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The of Level of Omega-3 Fatty Acids  
Intake and Disordered Eating Attitudes

**The Level of Omega-3 Fatty Acids Intake and Disordered Eating Attitudes**

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## The of Level of Omega-3 Fatty Acids Intake and Disordered Eating Attitudes

**PURPOSE:** The purpose of this graduate study was to determine if there is a difference in disordered eating attitudes of dietetic students and working registered dietitians based on their sufficiency or insufficiency of omega-3 fatty acid intake. A Food Frequency Questionnaire was used to assess omega-3 intake and The Eating Attitudes Test-26 was used to measure disordered eating attitudes. Additionally, the study determined if the sufficiency and insufficiency groups were balanced with respect to gender, age, and employment status.

**METHODS:** Subjects who were members of the California Academy of Nutrition and Dietetics were asked to participate in a two part survey that electronically documented their dietary intake and EAT-26 scores. Age, weight, height, and occupation were collected as part of the survey. Eighty-four subjects between 21 and 69 years of age completed the study. According to the food frequency questionnaire of the survey, subjects were placed in either a sufficient group or an insufficient group.

**RESULTS:** In the sufficiency group, the mean age of the participant was significantly higher than the mean age of the insufficient group. Both Groups experienced insignificant relationships between level of omega-3 intake and EAT-26 score. Additionally, there was no significant difference in EAT-26 score and the age, and the occupation of the subjects

**CONCLUSIONS:** There was not a significant association between omega-3 intake and disordered eating attitudes. This outcomes should be further investigated to determine if the lack of association was due to the limitations of the study or if these were accurate findings.

### KEY WORDS

EAT-26

Omega-3s

Disordered eating

Eating disorder

Food frequency questionnaire

Dietary intake patterns in Western cultures have dramatically evolved over the years due to food availability, demand, and food trends. Of particular concern is the type of fat consumed, specifically the ratio of omega-6:omega-3 fatty acids.<sup>1</sup> The ratio has evolved from approximately 1:1 to the current Western diet of 15:1-16.7:1.<sup>2</sup> The Western diet adopted by the United States and other developed countries is deficient in omega-3 fatty

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acids; aiding in the pathogenesis of diseases including cardiovascular, cancer, and inflammatory and autoimmune diseases.<sup>2</sup>

Depression is a psychological condition associated with difficulty regulating emotions, a large risk factor for eating disordered behavior.<sup>3</sup> In recent years, the idea has evolved that inflammation was an independent factor that increased the risk of depression. Studies now show that inflammation is the primary risk factor. Inflammation increases the risk of depression and depression increases the risk of inflammation.<sup>1</sup> Researchers have found the consumption of omega-3 fatty acids has anti-inflammatory properties, thus having the potential to be used in the management of inflammatory and autoimmune diseases.<sup>4</sup>

There may be an influence on psychological health for those presenting with disordered eating attitudes and low intake of omega-3 fatty acids. Disordered eating behaviors may reflect a wide range of irregular eating behaviors such as chronic dieting; preoccupation with food, body image, or exercise; extremely rigid food and exercise regime; or compulsive and emotionally driven eating. Disordered eating behaviors do not warrant a diagnosis of an eating disorder yet, have the potential to evolve into an eating disorder.<sup>5</sup> Disordered eating behaviors are frequent in adolescents and persist well into adulthood in both males and females.<sup>6</sup>

A relationship study published in the *Journal of Adolescent Health* (2002) prospectively measured disordered eating in 81,246 adolescent males and females. Approximately 30% of the adolescent males and over 55% of the adolescent females reported disordered eating.<sup>7</sup> A 10-year longitudinal study done by Neumark-Sztainer and colleagues (2010) measured the consistency of dieting and disordered eating behaviors of

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2,287 males and females from adolescence into young adulthood. Results indicated that these behaviors either remained constant or increased over 10 years.<sup>8</sup>

It has been reported that women have greater difficulty with regulating emotions than men and are also more prone to disordered eating patterns.<sup>4</sup> Dietetics, a female dominant profession that interprets evidence-based nutrition principles and current information without personal bias, is commonly exposed to food, weight and diet trends, and wellness practices.<sup>9</sup> Research has shown that students in dietetic programs have double the risk of developing eating disorders compared to students in other majors.<sup>10</sup> The idea that a disordered eating attitude might be a motivation for a student to start a nutrition program as a coping strategy has been hypothesized.<sup>10</sup> Related functional consequences include but are not limited to a negative impact on social and professional functioning potentially interfering with proper counseling of clients and patients.<sup>10</sup>

A Food Frequency Questionnaire was used to assess omega-3 intake and The Eating Attitudes Test-26 was used to measure disordered eating attitudes. Additionally, the study determined if the sufficiency and insufficiency groups are balanced with respect to gender, age, and employment status.

### **Methods**

#### *Participants*

Our survey was attached to the monthly newsletter that is emailed to all 6000 members of the California Academy of Nutrition and Dietetics (CAND). Our potential participants consisted of active members of the CAND, ages 18-80 years, who were either currently

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enrolled in a Nutrition and Dietetics program or were currently working as a professional in the industry of nutrition as a dietitian.

### *Instruments*

One questionnaire was emailed for data collection. Section 1 assessed omega-3 intake and section 2 assessed risk for disordered eating attitudes. The questionnaire was developed using Qualtrics.

The Food Frequency Questionnaire section was based on a validated omega-3 food frequency questionnaire<sup>11</sup> which was revised utilizing the Dietary Reference Intake of omega-3 fatty acids. The rating scale had a total of 19 questions. Participants completed the questionnaire by analyzing the frequency of consuming foods rich in omega-3 fatty acids on a daily basis. The different survey frequency options were transformed into grams the using the ESHA Food Processor Nutrition Analysis. Based on the answers, participants' omega-3 fatty acid intake were categorized as sufficient or insufficient. Sufficiency were calculated using the standard American 2000 calorie diet and the DRI for adults 18 + years of age which has a recommended range of 0.6-1.2 percent of total energy intake. Insufficient omega-3 intake would be anything lower than 1.3 g per day, while sufficient intake would range between 1.3 g to 2.6 g per day.

The second section of the questionnaire was based on the Eating Attitudes Test-26, revised with two questions identifying if the participant was a student or a working professional and excluding part C of the questionnaire. The EAT-26 questionnaire uses a rating scale with questions 1 - 25 scored as (3= always, 2= usually, 1 = often; 0 = other answers) while question 26 is scored oppositely (3= never, etc.). Possible scores range

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from 3 to 75 points, with scores greater than 20 indicating having disordered eating attitudes and in need of a referral.

### *Procedures*

Data collection used one anonymous self-questionnaire that was attached to CAND's monthly newsletter. Which was emailed to students and dietetic professionals who are active members of the California Academy of Nutrition and Dietetics. The questionnaire was sent out twice via (daily news) email by CAND, allowing the participants a week to complete and submit back. By clicking the link, the participant gave consent to be in the study.

### *Data Analysis*

Data was analyzed using the Statistical Package for Social Science Software (SPSS), version 24 for Windows. Two groups were made based on sufficiency or insufficiency of omega-3 fatty acids. Gender and age data was summarized by these groups. Relationship between omega-3 intake and EAT-26 score were calculated using Spearman's correlation for the total group and the two subgroups. A correlation was also calculated for age of all participants and EAT-26 score. The EAT-26 score for all the participants were compared for the occupation groups using Mann-Whitney test.

### **Results**

Eighty-four individuals responded to the study posted in the monthly newsletter hosted by CAND. Of these individuals 70 participants (69 females, 1 male) completed the survey. There were 14 individuals who were eliminated from the study, 5 who were not CAND members, 4 who did not complete the survey, and 5 who were removed for failing to provide accurate and complete information. Of the participants, 40% (n=28) were

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students currently enrolled in a nutrition and dietetics degree program, and 60% (n=42) were registered dietitians currently working in a professional setting.

Participants were placed into two groups based on sufficiency and insufficiency of omega-3 fatty acid intake. The mean age of the participants was significantly higher than the mean age of the insufficient group ( $p=.002$ ) (Table 1).

### *Dietary Intake*

Participants were categorized into two groups based on the amount of omega-3 they consumed. The criterion for sufficient intake was defined as a weekly intake of 9.1 g to 18.2 g of omega-3. The intake was based on the self-reported food frequency questionnaire, where (34 participants) were placed into the insufficient group and (36) were placed into the sufficient group (Table 2).

### *Eating Attitudes Scores*

Of the participants who took part of the study, (two participants ) scored higher than 20 on the Eat-26 test, indicating a referral was needed for disordered eating attitudes, however, overall results found that there was not a significant relationship between total omega-3 intake and the EAT-26 test, ( $p = .71$ ). Further statistical analysis found no correlation between omega-3 intake and EAT-26 scores for either subgroups (Insufficient group  $n=34$ ,  $p=0.35$  and sufficient group  $n=36$ ,  $p=0.58$ ).

Additionally, there was no relationship between age and EAT-26 score for all participants ( $p=.11$ ). Finally, there was no significant difference between mean Eat-26 score between students and practicing dietitians( $p=.28$ ).

## **Discussion**



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This study examined whether there was an association between omega-3 fatty acid intake and disordered eating attitudes in dietetic students and registered dietitians. Overall there was not a significant relationship between the amount of omega-3 fatty acids consumed and the total score of the EAT-26 test.. Although the there was no significant relationship between omega-3 intake and EAT-26 test from the overall participants, there were two participants who scored greater than 20. On the EAT-26 these two participants, both female, were placed in the insufficient omega-3 group consuming less than 9.1 g omega-3 per week.

The amount of omega-3 intake was determined by a food frequency questionnaire, including a variety of foods and supplements. Three participants were removed from the assessment of total omega-3 intake, because they were unable to provide correct name/dosage for the supplements they consumed.

Limitations of this study involved potential variation bias due to self-reported information regarding intake and accuracy of answers submitted for EAT-26. Four people not completing the survey at various points could have represented such limitations. An additional limitation was the small sample size of the study. Originally, the study was intended to be distributed two times over a two-month period, however, it was only distributed once due to difficulties of scheduling.

In conclusion, there was not a significant association between omega-3 intake and disordered eating attitudes. These outcomes should be further investigated to determine if

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the lack of association was due to the limitations of the study or if these were accurate findings. Eating disorders and disordered eating amongst this population remains rather unstudied and underreported. There is a necessity for further research on the relationship between food intake and disordered eating attitudes in the dietetics profession.

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TABLE 1

Age, Anthropometrics, Gender, Occupation of Dietetic Students and Registered Dietitians.

Variable	Insufficiency (n=34) Mean (SD)	Sufficiency (n=36) Mean (SD)
Age (y)	30.6 (11.5)	37.4 (11.8)
Height (in)	64.7 (3.0)	65.3 (3.7)
Weight (lb)	137.6 (20.0)	130.0 (25.6)
P-Value		p=.002
	Insufficiency (n=34) % (n)	Sufficiency (n=36) % (n)
<b>Gender</b>		
Female	97.1 (33)	97.2 (35)
Male	*	2.8 (1)
<b>Occupation</b>		
Student	47.1 (16)	33.3 (12)
Registered Dietitian	52.9 (18)	66.7 (24)

\* One participant in insufficiency group did not disclose gender

TABLE 2

Estimated Average Omega-3 Fatty Acid Intake from FFQ Dietetic Students and Registered Dietitians.

Food (g omega -3)	Insufficiency (n=34) Mean (SD)	Sufficiency (n=34) Mean (SD)
Fish	0.4 (0.5)	0.7 (0.6)
Walnuts	2.0 (1.7)	8.7 (6.8)
Canola Oil	1.4 (1.7)	2.2 (2.6)
Flaxseed	0.4 (0.9)	0.8 (1.0)
Flaxseed Oil	0 (0)	1.8 (6.3)
Chia Seeds	0.8 (1.6)	1.5 (2.5)
Eggs	0.7 (0.1)	0.1 (0.1)
Supplements	0.0 (0.0)	3.3 (6.2)
<b>Total Omega-3 Intake</b>	<b>5.1 (2.1)</b>	<b>18.9 (7.4)</b>