical doctors participating in our study on medical doctors' perceptions of foods additives were thinking that food additives were harmful while 87,5% were thinking that these additives were carcinogenic. The rate of those thinking they had a sufficient level of knowledge on food additives was 26,5% while the ratio of those thinking they had a bad level of knowledge was 33,5%. The findings obtained showed that medical doctors were aware of the harms of food additives but had an insufficient level of knowledge on the said additives. Finding that the ratio of medical doctors defining some of the food additives as carcinogenic was higher than the ratio of those defining them as harmful suggests that the perception of carcinogenic substances is insufficient in some medical doctors. Some of the used food additives has been found to be carcinogenic. For example; dulce<sup>7</sup>, cinnamyl

anthranilate<sup>8</sup>, thiourea<sup>9</sup>, safrole<sup>10</sup>, butter yellow<sup>11</sup> have been determined to be carcinogenic and all of these were prohibited. Excess intake of nitrite and nitrate<sup>12</sup>, carrageenan<sup>13</sup>, to be determined may increase the risk of cancer but usage of these food additives continues. For this reason, cautious to avoid over-consumption of food additives that would be appropriate.

Finding that those reporting an average and low income level were more timid in consuming food additives when compared to those reporting good and very good income level suggests that those having a higher socioeconomic level are less sensitive and thus may get exposed to possible harms of these substances more. However, finding no studies on this issue in the literature makes interpretation harder.

Although finding that most of the participants were thinking that the food additives were not being audited during production shows a lack of trust to the producers and auditing institutions in our country, it was observed that those 40 years old or over trusted to the auditing institutions significantly more in terms of obtaining information ( $p < 0.05$ ). Similarly, finding that 55,5% of the participants were choosing the products by checking the ingredients suggests that a specific portion of the society is aware of food additives and choose the products they buy more carefully.

It was found that 37,5% of the participants obtained information on food additives from internet while the source of information was media in 21%. However, although medical doctors are able to find more clear and reliable sources to get information, it is remarkable in terms of the results of the present study that the ratio of those obtaining information from media was 60% while the source of information was scientific publications in 9,5% and medical

faculty in 7,5%. These ratios show that medical doctors are not sufficiently aware of the availability of these sources, have insufficient information on how to use these sources and the curriculum lacks sufficient information on food additives. However, in the literature, no studies could be found that evaluated sources and level of information in different countries and different occupational groups to support our interpretations.

As a result, it was seen that the perception level was not high medical doctors who encounter food additives and their effects very frequently. In order to solve this, events such as sessions, symposiums and conferences should be organized with the attendance of medical faculty students and medical doctors and results should be conveyed to the Ministry of Health, the Higher Education Institution (HEI) and similar institutions to increase the ability of reaching reliable sources during both the educational and professional life.

In order to spread the related information on a larger scale, internet should be used actively and TV programs should be aired. In order to raise an awareness of food additives during faculty years, curriculums should contain current and reliable information on food additives. Moreover, studies should be conducted to increase the reliability of the producers, auditors and informative institutions, and studies should be undertaken with the attendance of different occupational groups to obtain more reliable interpretations.

**Conflict of interest:** The authors declare no conflict of interest.

**Remarks:** The present study titled as 'MEDICAL DOCTORS' PERCEPTIONS OF FOOD ADDITIVES' was submitted as a poster during the International 2nd Halal and Healthy Food Congress held at Konya Dedeman Hotel

between 07 and 10 November 2013. A summary of the poster was published at the special issue of the 'International Journal of Health and Nutrition' in 2013.

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