

Awareness of Omega-3 fatty acids in Jeddah Population, Saudi Arabia

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ABSTRACT

Data on omega-3 polyunsaturated fatty acids in relation to chronic diseases are limited in Saudi population. Therefore, this study was to evaluate Saudi adult's knowledge regarding the importance of omega-3 fatty acids consumption and assess their views on current information availability. This cross-sectional study of men and women adult ($n=534$; 18-45) living in Jeddah, Saudi Arabia. Data were obtained from questionnaire designed to collect information about omega-3 fatty acids. It was found that male participants show a lack in knowledge in the sources of omega-3 compared to female participants where there has been a significant difference in the percentage of males who said yes to fish (35.1%) to females (64.9%). As well as the wide range of diseases that omega-3 can prevent. Therefore, it could be concluded that there is a deficiency in awareness towards omega-3. To overcome this deficiency, it could be recommended that increasing the awareness towards omega 3 through education, i.e. sufficient knowledge on omega-3 and its benefits for various levels of both men and women.

Key words: omega-3, fat, awareness, Saudi Arabia

Introduction

Chronic diseases such as cardiovascular diseases (CVD), obesity, diabetes and cancers are the leading cause of death worldwide (Shahidi and Ambigaipalan, 2018). For example, CVD according to Health Statistical Year Book, 2016 was increased by 256 cases in only two years from 5035 cases registered in 2014. The reason for the increase of these chronic diseases is due to a variety of factors such as lack of physical activities, knowledge of nutrients and change in the pattern and quantity of food consumed (Yach *et al.*, 2004 & Beydoun and Wang, 2008). The daily fat requirement needed for our health and physical wellbeing are essential as well as vitamins, minerals and antioxidants (Eckel *et al.*, 2009). Lipids have a much higher energy deposition as they are used to store energy in the body, the American Heart Association recommends a diet where 30% of energy is from fats (Krauss *et al.*, 2000).

Fatty acids are mainly composed of three levels of saturation; saturated fatty acids (SFA), mono-unsaturated fatty acids (MUFA) and poly-unsaturated fatty acids (PUFA) (Eckel *et al.*, 2009). Omega-3, a type of PUFA, is synthesised from Alpha-Linolenic Acid (ALA) (Stark *et al.*, 2016). Since this essential fatty acid is produced outside the body, omega-3 fatty acids should be obtained through the diet, meaning it's crucial that fatty fish like salmon, mackerel, herring and trout are available as well as being derived from plants, nuts, canola oil, flaxseed and flaxseed oil (Stark *et al.*, 2016). There is an impact on heart diseases from the omega-3 fatty acids which include ALA, eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), that are associated with hormone-like substances called eicosanoids (Prostaglandin, Leukotriene and Thromboxanes) causing this impact on the health (Simopoulos, 1999). Omega-3 fatty acids have shown influence to decrease the risk of coronary heart disease, sudden death from CVD (Harris, 2008). The American Heart Association has also recommended that a mean intake of total fat should be 33% of which 10% SFA, 12% MUFA and 6% PUFA (Krauss *et al.*, 2000). Oily fish intake to twice per week is recommended to obtain the dietary consumption of omega-3 fatty acids, in order to maintain the content of omega-3 in oily fish it is recommended that the source should be steamed as an alternative to grilling or frying (Calder, 2017).

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There are insufficient amounts of information regarding nutrients rich in omega-3 fatty acids consumed in Saudi Arabia. Furthermore, awareness can achieve an increase in the intake of omega-3 fatty acids if an education on healthy eating habits is provided (Al Numair *et al.*, 2005 & Beydoun and Wang, 2008). So, the recognition of the significance of omega-3 can prevent the rise of chronic diseases in our population.

Thus, the study objective was to evaluate the awareness amongst people living in Saudi Arabia, to deduce the most convenient source of information in the population.

Methods

A self-administered questionnaire was distributed online through a weblink, which included 12 closed-ended questions about their knowledge on omega-3 fatty acid coded Yes, No and Don't know. The first 5 questions are about the demographic variables (Name, Age, Gender, Social Status, and Education level). Followed by the 12 questions. The questions distributed were written in Arabic to be understood by the participants then the outcomes were translated to English.

The questionnaire took about 5 minutes to complete. Participants were recruited in the city of Jeddah, in the western region of Saudi Arabia, sampling both men and women within an age range of 18-45 years. The field work lasted from 1st of September 2017 to 31st of October 2017. Data were analysed using SPSS Inc., version 25, Chicago, IL, USA. Data were presented as means and standard deviation (SD), Comparisons between groups, such as between men and women, were carried out using in-dependent-samples *t*-tests. A non-parametric Chi square test (χ^2) was used for comparison of categorical data. All differences were considered significant if *P*-values were < 0.05.

Results and Discussion

From approximately 534 surveys were filled by the volunteers, there were 279 men (52.2%) and 255 women (47.8%). Table 1 summarizes the demographic characteristics for both genders.

Table 1: Demographic characteristics of the study subjects by gender

Characteristics	Females		Males		χ^2	<i>P</i>
	<i>(n = 255)</i>		<i>(n = 279)</i>			
	No.	%	No.	%		
Age:						
18-25	96	37.6	120	43.0	11.592	< 0.001
26-35	66	25.9	117	41.9		
36-45	93	36.4	42	15.1		
Marital status:						
Single	111	43.5	138	49.5	15.546	< 0.001
Married	144	56.5	132	47.3		
Other	0	0	9	3.2		
Education level:						
Low education (high school and less)	87	34.1	159	57.0	9.03	< 0.001
High education (bachelor degree and more)	168	65.9	120	43.0		

*There were significant differences between males and females in age rang, marital status and education level (*P* < 0.001).*

Saudi Arabia has achieved a change in disease trends especially for CVD primarily due to a change in the overall life style and dietary habits and prolonged life expectancy in the country (Kumosani *et al.*, 2011). The present study was undertaken to examine the awareness of omega-3 fatty acids among men and women in Jeddah, in Saudi Arabia. With the majority of all participants 71.3% have background knowledge about nutrition in general. While comparing between men and women, 39.8% of men said no compared to 11.8% of women (Fig. 1). Almost all the participants of women (95.2%) and a large part of men (67.7 %), realise that a variety in the diet is essential to a healthy life (Fig. 2).

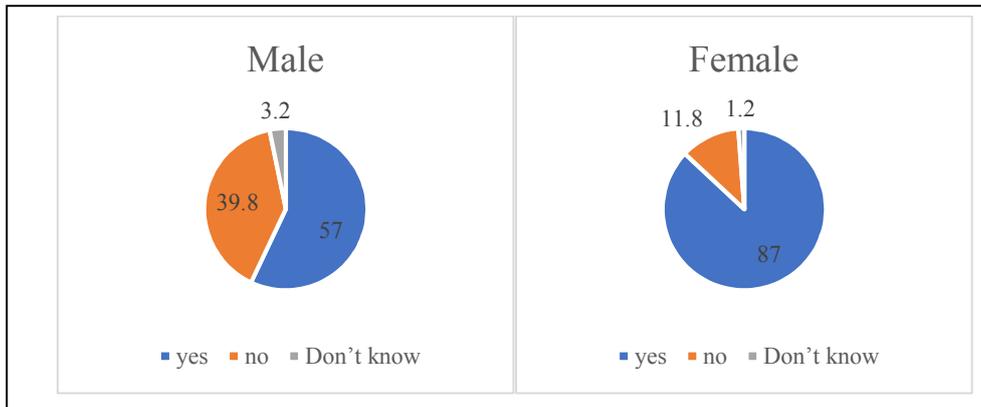


Fig. 1: Q6: Do you have a background knowledge about nutrition in general?

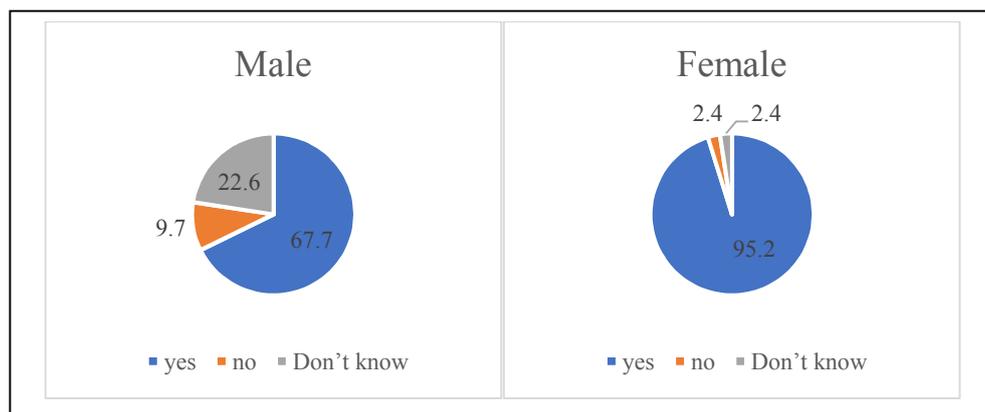


Fig. 2: Q7: Can less variety of foods in a meal lead to a shortage in food elements?

Nearly half of the male participants (51.6%) and three quarters of female participants (76.5%) know that fats are one of the main components to build the body (Fig 3). However, the proportion of those who did not know the number of calories burned in 1 gram is significantly high for both genders, male and female, 57% and 65.9% respectively (Fig 4).

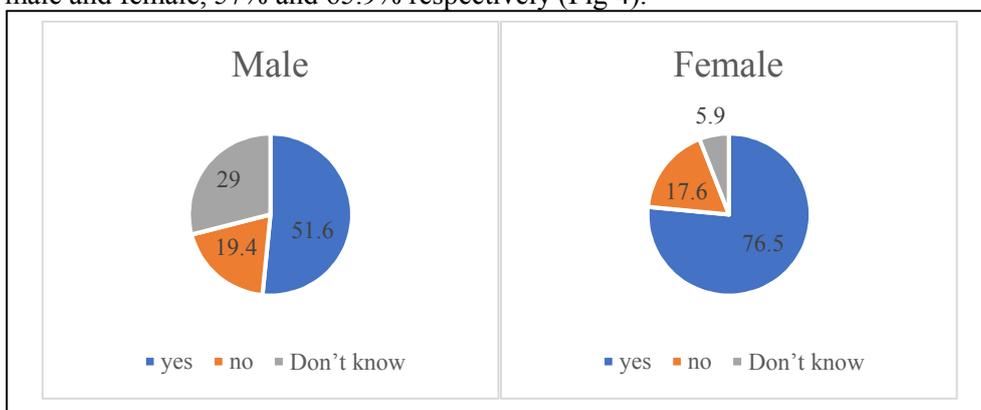


Fig. 3: Q8: Do you think that fats are Important to build the body?

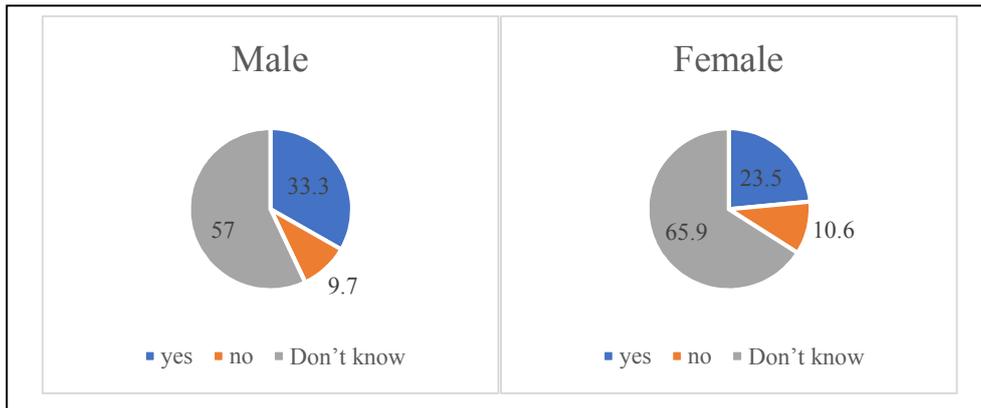


Fig. 4: Q9: Each gram of fat will give 9 calories when burned?

The majority of male participants (51.6%) have not heard about omega-3 whereas 36.6% have, on the other hand 88.2% of the females did hear about omega-3 (Fig 5). More than half of the participants (53.9%) think that omega-3 is important to the health, from which a large number of females have answered yes (77.6%) compared to 50.5% of men who said don't know (Fig 6).

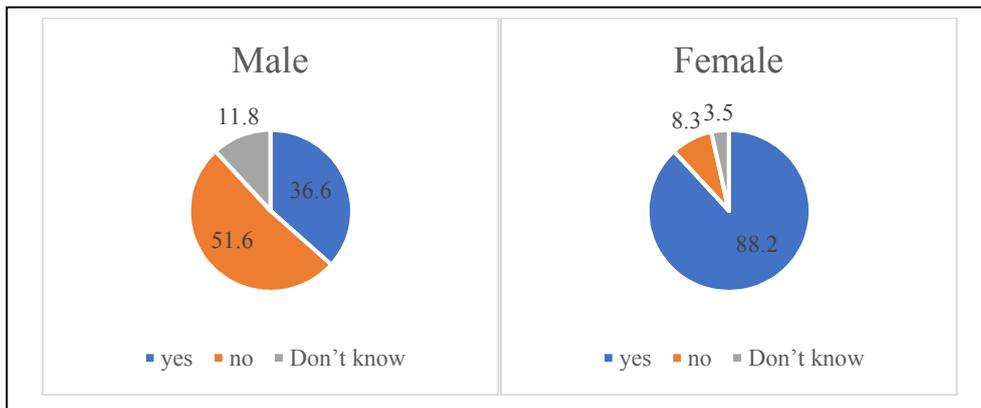


Fig. 5: Q10: Have you heard about omega-3 fatty acids?

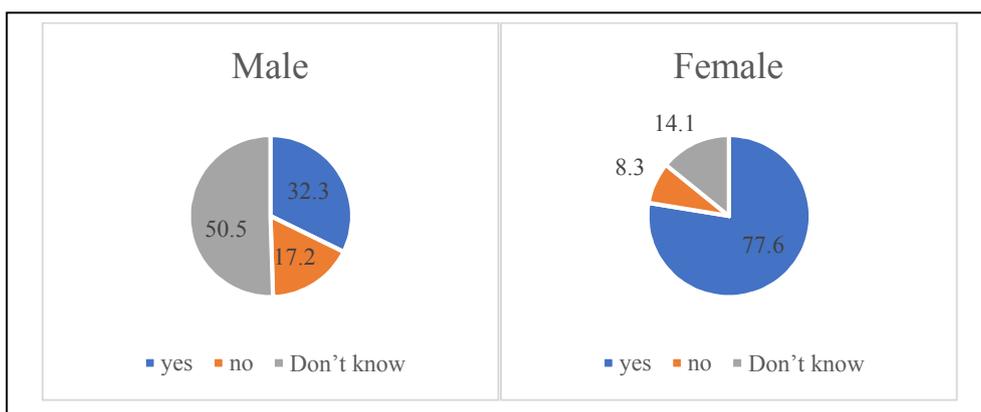


Fig. 6: Q11: Do you think omega-3 is important for your health?

A large proportion of females agree that omega-3 is an essential fatty acid in comparison to the male participants where more than half (55.9%) have insufficient knowledge about essential fatty acids (Fig 7). Almost a third of male participants (32.2%) believe that they are able to get enough omega-3 from their diet in contrast to the female participants with just over three-quarters (71.8%) (Fig 8). Overall, 50.6% of all participants have an idea of the sources rich in omega-3, from that 25% are male and 75% are female, however just under half of all male participants don't have an idea and

majority of female participants do (Fig 9). In-dependent-samples *t*-tests was used to compare between male and female and there were significant differences between participants in Q6, Q7, Q8, Q10, Q11, Q12, Q13 and Q14 ($P < 0.05$, for difference between genders).

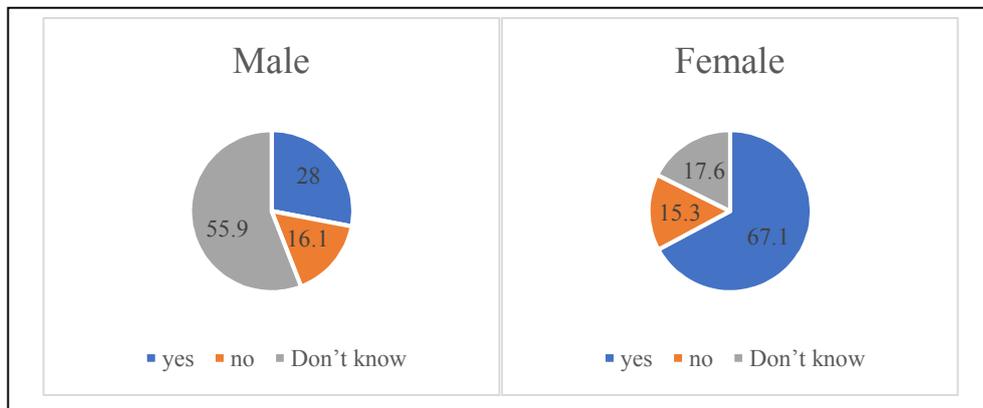


Fig. 7: Q12: Do you think omega-3 is an essential fatty acid?

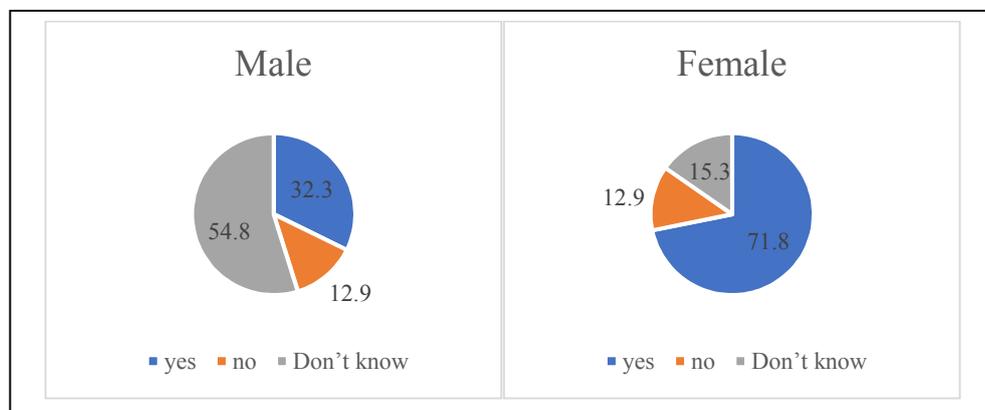


Fig. 8: Q13: Do you think you can get enough omega-3 from the foods you eat?

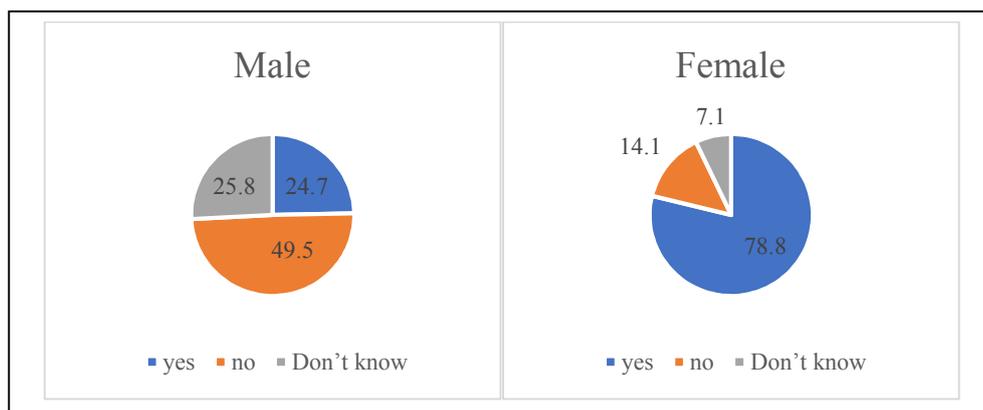


Fig.9: Q14: Do you have any ideas about foods rich in omega-3?

From (Fig 10) the difference between male and female about the knowledge of sources of omega-3 where most females are aware that fish and nuts, 87.1% and 62.4% respectively, are the richest sources of omega-3. Although male participants showed that the percentages for fish and nuts are 43% and 29% respectively. Several organisations including the World Health Organization (2003) and the UK Scientific Advisory Committee on Nutrition (2004) have set new guidelines demanding an increase in the consumption of oily fish to two occasions per week (Krauss *et al.*, 2000) to achieve the recommended dietary intake of total long chain omega-3 fatty acids.

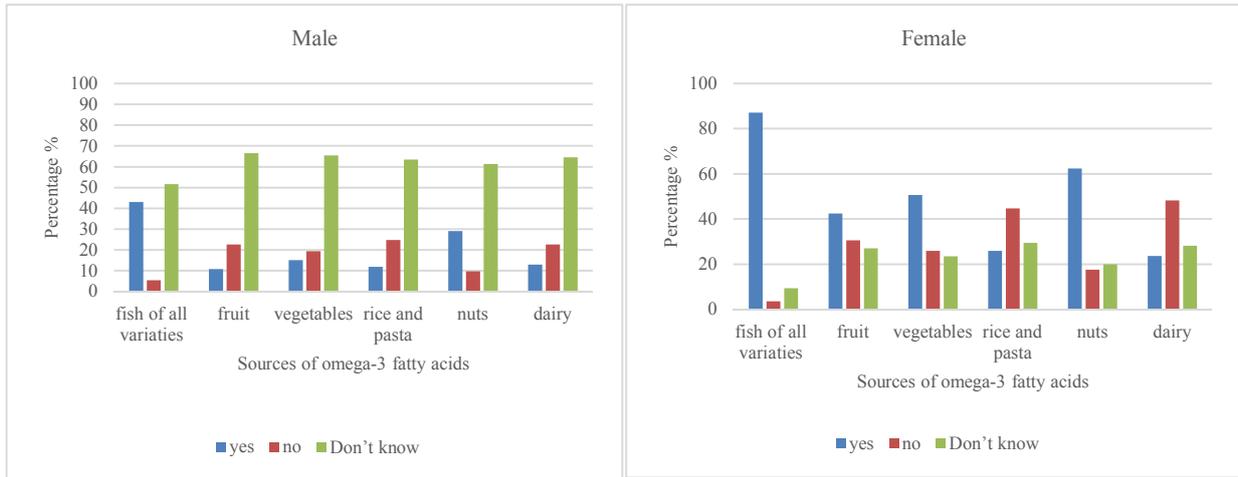


Fig. 10: Q15: Sources of omega-3 fatty acids

Figure 11 shows the comparison between male and female in the knowledge of prevented diseases by omega-3 fatty acids, where a large proportion of female participants have chosen heart diseases (83.5%), cholesterol (78.8%) and blood pressure (69.4%). This shows contrast to male participants who show a lack of knowledge towards omega-3 and its benefits to widespread diseases. A high dietary intake of omega-3 fatty acids has been reported by many studies, to show a significant association to reduce the risk factors of CVD such as a reduction of plasma triacylglycerol levels, blood pressure (Jain *et al.*, 2015), and platelet aggregation (Tatsuno, 2014), thus awareness is essential to increase oily fish consumption (Bauch *et al.*, 2006).

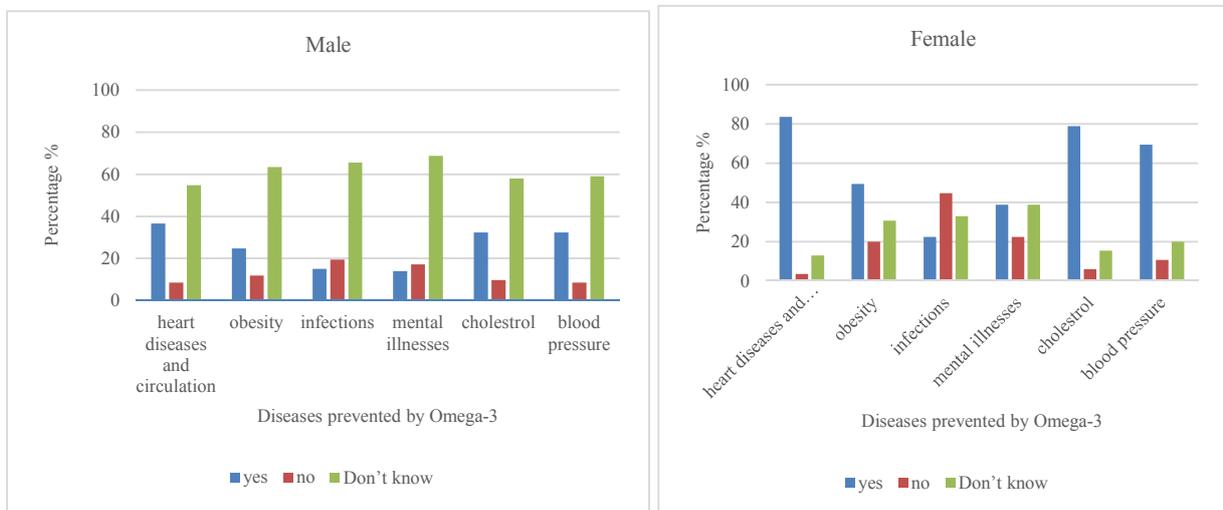


Fig. 11: Q16: Diseases prevented by omega-3 fatty acids

Figure 12 showed that media play an important role as source of information in omega-3 fatty acids awareness in our research with 52.8% of all men and women. Although, the participants get their information from their family with (51.7%), doctors with (38.8%) and friends (34.3%).

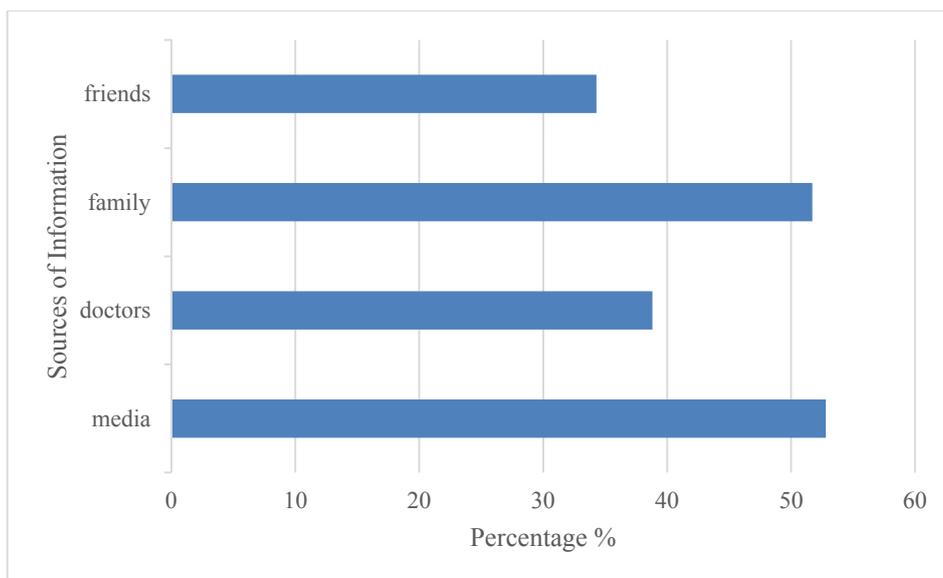


Fig. 12: Q17: Sources of information

Conclusion and Recommendation

Therefore, improving the methods of educating the public will enhance the knowledge of the population to the major health benefits of omega-3 consumption. Emphasis by doctors and clinics should be effective if campaigns are arranged to provide the community with this information. Teachers are also important in giving awareness to the younger population. Since media has shown the highest percentage in the source of information its plays a major role in the populations awareness, its will be effective if it aimed to emphasize the benefits of omega-3.

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