

Food Consumption Habits in Germany—The Clinician's Point of View

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Findings of the Nationale Verzehrstudie and Verbundstudie, Ernährungserhebung und Risikofaktorenanalytik studies are discussed in light of their clinical significance. Obesity increases the statistical risk of developing a number of diseases, of which the most important are cardiovascular morbidity and mortality. Obesity causes insulin resistance and plays a part in the development of the metabolic syndrome. The Verbundstudie, Ernährungserhebung und Risikofaktorenanalytik survey shows that in the mid-1980s roughly one third of the German population was overweight. However, criteria for defining the overweight condition are variable. Overall data in Germany are comparable to those of several other population surveys, but regional increases are observed. Analysis of dietary intakes shows a marked deviation from recommended nutritional standards, especially in the distribution of total caloric intake as carbohydrate (42.8%) and fat (38.4%). Almost 9% of the population derived more than 20% of their energy intake from snacks. The data cannot provide a full explanation as to why people become fat. This may be due to the well-known problem of underrating and underreporting intakes, particularly by obese subjects.

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FOR THE CLINICIAN, obesity represents an important problem because it increases the statistical risk of developing a number of diseases (Table 1). This does not necessarily imply a causal relationship, and in some cases the pathophysiologic connection remains obscure. From an epidemiologic point of view, the most important association is with cardiovascular morbidity and mortality. Many studies have shown that obesity can be regarded as an independent risk factor; these have myocardial infarction or coronary death as end points and are based on extensive physical and laboratory examinations¹⁻⁵ or on investigations with the help of questionnaires in larger populations.^{6,7} Although in these studies the type of obesity, ie, the distribution of excess fat in an android or gynoid pattern, was not taken into account, we now know that in both sexes a high waist to hip ratio is associated with an increased risk of hypertension, diabetes, stroke, and death.^{8,9}

OBESITY AND INSULIN RESISTANCE

Obesity is associated with insulin resistance and diabetes, and the majority of patients with type 2 diabetes are overweight. Figure 1 depicts the (hypothetical) connection between obesity—especially the android form—and insulin resistance. A few years ago, Reaven revived the discussion on insulin resistance and the metabolic syndrome by proposing the attractive hypothesis that insulin resistance is the common denominator for a syndrome of glucose intolerance, hypertension, hyperlipidemia, and atherosclerosis that also involves obesity¹¹ (Fig 2). This syndrome could be of major epidemiologic significance, and current activities focus on early detection and prevention. There is little doubt that the general nutritional habits of a population play an important role in eliciting the metabolic syndrome.

NUTRITION AND OBESITY IN WEST GERMANY

During the five decades after World War II, the nutritional situation in West Germany underwent considerable

Table 1. Obesity as a Risk Factor for Other Diseases

Cardiovascular diseases
Hypertension
Pulmonary disorders
Gallbladder disease
Diabetes mellitus
Degenerative joint diseases
Certain forms of cancer

changes that from the medical point of view were far from desirable. Product consumption statistics have shown an increase in general energy intake and fat, cholesterol, and alcohol intake, together with an enhanced intake of monosaccharides and disaccharides and a decrease in dietary fiber.¹²

In 1980, approximately one third of the health budget and one fifth of the indirect costs due to production losses, invalidism, and premature death were ascribed to nutrition-derived disorders, for a total estimate of 42 billion marks.¹³ After reunification of East and West Germany and owing to a general increase in costs, these expenses are now much greater. The population surveys (Verbundstudie, Ernährungserhebung und Risikofaktorenanalytik and the Nationale Verzehrstudie^{14,15}) presented by Heseker et al at this symposium have shown that approximately one third of Germans are overweight and that their nutritional habits, as we shall discuss later, leave a lot to be desired. However, a key question remains with regard to the definition of excess body weight and obesity. Accordingly, the first publication of this survey has met with criticism from several groups, especially psychologists in the field, who believed that the criteria applied were too strict: namely a body mass index (BMI) range of 25 to 30 kg/m² to define overweight in men, 24 to 30 kg/m² in women,¹⁶ and greater than 30 kg/m² to define obesity (severe overweight), without making any allowance for age. The same criticisms hold, albeit to a lesser extent, for more recent criteria that have been age-corrected.¹⁷ Nevertheless, these criteria are based on statistics of life expectancy.

Another argument was that the true overall morbidity rate attributable to overweight in Germany would be approximately 5% if one were to consider only the health risk. A committee of experts believed that excess morbidity and mortality begin above a BMI of 27.8 for men and 27.3

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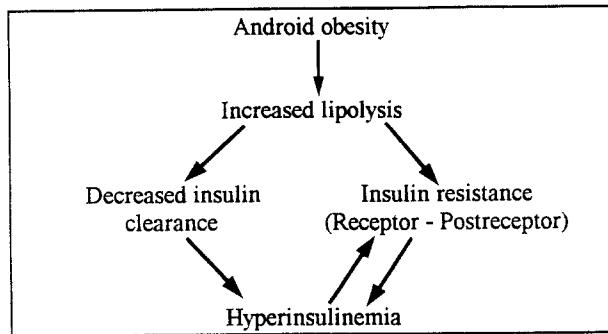


Fig 1. Relationship between obesity and insulin resistance. (Reprinted with permission.¹⁰)

for women, a figure derived from the 85th percentile of the US National Health and Nutrition Examination Survey conducted from 1976 to 1980.¹⁸ However, this formulation fails to take into account other disorders such as diabetes, hyperlipidemia, hypertension, and hyperuricemia. According to Bray,¹⁹ BMI shows a curvilinear relationship to excess mortality, with a relatively low risk up to a BMI of 30 kg/m².

It is true that we as physicians should not become preoccupied with the cult of the slim and beautiful. The propagation of an ideal body weight could in fact increase the social pressure on a large group of healthy people who are just heavyset, and the result of insisting on such a rigid standard could be, among other problems, an increase in eating disorders.

Let us come back to the prevalence of overweight in West Germany and compare it with that in other countries. Bray published a relevant table for English-speaking countries in 1985¹⁹ (Table 2). This compares with 36.8% of men and 25.7% of women in West Germany with 7% to 8% obesity as defined by a BMI greater than 30 kg/m².¹⁴

Using somewhat different criteria, the MONICA project conducted by the World Health Organization presented

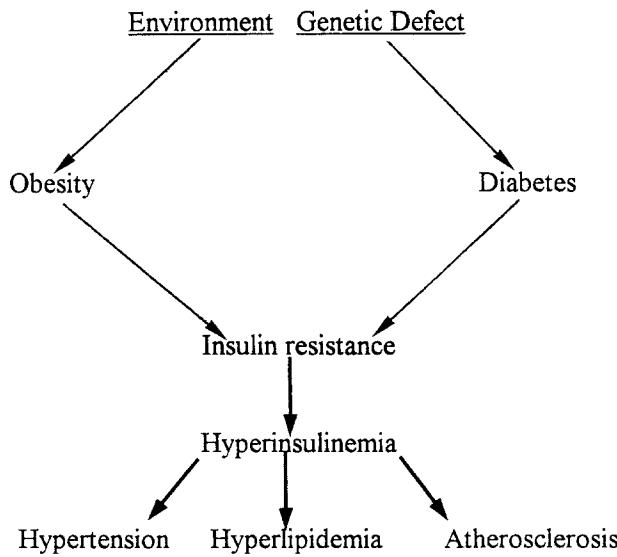


Fig 2. Hyperinsulinemia as a central factor in the pathogenesis of the metabolic syndrome.

Table 2. Percentage of Overweight and Obese People in Three English-Speaking Countries

Country	Age (years)	Overweight (%)*		Obese (%)†	
		Men	Women	Men	Women
Australia	25-64	34	24	7	7
Britain	16-65	34	24	6	8
United States	20-74	31	24	12	12

*Overweight, BMI 25-30 kg/m².

†Obese, BMI > 30 kg/m².

Adapted with permission.¹⁹

data for the age group 35 to 64 years as shown in Table 3.²⁰ These results show a high rate of obesity in East and West German towns, for example, Augsburg, a provincial city in the south, which places nearly one fifth of the population between ages 35 and 65 at a considerable risk for nutrition-derived disorders.

There is also a marked difference between the population of the city of Augsburg and those living in the country. To this day, one can find among the rural population the view that fatness is positive; it signals solidity and prosperity. A number of our leading politicians are obese, and this may even be an asset that brings them votes. Surely something has to be done at the level of health education, and this must start in the schools.

DISTRIBUTION OF MACRONUTRIENTS

To find an explanation for this excess in body weight, it is worthwhile to consider total caloric intake and distribution of macronutrients (Table 4). The Verbundstudie, Ernährungserhebung und Risikofaktorenanalytik study shows a clear deviation from the general recommendations of nutritional experts.¹⁴ In particular, the intake of fat and monosaccharides and disaccharides is too high and overall carbohydrate consumption is too low.

How does this compare with other European countries? The results listed in Table 5 are from a recent article by Winkler et al²¹ and show data collected in the years 1984 to 1985. It would seem that the middle-aged male population

Table 3. Percentage of Overweight People in Different Populations From the MONICA Project of the WHO for the Age Group 35 to 64 Years

	BMI			
	Men (%)		Women (%)	
	> 27	> 30	> 27	> 30
Peking	14.3	2.8	24.7	9.3
Gothenburg	25.3	7.1	30.4	8.8
Glasgow	33.9	10.9	36.7	16.1
Stanford	35.5	10.2	26.7	14.9
Warsaw	42.2	17.6	48.0	26.0
Bremen	40.3	13.9	34.2	18.0
Augsburg (Town)	46.3	17.4	34.1	15.6
Augsburg (Country)	54.1	20.1	41.0	22.1
Cottbus	44.4	16.9	41.9	23.4

Abbreviations: WHO, World Health Organization; MONICA, Monitoring trends and determinants in cardiovascular diseases.

Data from Keil et al.²⁰

of Augsburg is not much above the German average in terms of estimated caloric intake. Furthermore, all populations shown consume too much fat. Yet these data leave the reader somewhat dissatisfied because they can not provide a clear explanation for the increase in overweight and obesity.

One clue may be underrating and underreporting by obese people, as pointed out by Heseker et al,¹⁴ a fact that is a handicap in all population surveys.

Thus, several studies the world over have shown a marked difference between measured and self-reported nutritional intake.²² Other investigations have shown a lack of correlation between metabolic rate and energy intake.²³ This may at least in part explain some of the discrepancies.

Finally, in the context of this symposium, it would be of great interest to identify eating disorders in the German population. The Nationale Verzehrstudie was not specifically designed to answer this question. Nevertheless, there are some interesting details such as the identification of

Table 4. Distribution of Macronutrients in Germany (VERA 1985 to 1988)

	VERA	Recommended
Energy (kcal)	2,187	
CHO (%)	42.8	50
MONO and DI (%)	16	10
Fat (%)	38.4	30
Protein (%)	14.1	12-13

NOTE. Results are the median for men and women aged > 18 years.

Abbreviations: VERA, Verbundstudie, Ernährungserhebung und Risikofaktorenanalytik; CHO, carbohydrates; MONO, monosaccharides; DI, disaccharides.

Table 5. Percentage of Macronutrients in Energy Intake for Men Aged 45 to 64 Years

	VERA (Age > 18 years)	Augsburg	Finland	France	N. Ireland
Energy (kcal)	2,574	2,609	2,873	2,499	2,369
CHO (%)	42	37	44	39	43
Fat (%)	38	38	39	36	38
Protein (%)	14	16	15	15	14
Alcohol (%)	5	9	2	10	4

NOTE. Abbreviations as in Table 4.

Data from Winkler et al.²¹

snackers, ie, people who derive more than 20% of their energy intake from snacks. Such individuals are found in 8.7% of the population, and the median for kilocalories in a snack was 215; 8.2% of these were sweets and 2.8% were salty snacks.

An attempt to identify carbohydrate cravers produced a figure of two in 18,000, or 0.011%.

When asked about current nutritional habits, 94% of men and 90% of women classified them as normal. With the exclusion of known diabetics, 4.5% of men and 7.4% of women were on some sort of diet; approximately half were on a reduction diet. Of men and women, 1.4% and 2.4%, respectively, considered themselves vegetarians.

In summary, the following conclusions can be drawn: (1) population surveys of the mid-1980s show a considerable degree of obesity in West Germany, (2) analysis of dietary intake shows a marked deviation from health standards, and (3) the data cannot provide a full explanation as to why people become fat. This may be due to the well-known problem of underrating and underreporting.

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