

Nutrient Consumption in Individuals Experiencing Various Levels of Anxiety

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Abstract: In the present times, the prevalence rates of anxiety and anxiety related disorders are rising. It is also known that the nutrition influences the biological processes of the individuals. Hence, the objectives of the present study were firstly, to study the body mass index (BMI) of the individuals with low, average or normal and high anxiety and secondly, to assess the nutrient intake of the individuals with low, average and high anxiety. A sample of 117 individuals from Uttarakhand was collected. It was found that 44.4% subjects showed low anxiety and 20.5% of subjects showed high anxiety. The group showing normal anxiety had lower BMI values compared to low and high anxiety groups. The intake of all the nutrients except niacin was lesser in the high anxiety group compared to normal anxiety group. It was notable that the energy and iron intake reduced as the anxiety score increased, though no significant difference in the consumption of various nutrients was seen in the three anxiety groups.

Keywords: Anxiety, BMI, Nutrient intake.

INTRODUCTION

Commonly, the optimum level of anxiety is considered to be a facilitator in exhibiting the best possible work performance. Whitaker [1] explained that the difference between normal and pathological anxiety is duration, intensity and frequency of anxiety. Further, normal anxiety is beneficial until its duration, intensity and frequency becomes so great that it interferes with normal functioning. It is also observed that the cases exhibiting anxiety symptoms are on an increase. Twenge [2] found that both college student (adult) and child samples increased almost a full standard deviation in anxiety between 1952 and 1993(explaining about 20% of the variance in the trait).

In a prevalence study of anxiety disorders of higher secondary students of Kerala it was found that 56.8% students were suffering from anxiety and anxiety related disorders [3]. In such circumstances, there appears to be a need to investigate the various causative factors which may work underneath the rise in the anxiety among people. One vital component which influences our lives is our nutritional intake. The associations between nutrients acting as precursors for several neurotransmitters, which, further influence the psychiatric conditions are well established [4]. Hence, it becomes important and obvious to explore the problem of anxiety in perspective of nutrient intake. The objectives of the present study are firstly, to study the Body Mass Index (BMI) of the individuals with low, average or normal and high anxiety and secondly, to assess the nutrient intake of the individuals with low, average and high anxiety.

MATERIALS AND METHODS

In the present study, a sample of 117 individuals from five regions (Pithoragarh, Pauri, Nainital, Dehradun and Udham Singh Nagar) of Uttarakhand was collected. Individuals who were literate, from age range 22-55 years and residents of Uttarakhand for the past ten years were included in the study. Individuals suffering from any physical impairment, diagnosed psychological disorder, pregnant and lactating mothers were excluded from the study.

The tools employed for the present study were:

- 1) Comprehensive anxiety test (CA-test): It is developed by Bhardwaj *et al.* [5]. It consists of 90 items. The interpretational categories are divided into five, namely, very high or saturated, high, average or normal, low and very low. In the present study, for the erpretational categories are divided into five, namely, very high or saturated, high, average or normal, low and very low. In the present study, for the interpretational convenience very high and high categories were merged into a high anxiety group. Similarly, very low and low categories were merged into a low anxiety group. Its reliability is 0.94 and validity is 0.82.
- 2) For assessing nutritional status a self made questionnaire in which anthropometric details viz. height, weight were collected and BMI was calculated as weight (kg)/ height (m²). Further a 3 day food recall method [6] was deployed and the daily intake of nutrients was calculated according to food composition table for Indian foods [7].

RESULTS AND DISCUSSION

Out of 117 subjects, 44.4% had low anxiety, 35 % has average or normal anxiety and 20.5 % had high anxiety. The mean anxiety scores for low anxiety, normal anxiety and high anxiety groups were 14 ± 5.6 , 27.26 ± 4.5 and 46.5 ± 6.3 , respectively. A significant difference for the scores of anxiety was found (Table1).

Further Body Mass Index (BMI) for the corresponding anxiety groups was computed and it was observed that low and high anxiety groups had similar

BMI scores of 23.1 kg/m^2 whereas, the normal anxiety group had slightly lower BMI of 21.9 kg/m^2 , though the difference was not significant (Table1). Similar results were observed by Ejike [8] where, the mean BMI values of the subjects were largely within the normal range. Males in the average anxiety group had the highest mean BMI ($25.3 \pm 8.5 \text{ kgm}^{-2}$), while females in the high anxiety group had the highest mean BMI for the females ($23.7 \pm 2.6 \text{ kgm}^{-2}$).

Table 1: Distribution of subjects according to anxiety scores and their corresponding BMI

| | Low Anxiety group | Average or normal anxiety group | High anxiety group | p-value |
|---------------------|-------------------|---------------------------------|--------------------|------------|
| N | 52 | 41 | 24 | |
| Mean Anxiety Score* | 14 ± 5.6 | 27.26 ± 4.5 | 46.5 ± 6.3 | 1.11e-16 S |
| BMI Scores* | 23.1 ± 3.5 | 21.9 ± 3.4 | 23.2 ± 3.8 | 0.21 NS |

*Mean \pm SD, S/NS Significant /non significant

Research have elucidated that dietary deficiency of nutrients may precipitate brain disease, although association between specific nutrient and anxiety are sparse. Nutrients like protein, iron are important for synthesis of neurotransmitters. Carbohydrates have been found to have soothing effect on brain. Zinc and vitamin C act as antioxidants and protect against free radicals. The nutrient intake in the three anxiety groups was also calculated (Table2) and it was found that energy consumption lowered as the anxiety level increased. The three anxiety groups consumed 2228 Kcal, 2148 Kcal and 2119 Kcal of energy, respectively. Protein intake (g) was slightly higher for normal anxiety group (78 g) compared to low anxiety group (72g) and high anxiety group (73g). The consumption of carbohydrate (g) was 362.7, 379.7 and 348.5g for low, normal and high anxiety groups,

respectively. Major mineral calcium was calculated and it was seen that all the three groups consumed calcium higher than the recommended levels. Micro mineral iron was estimated and it was seen that low anxiety group had slightly higher iron intake compared to normal and high anxiety groups, although the iron intake in normal and high anxiety group was quite lower than the recommended dietary levels for Indian adults which indicates that as the anxiety score increased the iron intake decreased. Among vitamins niacin and vitamin C was calculated. The niacin intake increased slightly as the anxiety scores increased. No such trend was seen for the vitamin C intake. The intakes of vitamins were higher than recommended allowances but the significant difference in the level of nutrients among three groups were not seen.

Table 2: Nutrient intake in low anxiety group, normal anxiety group and high anxiety group

| Nutrients* | Low Anxiety group | Average or normal anxiety group | High anxiety group | p-value |
|------------------|-------------------|---------------------------------|--------------------|---------|
| Energy (Kcal) | 2229 ± 99.5 | 2148 ± 106.5 | 2119 ± 89.6 | 0.69 |
| Protein (g) | 72.5 ± 4.2 | 78.2 ± 4.9 | 73.6 ± 5 | 0.65 |
| Carbohydrate (g) | 363 ± 14.5 | 380 ± 18.3 | 348.5 ± 22.8 | 0.53 |
| Calcium(mg) | 720 ± 34.8 | 737 ± 38.4 | 679 ± 42.5 | 0.64 |
| Iron (mg) | 28.4 ± 4 | 24.8 ± 1.3 | 24.3 ± 1.4 | 0.6 |
| Zinc (mg) | 9.3 ± 0.43 | 10.1 ± 0.59 | 9.8 ± 0.48 | 0.48 |
| Niacin (mg) | 18.1 ± 6.5 | 19.4 ± 6.8 | 20.6 ± 7.8 | 0.3 |
| Vitamin C (mg) | 105 ± 6.5 | 107 ± 8.8 | 102 ± 7.9 | 0.9 |

*Mean \pm SD

CONCLUSION

Physiological and psychological health is pivotal to one's wellbeing. The study showed that 65% subjects showed deviant anxiety levels. The normal anxiety group had lower BMI compared to other two groups. The nutrient intake was slightly lower in the

higher anxiety group. Thus we can say that nutrient consumption and anxiety is somewhat associated, though a larger sample is required for inferring a significant association between the two.

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