

Impact of Low Calorie Diet on Health

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ABSTRACT: *With the aim to determine the impact of dieting on the long term health of an individual, a study was conducted. The study involved candidates of various age group like kids, adolescence, young adults, adults, young senior citizens, old age group. The candidates for the study belonging to various age group were selected from the clinic of a dietician. With the change in lifestyle and eating pattern, obesity is seen in almost all age group of people. To overcome the problem of obesity, various diets are followed. The diet plans include different type of food to reduce the weight of the person following the diet. Diet plan mainly includes reducing the quantity/calorie or limiting the consumption of a particular type of food. During following a particular diet plan body gets deprived from essential nutrients. Thus results in health ailments in the person following the diet plan. Current study focuses on finding the impact of following the diet plan on the health of people. Thus, opens future prospects to conduct more research on health effects after following various diets.*

KEYWORDS: *Body, Calorie, Diet, Weakness, Weight loss.*

1. INTRODUCTION

A very low calorie diet is a proper medical eating regimen that entails consuming less than 800 calories per day. Obese and very obese patients who are controlling diabetes, undergoing surgery, or preparing for reproductive therapy may benefit from them. Low-calorie smoothies, soups, bars, or milk porridge are commonly substituted for regular food in this diet. Men should consume 2,500 calories per day and women should consume 2,000 calories per day. It is a difficult diet to stick to. The following are examples of possible side effects.

1. Hunger pangs,
2. Low energy,
3. A dry mouth,
4. Constipation,
4. Diarrhoea,
5. Headaches,
6. Dizziness,
7. Scramps
8. Thinning hair

While very low calorie diets can provide weight loss in the short term, the weight will most likely return after the diet is over. Various side effects of consuming low calorie diet are known, but the impact of consuming low calorie diet while performing dieting is not known. The current study put light on the impact of consuming low calorie diet on the health of various age group of people. Few low calorie food include.

1.1 Yogurt:

Greek yoghurt is high in protein and has been linked to weight loss. It is high in probiotics, which are essential for a healthy gut. The best part is that it's an all-day food: add it to your morning smoothie, eat it as a side dish for lunch, top it with almonds for a tasty evening snack, or combine it with chopped fruits for dessert. Greek yoghurt, in particular, has more protein than regular yoghurt[1].

1.2 Egg:

A single egg eaten for breakfast has been shown to reduce your appetite for the rest of the day because it is high in protein, fibre, healthy fats, and other nutrients. Starting your day with eggs helps ensure that you stay fuller for longer and consume less food throughout the day, especially processed food. You can have them boiled, poached, scrambled, fried, or sunny side up[2].

1.3 Apples:

Everything you've heard about the humble apple is true: it keeps the doctor (or dietician, as the case may be) away. If you've ever tried this crunchy, juicy fruit as a morning dish or an afternoon snack, you'll agree that it's quite full. Apples are high in fibre, contain a lot of water, and have a low sugar content - everything you want in a low-calorie food [3].

1.4 Oats:

A healthy day begins with a bowl of fibre oats, low-fat milk, or Greek yoghurt, and berries. Oats are high in fibre and protein and can easily keep you full for several hours. Sure, they have a bland flavour, but that opens them up to experimentation and makes them compatible with a wide range of dishes, particularly fruits. If you want, you may eat them straight or toast them and sprinkle them on top of your smoothie.

1.5 Watermelon:

A watermelon is mostly water, so a few cubes on a hot afternoon can keep you hydrated and satisfied. The high water content of these melons rapidly fills the stomach, and the fact that they taste so good also helps! Prepare a dish of cubed watermelon with a few mint leaves and a spritz of lemon to brighten up a dreary afternoon and fill an empty stomach.

1.6 Popcorn:

Air-popped, unflavoured popcorn is a low-calorie evening snack that can be shared with friends and family. Because it's high in fibre, it keeps you fuller for longer, as well as lowering blood sugar levels, reducing appetite, and making you feel more satisfied after you eat. Stick to the unprocessed variety; pop your own corn kernels at home and season with herbs and seasonings such as oregano and pink salt [4].

1.7 Cucumber:

The cucumber, like the watermelon, benefits from its high water content. This hydrating green vegetable is light and filling, and it will keep you satisfied for several hours. For a finger-licking snack, replace your chips with chilled cucumber slices dusted with chat masala or spices. You can eat an entire cucumber in one sitting and feel completely guilt-free[5].

1.8 Cottage Cheese:

The sour white cubes we adore, whether buried in rich gravy or roasted over an open flame, are actually a very healthy dish. Cottage cheese, like eggs, is a high-protein food that is frequently advised for vegetarians, young adults, and pregnant women looking to increase their protein intake. A few cubes of paneer can keep you full for a long time. It's one of the healthiest cheeses you can consume, so instead of using fat-laden spreads and dips, crumble some over salads and in sandwiches for a filling lunch [6]. Variety of diets followed by people include.

1. Paleo-diet[7]
2. Keto-diet[8]
3. Vegan-diet[8]
4. Dunken-diet[9]
5. Atkins-diet[8]
6. Ultra-low-fat-diet[9]
7. Zone-diet[10]
8. Human-chorionic-gonadotropin-diet
9. Intermittent-fasting[4]

2. LITERATURE REVIEW

Behrens, Paul et al. conducted a study on the impact of sensitive ingredients present in food that affects health and finding a solution to replace the ingredients. Ingredients that are sensitive on the health like sugar, fat, and sodium. Consumption of such ingredients can be replaced with other ingredients that are sensitive to sensor cell. Adding substance which increases the response of sensor cell is also suggested. Aiding the release of nutrients from food in order to increase the diffusion and transport of nutrients to the sensor cells is suggested. The research suggests the use of alternative ingredients instead of consuming ingredients that are sensitive on health[11]. N. Cummings et al. conducted a study on the link of fats and the risk of cancer and type-2-diabetes in patients. The study suggests that there is a strong connection between obesity and the occurrence of various types of cancers. The relation of occurrence of cancer is seen with intake of meat specifically red meat, whereas, less evidence were seen which showed relation of fat intake with occurrence of cancer. Thus study recommends that by reducing the intake of red meat the risk of occurrence of cancer can be reduced. Also evidences were seen that suggested that high intake of processed meat increased the chances of colorectal and prostate cancer[12]. G. Merra et al conducted a study and suggested that consumption of flaxseed-gum reduces the weight of body, triglycerides present in blood, fat present in body. Thus microbiota of gut is regulated by alteration of some particular bacteria. The altered bacteria play vital role in degradation of flaxseed-gum. Thus consumption of flaxseed-gum is associated with reduced weight[13].

As per cited literature the studies were conducted to analyse the risk of health caused due to intake of health sensitive food. Studies suggests that replacing health sensitive ingredients with alternative ingredients prevents the body from health risks. Studies also suggests that high intake of red meat is associated with high risk of prostate and colorectal cancer. The current study analyses the impact of dieting and consuming less fat on the weight of a person.

Research Question:

What is the long term effect of dieting?

3. DISCUSSION

All the candidates had consulted the dietician and a followed the diet plan provided by the dietician. As per the records of the dietician all the candidates had lose around 5 to 20 kg weight during the time when they followed the diet. Thus to analyse the after effect of following a diet plan, a telephonic contact with all the candidates was made. All the candidates who showed interest in participating in the study were considered for the survey. On recalling the diet chart followed by all the candidates, the dietician said that all the candidates were provided with a diet chart having 23 Kilo calories/day/kg of body weight. All the candidates were asked to follow the suggested diet chart for a period of 3 months and at the end of three months' weight of all the candidates was recorded. As a part of the study the weight of all the candidates before following the suggested diet plan was stored in a computer based program and the final reduced weight is also stored in the computer based program. The final output regarding the total weight loss is provided by the computer program. A total number of 50 kids were selected for the study, all the kids were divided in 5 different groups of 10 kids each. In Group 1, an average of 14.5% kids lose weight. In Group 2, an average of 19.3% kids lose weight. In Group 3, an average of 21.7% kids lose weight. In Group 4, an average of 24.1% kids lose weight. In Group 5, an average of 20.5% kids lose weight. Figure 1 show the average weight loss of various kids.

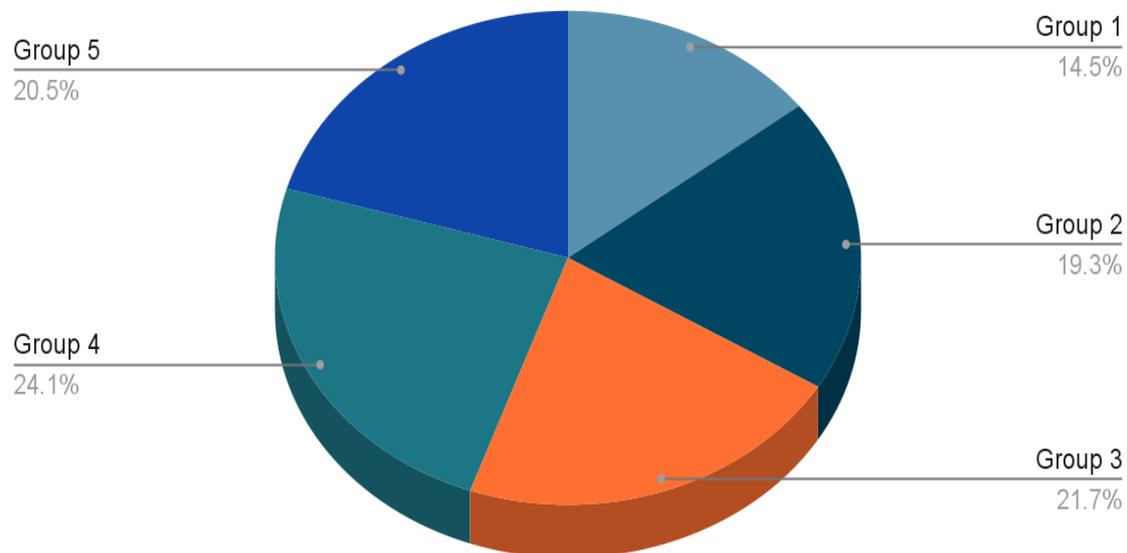


Figure 1: Show the average weight loss of various Kids

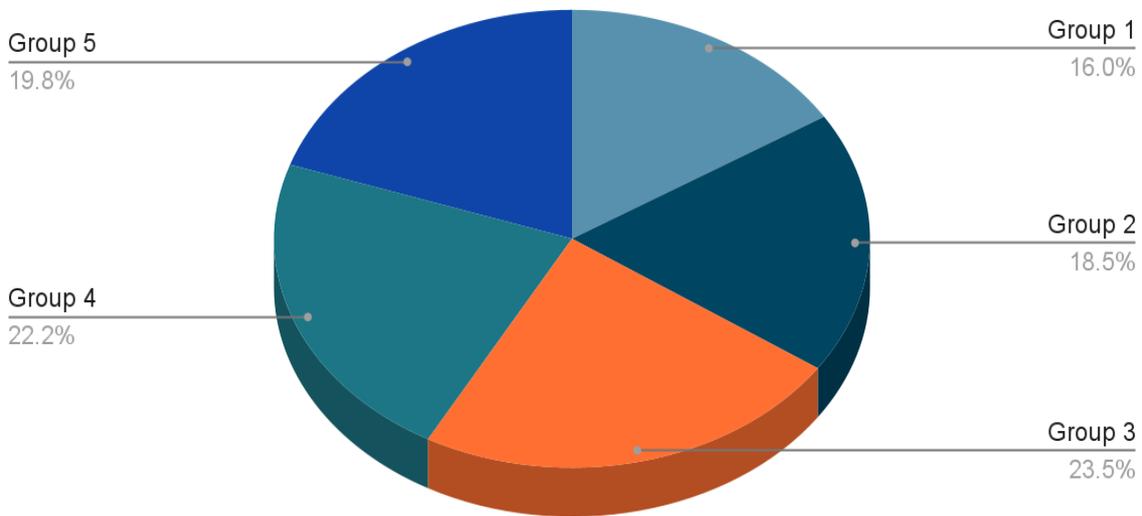


Figure 2: Show the average of weight reduced by various adolescents

A total number of 50 adolescents were selected for the study, all the adolescents were divided in 5 different groups of 10 adolescents each. In Group 1, an average of 16.0% adolescents lose weight. In Group 2, an average of 18.5% adolescents lose weight. In Group 3, an average of 23.5% adolescents lose weight. In Group 4, an average of 22.2% adolescents lose weight. In Group 5, an average of 19.8% adolescents lose weight. Figure 2 show the average weight loss of various adolescents. A total number of 50 adults were selected for the study, all the adults were divided in 5 different groups of 10 adults each. In Group 1, an average of 17.6% adults lose weight. In Group 2, an average of 20.6% adults lose weight. In Group 3, an average of 22.1% adults lose weight. In Group 4, an average of 20.6% adults lose weight. In Group 5, an average of 19.1% adults lose weight. Figure 3 show the average weight loss of various adults.

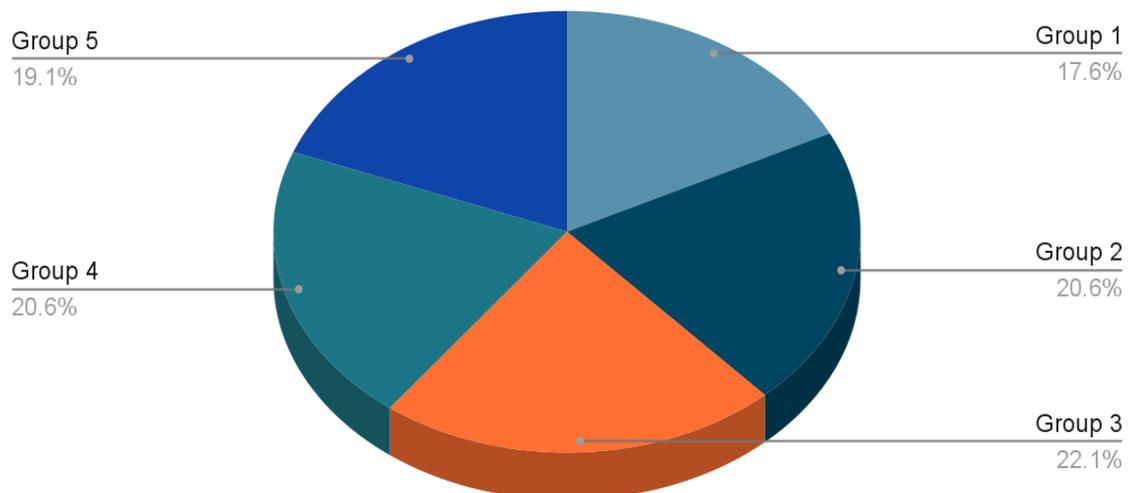


Figure 3: Show chart of weight loss of adults.

A total number of 50 senior citizens were selected for the study, all the senior citizens were divided in 5 different groups of 10 senior citizens each. In Group 1, an average of 20.5% senior citizens lose weight. In Group 2, an average of 17.9% senior citizens lose weight. In Group 3,

an average of 23.1% senior citizens lose weight. In Group 4, an average of 20.5% senior citizens lose weight. In Group 5, an average of 17.9% senior citizens lose weight. Figure 4 show the average weight loss of various senior citizens.

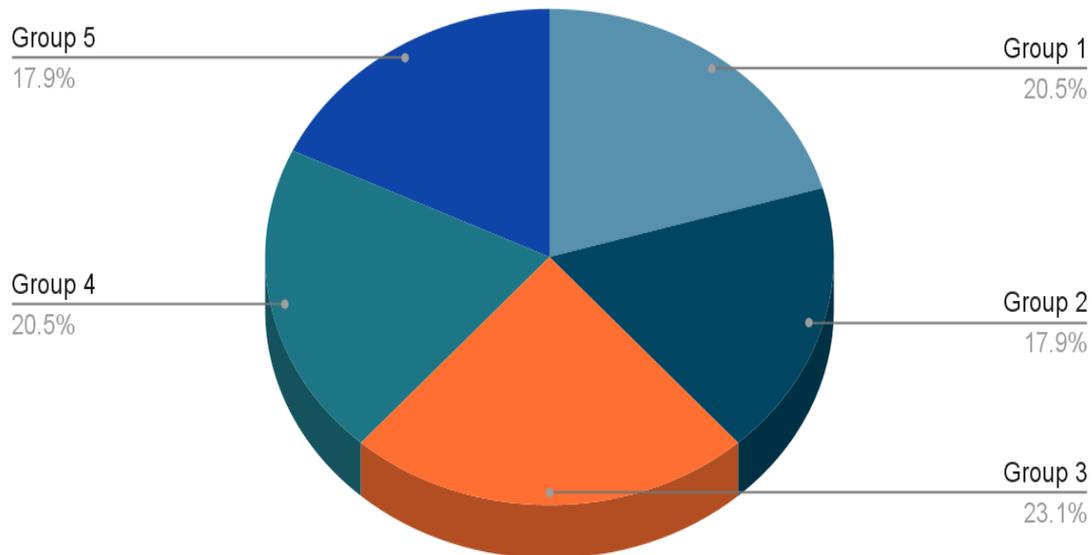


Figure 4: Chart show weight loss in young senior citizens

On further follow-up with all the survey candidates it was observed that a majority of candidates showed significant increase in weight within 30 to 60 days after completing the diet plan. It was also observed that all the candidates faced some kind of medical ailment during the course of following suggested diet chart. Table 1 shows the health ailment faced by candidates due to dieting. Among kids 26 kids felt weakness, 14 kids felt shortness of breath, 10 kids faced low/high blood pressure. 21 young adults showed weakness, 3 young adults showed shortness of breath, 12 young adults showed polycystic ovarian disease, 14 young adults showed low/high blood pressure. 15 adults showed weakness/body ache, 5 adults showed shortness of breath, 5 adults showed polycystic ovarian disease, 25 adults showed low/high blood pressure. 15 senior citizens felt weakness/body ache, 15 senior citizens showed shortness of breath, 20 senior citizens showed low/high blood pressure

Table 1: Shows the health ailment faced by candidates due to dieting

	Weakness/body ache	Shortness of breath	Polycystic Ovarian Disease	Low/High blood pressure
Kids	26	14	-	10
Young Adults	21	3	12	14
Adults	15	5	5	25

Senior Citizens	15	15	-	20
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4. CONCLUSION

With the changing eating and lifestyle pattern, obesity is widely seen across the globe. To reduce weight, various types of diet patterns are followed. Out of many diet patterns, low calorie diet is the most commonly followed diet. People of all age group follow low calorie diet to reduce weight. As a result of consuming low calorie diet for a significant period of time, body receives reduced quantity of nutrients required for growth and maintenance of body. This reduced consumption of essential nutrients puts the body in weakness. Body receiving less quantity of required nutrients and performing all the daily chores for a long duration of time becomes weak. Due to reduced consumption of essential nutrients person feels many health ailments including weakness/body ache, shortness of breath, polycystic ovarian disease, and low/high blood pressure. The study conducted included analysis of patients belonging to various age group who followed low calorie diet plan to reduce weight. The result of the study shows that all the patients who followed diet plan faced medical ailments. Thus current study opens future prospects to conduct more research on health effects after following various diets.

REFERENCES

- [1] J. M. Nielsen, E. L. Clare, B. Hayden, M. T. Brett, and P. Kratina, "Diet tracing in ecology: Method comparison and selection," *Methods in Ecology and Evolution*. 2018, doi: 10.1111/2041-210X.12869.
- [2] S. H. Bae, "Diets for constipation," *Pediatric Gastroenterology, Hepatology and Nutrition*. 2014, doi: 10.5223/pghn.2014.17.4.203.
- [3] F. L. Nassan, J. E. Chavarro, and C. Tanrikut, "Diet and men's fertility: does diet affect sperm quality?," *Fertility and Sterility*. 2018, doi: 10.1016/j.fertnstert.2018.05.025.
- [4] S. Dernini *et al.*, "Med Diet 4.0: The Mediterranean diet with four sustainable benefits," *Public Health Nutrition*. 2017, doi: 10.1017/S1368980016003177.
- [5] S. Kalra, R. Singla, R. Rosha, M. Dhawan, D. Khandelwal, and B. Kalra, "The ketogenic diet," *US Endocrinology*. 2018, doi: 10.17925/USE.2018.14.2.62.
- [6] A. Paoli, "Ketogenic diet for obesity: Friend or foe?," *International Journal of Environmental Research and Public Health*. 2014, doi: 10.3390/ijerph110202092.
- [7] R. J. Widmer, A. J. Flammer, L. O. Lerman, and A. Lerman, "The Mediterranean diet, its components, and cardiovascular disease," *American Journal of Medicine*. 2015, doi: 10.1016/j.amjmed.2014.10.014.
- [8] R. K. Singh *et al.*, "Influence of diet on the gut microbiome and implications for human health," *Journal of Translational Medicine*. 2017, doi: 10.1186/s12967-017-1175-y.
- [9] M. Perignon, F. Vieux, L. G. Soler, G. Masset, and N. Darmon, "Improving diet sustainability through evolution of food choices: Review of epidemiological studies on the environmental impact of diets," *Nutr. Rev.*, 2017, doi: 10.1093/nutrit/nuw043.
- [10] K. Knight-Sepulveda, S. Kais, R. Santaolalla, and M. T. Abreu, "Diet and inflammatory bowel disease," *Gastroenterology and Hepatology*. 2015.
- [11] P. Behrens, J. C. Kieft-De Jong, T. Bosker, J. F. D. Rodrigues, A. De Koning, and A. Tukker, "Evaluating the environmental impacts of dietary recommendations," *Proc. Natl. Acad. Sci. U. S. A.*, 2017, doi: 10.1073/pnas.1711889114.
- [12] N. E. Cummings *et al.*, "Restoration of metabolic health by decreased consumption of branched-chain amino acids," *J. Physiol.*, 2018, doi: 10.1113/JP275075.

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- [13] G. Merra *et al.*, “Very-low-calorie ketogenic diet with aminoacid supplement versus very low restricted-calorie diet for preserving muscle mass during weight loss: a pilot double-blind study,” *Eur. Rev. Med. Pharmacol. Sci.*, 2016.