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GENETICALLY MODIFIED FOOD: A (KPA) CASE STUDY IN TABUK SAUDI ARABIA

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ABSTRACT: An observational study KPA (Knowledge, Practice & Attitude) was undertaken amongst a mixed population in Tabuk region Saudi Arabia. The survey revealed that from a total of 100 samples analyzed with the help of a questioner following observations were made: higher percentage of males (58%) compared to females (42%) are aware of genetically modified food Knowledge of measures of safety assessment of GM food conducted is considered to be poor for both sexes. with a higher frequency for males (10%). The main issues of concern for human health are known more in males (26%) compared to 18% only in females. 24.5% of females thought the GMO to be safe, with only 19% of males. The knowledge of the type of GMO present in international market and Saudi markets is very low for females only(7% and 6% respectively) while the percentage of males is almost twice. Although the knowledge of GMO barcode is very poor for both sexes, still higher frequency of males read the label of the product before buying. Generally speaking there was significant difference between males and females in most of the questions surveyed concerning knowledge of GMO food.

KEYWORDS: GMO Food, Knowledge, Practice and Attitude.

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1. INTRODUCTION

It was first noted in 1946 the DNA of an organism can be transformed and transferred between the organisms, [1] and initiated the era of GMO. As per the European Union (EU) the genetically Modified food are those which are obtained from genetically altered sequence (DNA) organisms, thereby leading to many unsolved and not yet fully answered queries. The concerns for human safety related to GM Foods is an ongoing debate process between the government policies, producers and

Pasha & Amir RJLBPCS 2018 www.rjlbpcs.com Life Science Informatics Publications consumers [2,3.4]. The major question which strike without a doubt is the safety of the product of the so called "altered food" or GM foods. The United States National Research Council (USNRC) pronounced that all the elements in GM Food should be perceptible and codes selected appropriately. There by leading many scientists to work on various aspects of GM Food safety on human health, [4,5,6] presently and in coming generations.[7]. The most common GM Foods available in consumer market are soybean being the most produced followed by maize, potatoes, tomatoes and meat as most of the meat products are mixed with soybean.[5].All these foods produced with the motive to make them better tolerant to herbicides and insect resistant, while the others to enhance the nutritional values. [8,9] In their research reported the US consumer's attitude towards GM Foods, where it was evident that most of them were unaware of the products available and their details. Therefore an observational study was undertaken and astonishingly, most of the participants in the study were unaware of the GM Food and their contents. Lack of information about the GM Food and the process of GM Food production has led to their disinterest in GM Foods.[10,11,12]. Another important factor is that the laws, regulations and the monitoring process for GM Foods is different in different countries, which also add on to a lack of uniform information system regarding them. As an evident fact all over the world media plays a very important role and so is it important in Middle East and in Saudi Arabia too.[13,14,15] Now to what extent media has reported the various aspects of GM Foods and to what intensity needs to be studied by the researchers. This case study is a step towards deciphering the relevant Knowledge (K), Practice (P) and Attitude (A) of people in Tabuk region of Saudi Arabia related to GM Foods.

2. MATERIALS AND METHODS

A survey was performed for 100 individuals which include citizens, faculty members and students of University of Tabuk in Tabuk region of Saudi Arabia. In this evaluation their Knowledge, Practice and Attitude (**KPA Study**) was observed with the help of a questionnaire. Followed by statistical analysis via central tendency, Pearson correlation among individual variables and analysis of variance (ANOVA) with Friedman's Chi-square Test were studied. Finally the results were analyzed by SPSS[®].

3. RESULTS AND DISCUSSION

Results reflected that higher percentage of males (58%) compared to females (42%) are aware of genetically modified food (Figure 1). Although the reason of producing genetically modified food is almost unknown, since only 42% of the survey was aware, also males reflected a higher level of knowledge compared to females (Figure 2). Why the safety of GM foods assessed differently from conventional foods, 21% of males answered positively, while only 12% of females answered positively, as shown in (Figure 3). Knowledge of measures of safety assessment of GM food conducted is considered to be poor for both sexes, with a higher frequency for males (10%), as reflected in (Figure 4.). The main issues of concern for human health are known more in males

Pasha & Amir RJLBPCS 2018 www.rjlbpcs.com Life Science Informatics Publications (26%) compared to 18% only in females, (Figure 5.). 24.5% of females thought the GMO to be safe, with only 19% of males (Figure 6). The knowledge of the type of GMO present in international market and Saudi markets is very low for females only(7% and 6% respectively) while the percentage of males is almost twice (Figure 7 and 8). Although the know what barcode is for GMO is very poor for both sexes (Figure 9), still higher frequency of males read the label of the product before buying[15,16] (Figure 10).Generally speaking there was significant difference between males and females in most of the questions surveyed concerning knowledge of GMO food.

Do you know what are genetically modified (GM) organisms and GM foods?

- game and entre entre			
		Frequency	Percent
	yes	89	44.5
Valid	no	111	55.5
	Total	200	100.0

Do you know why are GM foods produced?

		Frequency	Percent
	yes	42	21.0
Valid	no	158	79.0
	Total	200	100.0

Do you know why the safety of GM foods assessed

differently from conventional foods?

		Frequency	Percent
	yes	67	33.5
Valid	no	133	66.5
	Total	200	100.0

Do you know how a safety assessment of GM food

conducted?					
Frequency Percent					
	yes	32	16.0		
Valid	no	168	84.0		
	Total	200	100.0		

Do you know what the main issues of concern for human

health is?	
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		Frequency	Percent
	yes	88	44.0
Valid	no	112	56.0
	Total	200	100.0

gender * Do you know what are genetically modified (GM) organisms and GM foods? Cross tabulation

Do you know whether the GM roods are sale of no?					
	Frequency Percent				
	yes	87	43.5		
Valid	no	113	56.5		
	Total	200	100.0		

you know whether the CM foods are safe or no?

Do you know what kind of GM foods are in the market

internationally?				
Frequency Percent				
	yes	46	23.0	
Valid	no	154	77.0	
	Total	200	100.0	

Do you know what kind of GM Food is available in Saudi

Arabia?				
Frequency Percent				
	yes	37	18.5	
Valid	no	163	81.5	
	Total	200	1 00.0	

Do you know what barcode is for GMO?

		Frequency	Percent
	yes	37	18.5
Valid	no	163	81.5
	Total	200	100.0

Do you read the label on products before buying?

		Frequency	Percent
	yes	64	32.0
Valid	no	136	68.0
	Total	200	100.0

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		Do you know what are genetically modified (GM) organisms and GM		Total
foods?				
yes no				
gondor	male	58	42	100
gender	female	31	69	100
	Total	89	111	200



Figure 1: Knowledge of genetically modified (GM) organisms and GM foods

Gender * Do you know why are GM foods produced? Cross tabulation

Count				
		Do you know why are GM foods		Total
		produced?		
		yes	no	
gender	male	29	71	100
	female	13	87	100
Total		42	158	200



Figure 2: Do you know why are GM foods produced?

Gender * Do you know why the safety of GM foods assessed differently from conventional foods is? Crosstabulation

Count				
		Do you know why	the safety of GM	Total
		foods assessed differently from		
		conventional foods is?		
		yes	no	
	male	42	58	100
gender	female	25	75	100
Total		67	133	200

Bar Chart

Figure 3: why the safety of GM foods assessed differently from conventional foods

Gender * Do you know how a safety assessment of GM food conducted is? Crosstabulation

Count				
		Do you know how a safety assessment of GM food conducted		Total
		is?		
	yes no			
	male	20	80	100
gender	female	12	88	100
Total		32	168	200

Figure 4: measure of safety assessment knowledge

Gender * Do you know what the main issues of concern for human health are? Crosstabulation

Count				
		Do you know what the main issues		Total
		of concern for human health are?		
		yes	no	
aondor	male	52	48	100
gender	female	36	64	100
Total		88	112	200

Figure 5: The main issues of concern for human health Knowledge

Gender * Do you know are GM foods safe? Crosstabulation

Count	

		Do you know are GM foods safe?		Total
		yes	no	
gender	male	38	62	100
	female	49	51	100
Total		87	113	200

Figure 6: Do you know are GM foods safe

Gender * Do you know what the main issues of concern for human health are? Crosstabulation

Count				
		Do you know what the main issues		Total
		of concern for human health are?		
		yes	no	
aondor	male	52	48	100
gender	female	36	64	100
Total		88	112	200

Figure 5: The main issues of concern for human health Knowledge

Gender * Do you know are GM foods safe? Crosstabulation

		Do you know are GM foods safe?		Total
		yes	no	
gender	male	38	62	100
	female	49	51	100
Total		87	113	200

Figure 6: Do you know are GM foods safe

gender * Do you know what kind of GM foods are on the market internationally? Crosstabulation

Count				
		Do you know w	hat kind of GM	Total
		foods are on the market		
		internationally?		
		yes	no	
acadar	male	31	69	100
gender	female	15	85	100
Total		46	154	200

Figure 7: GM foods present on the market internationally

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gender * Do you know what kind of GM Food is available in Saudi Arabia? Crosstabulation

		Do you know w Food is available	hat kind of GM in Saudi Arabia?	Total
		yes	no	
e e e e e e e	male	26	74	100
gender	female	11	89	100
Total		37	163	200

Figure 8: Do you know what kind of GM Food is available in Saudi Arabia?

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Gender * Do you know what barcode is for GMO? Cross tabulation

Count										
		Do you know what barcode is for GMO?		Total						
		yes	no							
gender	male	22	78	100						
	female	15	85	100						
Total		37	163	200						

Figure 9: Do you know what barcode is for GMO

Gender * Do you read the label on products before buying?

Cross tabulation

Count				
		Do you read the	Total	
		before		
		yes	no	
goodor	male	54	46	100
gender	female	10	90	100
Total		64	136	200

Figure 10: Do you read the label on products before buying?

Pasha & Amir RJLBPCS 2018 Table (1): ANOVA Results.

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		Sum of Squares	df	Mean Square	F	Sig.
Do you know what are	Between Groups	3.645	1	3.645	15.775	.000
genetically modified (GM)	Within Groups	45.750	198	.231		
organisms and GM foods?	Total	49.395	199			
Do you know why are GM	Between Groups	1.280	1	1.280	7.945	.005
foods produced?	Within Groups	31.900	198	.161		
	Total	33.180	199			
Do you know why the safety	Between Groups	1.445	1	1.445	6.637	.011
of GM foods assessed	Within Groups	43.110	198	.218		
differently from conventional	Total	44 555	199			
foods is?		44.000	155			
Do you know how a safety	Between Groups	.320	1	.320	2.386	.124
assessment of GM food	Within Groups	26.560	198	.134		
conducted is?	Total	26.880	199			
Do you know what the main	Between Groups	1.280	1	1.280	5.280	.023
issues of concern for human	Within Groups	48.000	198	.242		
health are?	Total	49.280	199			
Do you know are GM foods	Between Groups	.605	1	.605	2.467	.118
safe?	Within Groups	48.550	198	.245		
	Total	49.155	199			
Do you know what kind of GM	Between Groups	1.280	1	1.280	7.424	.007
foods are on the market	Within Groups	34.140	198	.172		
internationally?	Total	35.420	199			
Do you know what kind of GM	Between Groups	1.125	1	1.125	7.673	.006
Food is available in Saudi	Within Groups	29.030	198	.147		
Arabia?	Total	30.155	199			
Do you know what barcode is	Between Groups	.245	1	.245	1.622	.204
for GMO?	Within Groups	29.910	198	.151		
	Total	30.155	199			
Do you read the label on	Between Groups	9.680	1	9.680	56.638	.000
products before buying?	Within Groups	33.840	198	.171		
	Total	43.520	199			1

ANOVA

4. CONCLUSION

The prevalence of GM food has lead the main markets flooded with many new products. Their gene are altered to benefit the human race in one way or the other but their existence and the expression of altered genes in future generations are a subject of intensive research to scientists. The study undertaken in Tabuk region in Saudi Arabia revealed that the males are having fairly better knowledge OF gm Foods than the females, although both the genders have no clue for labeling, barcode or description of quality assessment of GM Foods. Generally speaking there was significant difference between males and females in most of the questions surveyed concerning knowledge of GMO food.

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CONFLICT OF INTEREST

Above is a case study based on Knowledge, Attitude and Practice of people in Tabuk region of Saudi Arabia. On the bases of their review a significance analysis test has been performed related to GM Foods. These results signify individual views and have no inference with government rules or policies.

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