

# Lifestyle and Health Aspects of Raw Food Eaters

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## Abstract

**A**mong a number of alternative dietary regimens, raw food diets are interesting and increasingly popular in western countries. A high proportion of raw foods in the diet is the general concept, while raw food eaters follow different raw food dietary recommendations. The subjects are composed of 230 male and 342 female raw food eaters between the ages of 25-74 years, having maintained raw food diets for 2.3 years on average. Health habits were investigated by means of a detailed questionnaire and food frequency questionnaire, which were used to estimate food intake and food habits of the subjects. The raw food eaters in this study had high awareness concerning health. Most of them refused smoking, alcohol and frequently exercise. Findings indicated that 29.5% of male and 24.9% of female raw food eaters were underweight according to their body mass indices (BMI). Underweight was more pronounced in the raw food eaters with a higher proportion of raw food intake. An obvious relationship between the proportion of raw food consumed and menstrual situation was observed. Most raw food eaters consumed vegetarian diets. The average amount of fruit and vegetables consumed by the study cohort was 1,836 g/d. The most favored fluids among raw food eaters were water, mineral water, fruit juices and herbal tea. Some raw food eaters did not drink at all (3.0%) and 31.6% drank less than 500 ml/d. Raw food diets contain a lot of vitamins and minerals as well as phytochemicals, but the strict vegan group with high proportion of raw food diets may pose nutritional problems. Anti-nutrients and toxic substances in some raw foods should be correspondingly considered. Moreover, food safety is another point for concern in the consumption of raw food diets due to possible contamination by parasites, bacteria and soil-transmitted pathogens.

**Keywords:** raw food diets, raw food eaters, vegetarian, vegan

## Introduction

Health and long life are the primary goals of the raw food diets, as well as remedies and prophylactics. Raw food diets are an alternative food regimen, the general idea of which is to refuse cooked foods because of their being denatured and worthless. Fresh, raw and unprocessed food is the natural food for man in the raw food eater's opinion.

The concept of eating raw food diets

developed for many reasons. Max Bircher-Benner (1867-1939), a Swiss medical doctor, treated patients successfully with raw food diets in his private clinic [1]. From his own experience, Are Waerland (1876-1955) found that lacto-vegetarian diets, mainly raw foods, were effective treatments of his illness [2]. "Natural Hygiene" began in 1822 by a group of American physicians who believed in natural treatment in traditional medicine. The medical doctor Herbert Shelton

(USA, 1895-1985) followed this concept and became well known as the Father of Natural Hygiene [3]. Raw food diets, as recommended by Helmut Wandmaker (1991), a German businessman, focus on fresh fruits [4]. Raw meat was included in the “Instinct Therapy” developed by Guy-Claude Burger (1990), a French cellist [5]. A American bestseller book “Fit For Life” was written by Harvey and Marilyn Diamond (1986), following the concept of Natural Hygiene [6]. Most of the books that have been written have recommended raw food diets without scientific evidence. Raw food diets are not homogeneous food regimens. These have been classified into different groups of raw food diets due to various recommendations [7] (Fig 1).

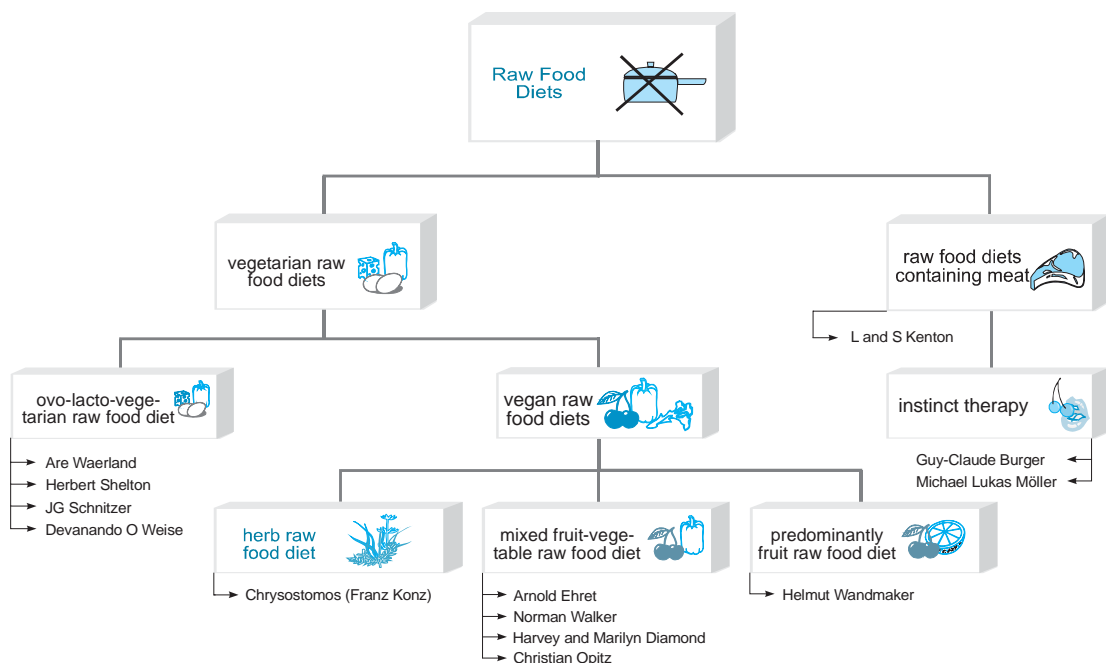
At present, raw food diets are increasingly popular in western countries, including Germany. This group of people follows different raw food diet recommendations. The effects of practicing raw food diets long-term are not known. There is also no scientific information on treatments with these alternative dietary regimens. This investigation is part of the

Giessen raw food study, which was designed to elucidate the lifestyles, food habits and behaviors as well as health aspects of the group of people whose diets are comprised mostly of raw food.

### Materials and methods

A total of 572 raw food eaters (230 males and 342 females) were recruited by announcement in 9 different nationwide magazines, appropriate lectures, health congresses and self-help associations. The criteria for selecting the study group were a minimum quantity of 70% raw food in the diet and having practiced for at least 4 months continually; the lowest age of the participants was 16 years.

All the studied group was asked to complete the questionnaires, which were designed to include biographical data, information on eating patterns, foods and sources of foods, health behavior, the use of medications and health supplements, socioeconomic information and physical activity. The food frequency questionnaires were developed in order to estimate the food intake and calculate the raw



**Fig 1 The different raw food diets.**

food proportion in this studied collective. The data were analyzed by the statistical program SPSS for Windows 6.3.

**Results**

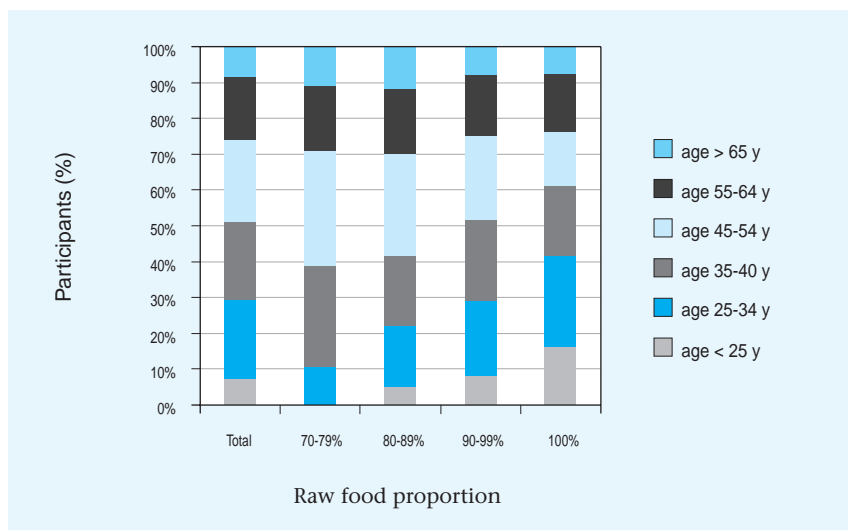
The mean age of the participants was 44 years ( $44 \pm 14.1$ ) and they averaged 2.3 years ( $2.3 \pm 6.1$ ) of adhering to raw food diets. Most of them were in the age range 45-54 years. The quantity of raw food consumed was age-dependent, there were negative correlation with high significance ( $p = 0.002$ ). The older age group eating the smaller amount of raw food (Fig 2).

The educational status of the participants was higher than that of the average German population. Therefore, with their higher level profession, their incomes were correspondingly rather high as well [8-10]. From the findings it appeared that the majority of these raw food eaters followed the recommendations of Helmut Wandmaker (27.3%) and Guy-Claude Burger (19.1%), whereas the rest preferred the different raw food models from Diamond and other authors. A proportion of them gave no answer (16.9%). Obviously, most of the studied group practiced raw food diets because of their belief that they were healthy (62.5%); other reasons were ethics, beauty, taste, ecology and social factors. However, this agreed with the answer that their own sickness was the reason of diet

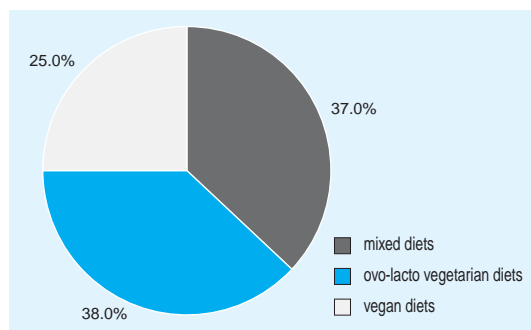
change (54.9%).

It was noted that the members of the study group had high awareness concerning health, a small number smoked (2.1%), most refused alcohol (98.0%) and some drank only a small amount (20 ml/d). They went for relaxation exercise frequently. Almost half of them visited for a sauna and 20% practiced yoga regularly. Most of them did not use any supplements or medicines to complete their diets (67.0%), whereas a few took some vitamins and minerals. The supplements that they often used were preserved algae such as spirulina (7.9%), while 25.1% took various other supplements and medicines. Only two out of the 342 female raw food eaters took oral contraceptives. This corresponded to only 0.6%, much lower than the general German female population (37.0%) from a survey in 1985 [11], and the studied group adhering to wholesome nutrition (8.6%) [12]. Fasting and flushing the gut are recommended by various authors to purify the body. Almost half of the participants (49.3%) fasted many times a year. The popular fasting methods were total fasting and fasting with juice. Not many raw food eaters regularly applied enemas (16.1%).

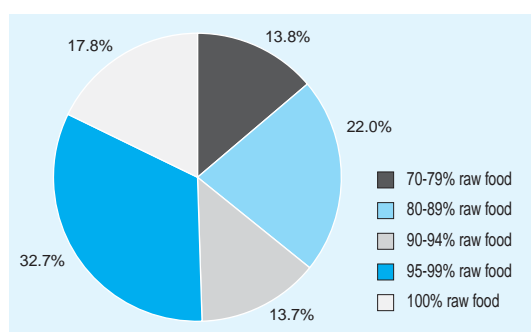
The general consensus among the raw food eaters is that food must be in a natural form or not heated above 40° C. The types of raw food eaters in this study showed that most consumed



**Fig 2 Distribution of age and raw food proportion eaten by participants.**



**Fig 3 Percentage of raw food eaters classified in various forms of raw food diets.**



**Fig 4 Percentage of raw food eaters consuming different raw food proportions.**

vegetarian diets, 38.1% ovo-lacto vegetarian and 24.5% vegan (Fig 3). The proportion of raw food consumption is shown in Fig 4. Most of the studied group consumed 95-99% raw food diets, whereas the frequency of the others resemble distribution into different raw food diet proportions.

This accords with the expectation that the fruit and vegetable consumption by the studied members was relatively high, 1,836 g/d, in which the ratio of fruits to vegetables was 2:1. Compared with the German population and the group adhering to wholesome nutrition, fruit and vegetable consumption as well as consumption of nuts and seeds by raw food eaters was greater, whereas consumption of breads and bakery products, milk and dairy products, potatoes, cereals, animal foods, sugar, and desserts was lower [12-13] (Table 1). The average amount of animal food consumed was 22.1 g/d, which included 3.3 g/d raw egg, 0.3 g/d raw meat, and 3.6 g/d raw fish. Alcohol, coffee and black tea were not counted in the raw food diets by 89% participants and 36.4% refused milk and dairy products. Special attention was paid to the quality of the food by raw food dieter. Burger (1993) recommended that quality raw food diets should comprise foods from special

**Table 1 Average food consumed (g/d) by the raw food eaters compared with the average German population and the group adhering to wholesome nutrition.**

Food consumed	Raw food eaters	German population	Wholesome nutrition
Breads and bakery products	25.6	-	183.0
Milk and dairy products	41.2	236.2	228.0
Fruits and vegetables	1,836.2	221.3	589.0
Potatoes	18.5	104	-
Cereals and cereal products	22.2	248	-
Animal foods and products	22.1	164.4	26.0
Sugar and honey	6.5	-	11.0
Desserts	6.2	-	11.0
Nuts and seeds	40.7	1.7	-

cultivation or farming, including tropical fruits. The food source of 6% of raw food eaters followed Burger [14]. However, 20% of raw food eaters bought their fruits, vegetables and cereals from conventional cultivation.

The studied group drank on average 870 ml/d. There were few raw food eaters who did not drink at all (3.0%) and 31.6% drank less than 500 ml/d (Fig 5). Water and mineral water (597 ± 632 ml/d), fruit juices (152 ± 322 ml/d) and

herbal teas (116 ± 260 ml/d) were the most favored liquids among them, considering that very few drank alcohol (20 ± 107 ml/d). Some raw food eaters (20.2%) preferred distilled water.

Table 2 illustrates the weight distribution of the studied group. The average BMI of male raw food eaters was 20.7 (20.7 ± 2.2) and for females it was 20.1 (20.1 ± 2.8), below the national average; their BMI was distributed in a narrow range, and 2.2% of males and 3.6% of

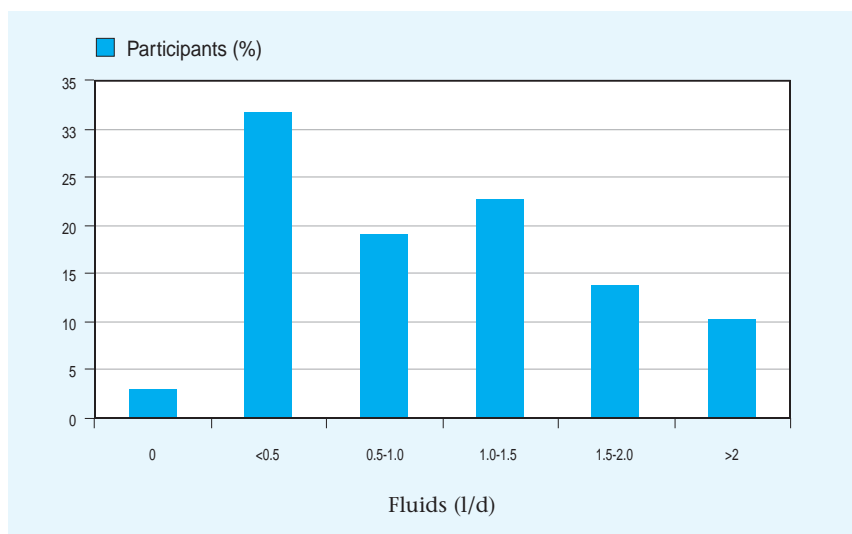


Fig 5 Quantity of fluids intake by raw food eaters (l/d).

Table 2 Distribution of relative body weight in both male and female raw food eaters compared with the average German population.

Classification	BMI			
	Raw food eaters		German population	
	male	female	male	female
underweight*	29.5	24.9	3.8	5.6
normal**	68.3	70.3	43.7	46.5
overweight***	2.2	3.6	41.9	36.3
obese****	0.0	1.2	10.6	11.6
total	100.0	100.0	100.0	100.0

\* underweight BMI for male < 20; female < 19  
 \*\* normal BMI for male = 20-25; female = 19-24  
 \*\*\* overweight BMI for male = 25-30; female = 24-30  
 \*\*\*\* obese BMI for male > 30; female > 30

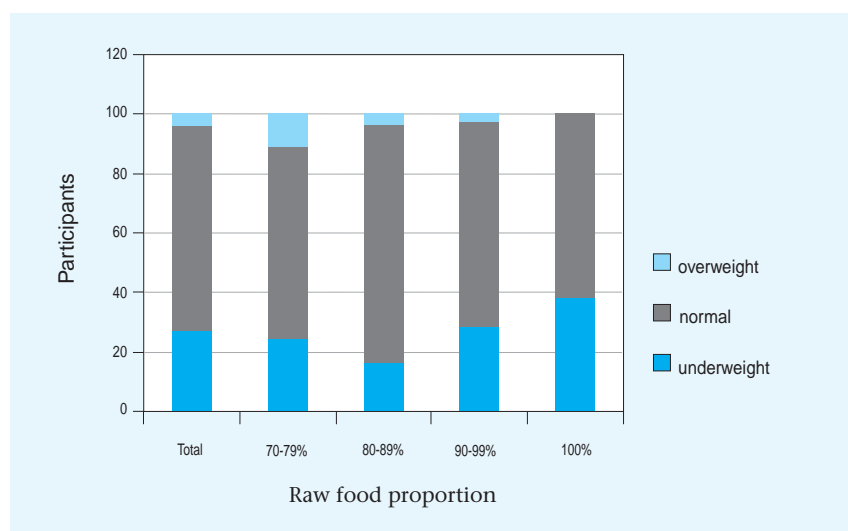
females were overweight. Only female raw food eaters showed 1.2% obesity. In contrast with German populations, the incidences of overweight and obesity in raw food eaters were lower and underweight was higher [15]. There were 29.5% male and 24.9% female raw food eaters underweight. Most of the participants BMI lay in the normal range (68.3% male, 70.3% female). As is shown in Fig 6, underweight was more common in the raw food eaters with a higher raw food proportion. The correlation of these parameters was statistically highly significant ( $p = 0.0002$ ). Weight change since adherence to raw food diets was 72.0%. The male raw food eaters lost 8 kg on average, and the females lost 6 kg.

It was remarkable that most premenopausal female raw food eaters (70%) found that their menstruation cycle changed after starting to practice the raw food diet. An obvious relationship between the proportion of raw food consumed and menstrual situation was observed (Fig 7). The pure raw food diet class indicated a great number of women whose menses were absent or rare and the moderate class were shown to occur seldom. It is interesting to find that the average BMI of the female raw food eaters with menstrual disturbance was lower

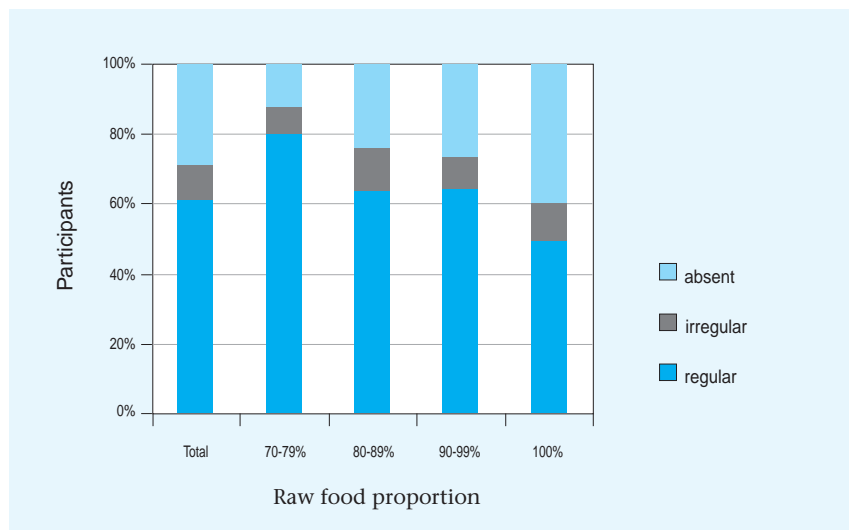
than those with regular menses.

## Discussion

The raw food eaters in this study is a heterogeneous group, in which vegetarians predominate. Some are of a mixed group, who consume only a small amount of animal food. The strict vegan group, with a high proportion of raw food in the diet, may pose nutritional deficiencies. Raw food diets are characterized by foods with high quantities of starch, fiber and low fat. Fruits and vegetables are practically the exclusive nourishing food and the tendency rises with an increase of the raw food proportion. In spite of the fact that raw food diets contain a lot of vitamins and minerals as well as phytochemicals, this type of food cannot provide sufficient essential fatty acid and fat-soluble vitamins. Considering the adverse effects of raw foods, anti-nutrients and toxic substances in uncooked food are another risk factor. Raw egg-white contains avidin, which forms a complex with biotin, and therefore this vitamin cannot be absorbed. Goitrogen is found in some raw vegetables i.e. cabbage, kale and some herbs, solanin in green potatoes and protease inhibitor in different kinds of bean and nut i.e. soy bean, peanut [16].



**Fig 6 Relation between nutritional status and percentage of raw food eaters.**



**Fig 7 Relationship between disappearance of menstruation and proportion of raw food in premenopausal female raw food eaters.**

The great loss of body weight in most participants is evidence of the deficit of energy sustenance [17-19]. Irregular menstruation is obviously seen in the women who consume a high proportion of raw food diets. This is a compensatory mechanism to reduce loss since there is an inadequate supply from food [20-23]. The Deutsche Gesellschaft für Ernährung (DGE, 1992) recommends the drinking of 1-2 l of water daily [24]. More than half of the raw food eaters cannot keep going this direction. Some of those who did not drink at all gave the reason that fruits and vegetables provide them with sufficient water. Further study is needed to assess the water intake by calculation from the water content in raw food diets.

Food safety is another substantial subject concerning the consumption of raw food diets. The importance of food-borne infections exists in many regions of the world. Although control efforts have been exerted for quite some time, overall progress has not been satisfactory, even in many well-developed countries. Those who ingest raw meat, pork or other animal foods should be aware of the potential for infection with toxoplasmosis, cysticercosis and

trichinellosis. There can be a risk of salmonellosis from eating raw egg, whereas anisakiasis has been reported in raw fish such as herring [25]. Fresh fruits and vegetables can be contaminated with soil-transmitted pathogens, especially tropical fruits and vegetables [26-30].

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