AWARENESS ON IMPORTANCE OF FOOD T0 BOOST IMMUNE SYSTEM - A SURVEY

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ABSTRACT:

The most basic definition of immunity is that the ability of the organism to resist the invasion of microorganisms and harmful substances.A well-functioning system is vital for survival. The system should be perpetually alert, observation for signs of invasion or danger.Adequate and acceptable nutrition is needed for all cells to function optimally and this includes the cells in the immune system.The immune system plays a major role in keeping our body healthy and prevents various diseases, especially the viral diseases. It is important to take immune boosting adequately through a balanced diet.. The aim of the present study is to assess the impact of food on the immune system.Approval was obtained from the institutional review board, prior to the start of the study. Simple random sampling was done. A total of 141 participants were involved in the study. Self administered questionnaire of close ended questions was prepared related to the immune system and distributed through online survey forms "GOOGLE FORMS". SPSS software was used to analyse the results. Chi square test was used as inferential statistics. Results:The present study observed that 93.4 % of the participants responded that the survey was useful and they have gained maximum knowledge about the importance of food on immunity.The present study thus concluded that the food plays a major role in boosting immunity.

Key words: immunity, exercises, vitamins,viral diseases, Balanced diet .

1.INTRODUCTION:

Immunity is the ability of the body to counteract pathogenic invasions.[1]A deficiency of dietary protein or amino acids has long been known to impair immune function and increase the susceptibility of animals and humans to infectious disease.[2]
The regular and timely food intake keeps healthy and maintains immunity of an individual. Some food substances such as ginger, gooseberries, and turmeric help in maintaining proper immune systems of the body and development of the bone.Nutrition plays a crucial role in the prevention of chronic diseases, as most of them can be related to diet. Functional food enters the concept of considering food not only necessary for living but also as a source of mental and physical well-being, contributing to the prevention and reduction of factors for several diseases or enhancing certain physiological functions. A balanced diet is the supporting treatment for the prevention of illness and especially against oxidative stress.[3,4]The impact of diet on human health has long been a topic of research, from its effects on human evolution during the Paleolithic times identified by recent scientific advances in genomic sequencing, exploring diet-health relationships[5] have explained and revealed. Although double edged nutritional research and genomics reveal clues for preventing disease and promoting optimal health, these opportunities have not been enthusiastically utilized nor given necessary importance during discussions of national health care[6] .

The new technology presents novel approaches for advancing nutritional genomics and tools for analyzing biochemical mechanisms involved in disease. As nutrition is an important environmental factor that could affect disease, genome based diets, potentially improve overall public health. Through nutritional guidelines supporting individual genetics, we are then equipped to stop and treat disease supported variations within the human genome. Some major reasons for reducing

immunity remain climatic changes, improper diet, increased mental stress. Analysis utilizing molecular and genetic technology measuring impacts of foods on genomics and metabolism reveal how nutrients may influence certain immune functions[7] Innate immunity and nutrient metabolism are complex biological systems that must work in concert to sustain and preserve life.

The effector cells of the innate system believe essential nutrients to get energy, produce metabolic precursors for biosynthesis of macromolecules and tune their responses to infectious agents. Thus disruptions to nutritional status exert a substantial impact on immune competence and can result in increased susceptibility to infection during nutrient deficiency[8], or chronic inflammation associated with overnutrition [9]. The several authors in their study gave a comparative and brief study on the role of food to boost our immune system [10] [11] [12]. Food is the ingredient that binds us together". Many studies state that immunity is a main mechanism that acts as a host defense against harmful substances inside the body. Immune system maintains the homeostasis, defends against viruses, bacteria and inflammation[13] and also the nutritional deficiencies, it also impairs the immune function [14,15] The present study helps to know the importance of and various supplements of food which develops the immune system against viral diseases. It creates awareness to people to know the importance of food and how food is important to boost the immune system against viral diseases [16] [17] [18] .

2.MATERIALS AND METHODS:

A descriptive cross sectional study was conducted among undergraduate dental college students aged 18-25 years to access their knowledge and awareness on successful technologies used in dentistry .Approval was obtained from institutional review board. Simple random sampling was done. A total of 141 participants were involved in the study. Self administered questionnaire of close ended questions was prepared and distributed among undergraduate dental college students through online portals. . Demographic details were also included in the questionnaire. The responses were collected, tabulated in excel sheet and analysed. Statistical analysis was done in SPSS software version 22. Chi square analysis was used for inferential statistics

3.RESULTS AND DISCUSSION:

Pie charts representing the percentage distribution of awareness on healthy food where.57.45% were aware of healthy food that builds up the immune system, whereas 42.55% are unaware of it.(FIGURE 1).Pie chart representing percentage distribution of knowledge on foods which weakens the immune system where . 26.95% of the participants feel junk food and ,31.21% feel that sugar cubes weaken the immune system.(FIGURE 2).Pie chart representing percentage distribution of knowledge on best vitamin to boost immunity. 36.88% of participants prefer vitamin A, 26.24% prefer Vitamin K, 19.86% prefer vitamin C and 17.02% prefer Vitamin D to boost their immune system.(FIGURE 3).Pie chart representing percentage distribution of practice of regular exercises . 87.23% do regular exercise to make their body active and fit while remaining 12.77% feel not so (FIGURE 4).Pie chart representing the percentage distribution of knowledge on exercise to boost immunity. 81.56% of participants responded that doing regular exercises increases the immune system .(FIGURE 5).Bar graph representing frequency distribution of association of awareness on healthy food and immune system.. 65 male participants and 16 female participants were aware that healthy food helps to build up a healthy immune system. Males were much more aware than females. There is a significant association of gender with awareness on healthy food and the immune system. Pearson chi square test value- 23.984 , P value - 0.000 (<0.05) - statistically significant. (FIGURE 6).Bar graph representing frequency distribution of association of gender and knowledge on food which weakens the immune system.. 14 males participants and 24 female participants responded to junk food. Females had good knowledge on the type of food which weakened the immune system. There is a significant association of gender with knowledge on food which weakens the immune system. Pearson chi square test value- 16.405, P value - 0.001 (<0.05) - statistically significant.(FIGURE 7).Bar graph represents frequency distribution of association of gender and knowledge on vitamins which are best for the immune system . 32 male participants and 20 female participants responded to vitamin A. Males had good knowledge on vitamins which is best for the immune system. There is no significant association of gender with knowledge on vitamins which are best for the immune system. Pearson chi square test value- 11.172, P value - 0.011 (>0.05) - statistically

not significant. (FIGURE 8).Bar graph representing frequency distribution of association of gender and practice of regular exercises .83 males participants and 40 female participants practice exercise regularly. Males had better practice of exercises than females. There is a significant association of gender with practice of regular exercises. Pearson chi square test value- 7.865, P value - 0.005 (<0.05) - statistically significant.(FIGURE 9).Bar graph representing frequency distribution of association of gender and knowledge on exercise to boost immunity. 77 male participants and 38 female participants agreed that practice of regular exercises can boost the immune system. Males had good knowledge about the immune system There is no significant association of gender with knowledge on exercise to boost immunity. Pearson chi square test value- 3.942, P value - 0.047 (>0.05) - statistically not significant. (FIGURE 10).

The present study has observed the following results and responses on current topics. Several vitamins are essential for the proper functioning of the immune system[19]. A well balanced and varied diet is essential to minimize vitamin deficiencies, but one must be aware of excess consumption [20]. Exploring and analyzing origins of immunity reveals evolutionary and developmental ties to diet and nutrition, ancient connections in function and development[21]. Foods are capable of influencing immune function. Recently expanded knowledge of invertebrate immune mechanisms and their essential complex molecules offer an opportunity to utilize this information for designing therapeutic treatment. As an increasing number of diseases and health conditions lack a cure, modern biomedicine[22] is obliged to explore all potential options that promise patient care[23].

The recent discoveries and successful application of animal products and bioactive compounds reveal potential to impact modern medicine[24]. The study states that vitamin supplementation especially vitamin D may be beneficial in people who are either deficient or insufficient [25] [26]. However most of the studies reported adverse effects on vitamin E supplementation on the immune response. Similar to the current study, the percentage of healthy food consumption of their healthy study population is 60 % of the majority.

Furthermore , the present study has observed citrus fruits, green leafy vegetables and dry fruits improve immunity (Figure 5) and junk foods may affect the immune system (Figure 6)Similarly observed that the percentage of the vitamin supplementation or intake (Figure 7)Further the present study observed that about 87.1% do regular exercise to make their body active and fit and about 81.4% of participants responded that they are practicing regular exercises which increases the immune system .(FIGURE 9)The limitations of the present study are low sample size and it is a survey based study.

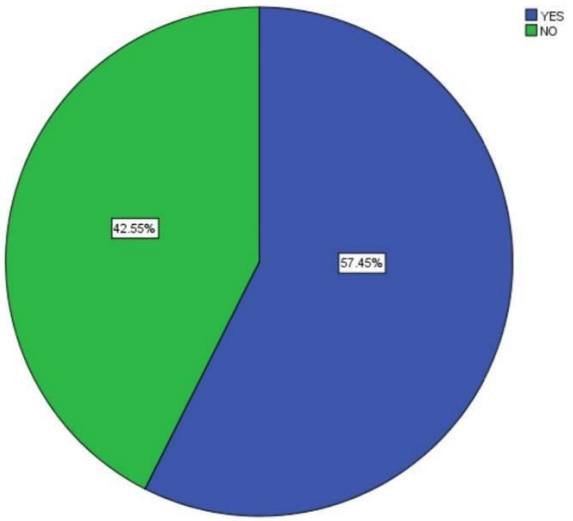

FIGURE 1: Pie chart representing percentage distribution of awareness on healthy food where blue colour denotes yes and green colour denotes no.57.45% were aware of healthy food that builds up the immune system, whereas 42.55% are unaware of it.

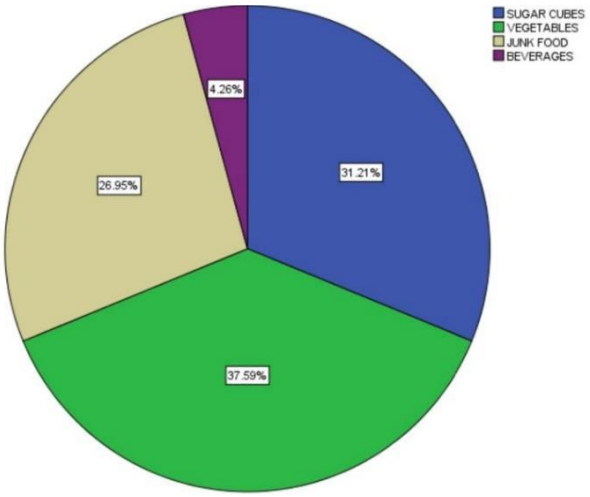

FIGURE 2: Pie chart representing percentage distribution of knowledge on foods which weakens the immune system where beige colour denotes junk foods , green colour denotes vegetables , blue colour denotes sugar cubes , violet colour denotes beverages . 26.95% of the participants feel junk food and ,31.21% feel that sugar cubes weaken the immune system.

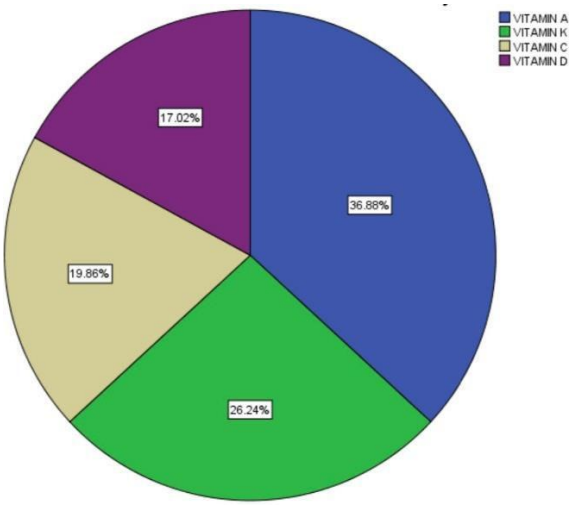

FIGURE 3: Pie chart representing percentage distribution of knowledge on best vitamin to boost immunity where blue denotes vitamin A , green denotes vitamin K, beige colour denotes vitamin C , violet colour denotes Vitamin D. 36.88% of participants prefer vitamin A, 26.24% prefer Vitamin K, 19.86% prefers vitamin C and 17.02% prefer Vitamin D to boost their immune system.

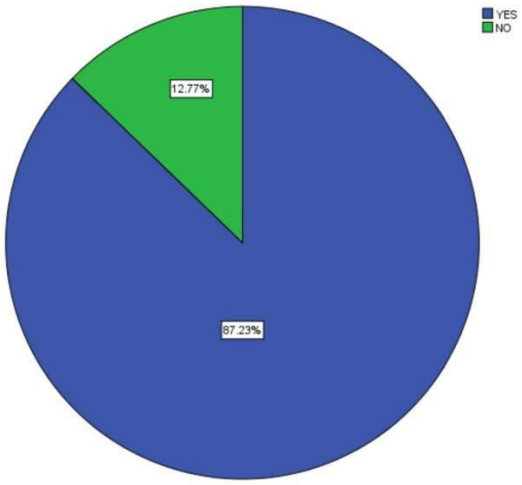

FIGURE 4: Pie chart representing percentage distribution of practice of regular exercises where blue denotes yes , green denotes No . 87.23% do regular exercise to make their body active and fit while remaining 12.77% feels not so .

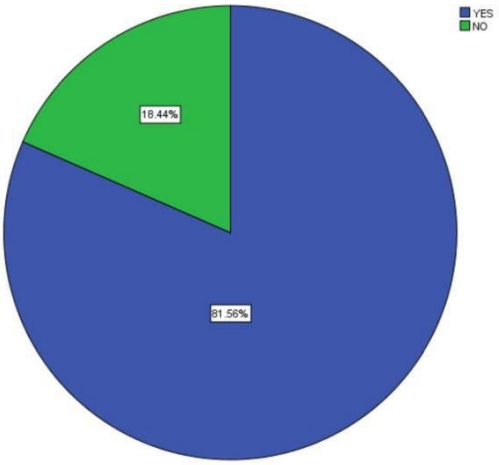

FIGURE 5: Pie chart representing percentage distribution of knowledge on exercise to boost immunity where blue denotes yes , green denotes No. 81.56% of participants responded that they are doing regular exercises increases the immune system .

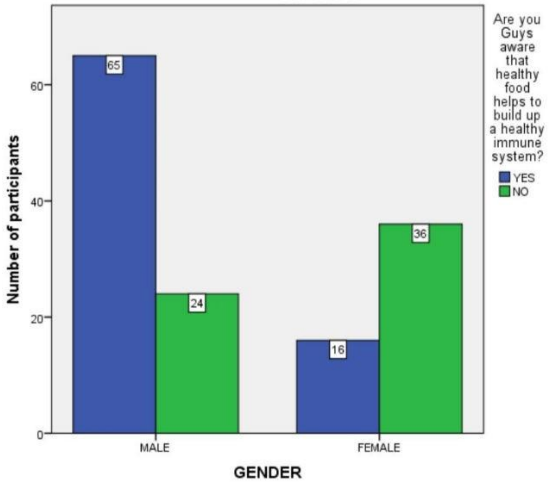

FIGURE 6: Bar graph representing association between awareness on healthy food and immune system.. X axis represents the gender and Y axis represents the number of participants responded. 65 males participants (blue) and 16 female participants (blue) were aware that healthy food helps to build up a healthy immune system. Males were much more aware than females. There is a significant association of gender with awareness on healthy food and the immune system. Pearson chi square test value- 23.984 , P value - 0.000 ($p<0.05$) - statistically significant.

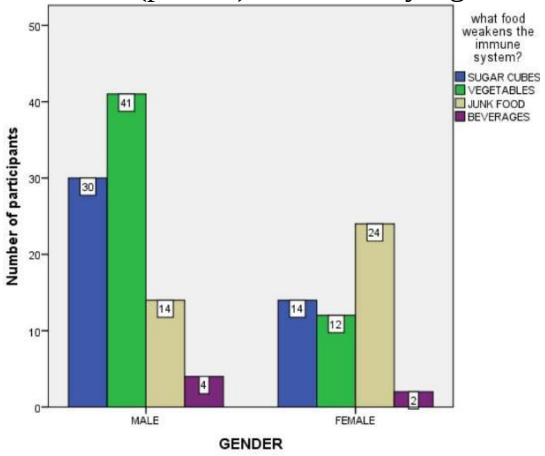

FIGURE 7: Bar graph representing frequency distribution of association of gender and knowledge on food which weakens the immune system.X axis represents the gender and Y axis represents the number of participants responded. 14 males participants (blue) and 24 female participants (blue) responded to junk food. Females had good knowledge on the type of food which weakened the immune system. There is a significant association of gender with knowledge on food which weakens the immune system. Pearson chi square test value- 16.405, P value - 0.001 ($p<0.05$) - statistically significant.

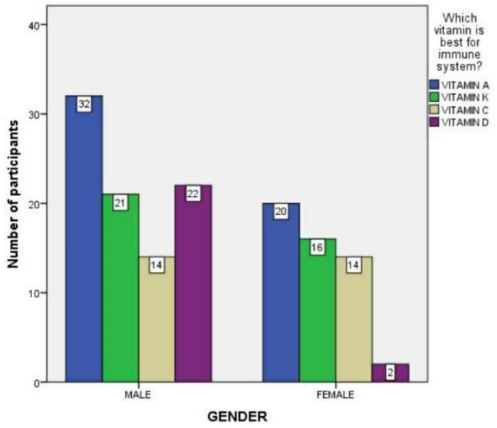

FIGURE 8: Bar graph representing frequency distribution of association of gender and knowledge on vitamin which are best for the immune system .X axis represents the gender and Y axis represents the number of participants responded. 32 male participants (blue) and 20 female participants (blue) responded to vitamin A. Males had good knowledge on vitamins which is best for the immune system. There is no significant association of gender with knowledge on vitamins which are best for the immune system. Pearson chi square test value- 11.172, P value - 0.011 (p>0.05) - hence not Statistically significant.

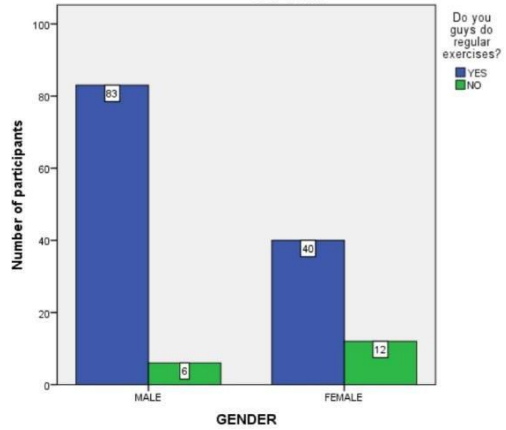

FIGURE 9: Bar graph representing frequency distribution of association of gender and practice of regular exercises. X axis represents the gender and Y axis represents the number of participants responded. 83 males participants (blue) and 40 female participants (blue) practice exercise regularly. Males had better practice of exercises than females. There is a significant association of gender with practice of regular exercises. Pearson chi square test value- 7.865, P value - 0.005 (p<0.05) - statistically significant.

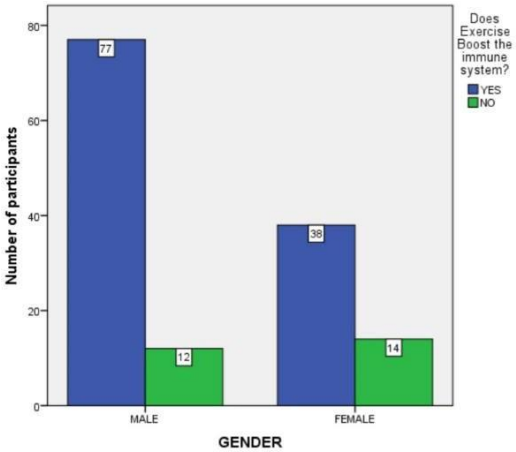

FIGURE 10: Bar graph representing frequency distribution of association of gender and knowledge on exercise to boost immunity. X axis represents the gender and Y axis represents the number of participants responded. 77 male participants (blue) and 38 female participants (blue) agreed that practice of regular exercises can boost the immune system. Males had good knowledge about the immune system There is no significant association of gender with knowledge on exercise to boost immunity. Pearson chi square test value- 3.942, P value - 0.047 (p>0.05) - hence not statistically significant.

4. CONCLUSION:

Food plays a major role in boosting immunity. The nutrients in food enable the cells in our bodies to perform their necessary functions. A strong immune system helps to keep a person healthy. In the present study, the majority of the participants were aware that food is important to boost the immune system. For further augmentation, awareness should be created about the importance of food that boosts immunity and presented to the public.

5. CONFLICT OF INTEREST:

The authors declare no conflict of interest

6. ACKNOWLEDGEMENT:

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