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# Food Patterns of Policemen on Patrol Duty. A Case Study of Stuttgart, Germany

13

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## Introduction

The Institute of Nutritional Economy and Sociology of the Federal Research Centre for Nutrition is studying the nutritional situation of working people who are assumed to have nutritional problems caused by their occupation. This group includes people working in shifts and at changing places, i.e. under conditions which are generally believed to be associated with a health risk. The persons' biological rhythm must adapt itself to continuously changing conditions; this is in the majority of cases felt as stress. Before specific nutritional advice adapted to the specific occupational situation can be provided for these groups, working conditions and profes-

sional activities have to be carefully studied first.

As little is known about the nutritional habits of these professional groups, a long-term project "Determination of the nutritional habits of selected professional groups working at changing places and times" has been initiated. The present case study of policemen on patrol duty in the city of Stuttgart is one of the sub-projects recently completed in its first part. Aims of the study were

- to determine and evaluate nutritional habits,
- identify problems, and
- develop a special nutritional programme for this group.

## Method

In June/July 1992 all Stuttgart police patrolmen were given a questionnaire including the variables shown in Figure 1 and 68% (= 403 persons) answered it. In a second phase of the study, 62 of these consented to record any eating activities in one shift cycle on a pocket dictaphone (Grundig DH 2071). The group was instructed verbally or in writing about the method. Every instance of food intake, including detailed information about the food, estimated size of the food portion, food origin, place of food intake, but also official matters keeping the policemen from eating were to be recorded.

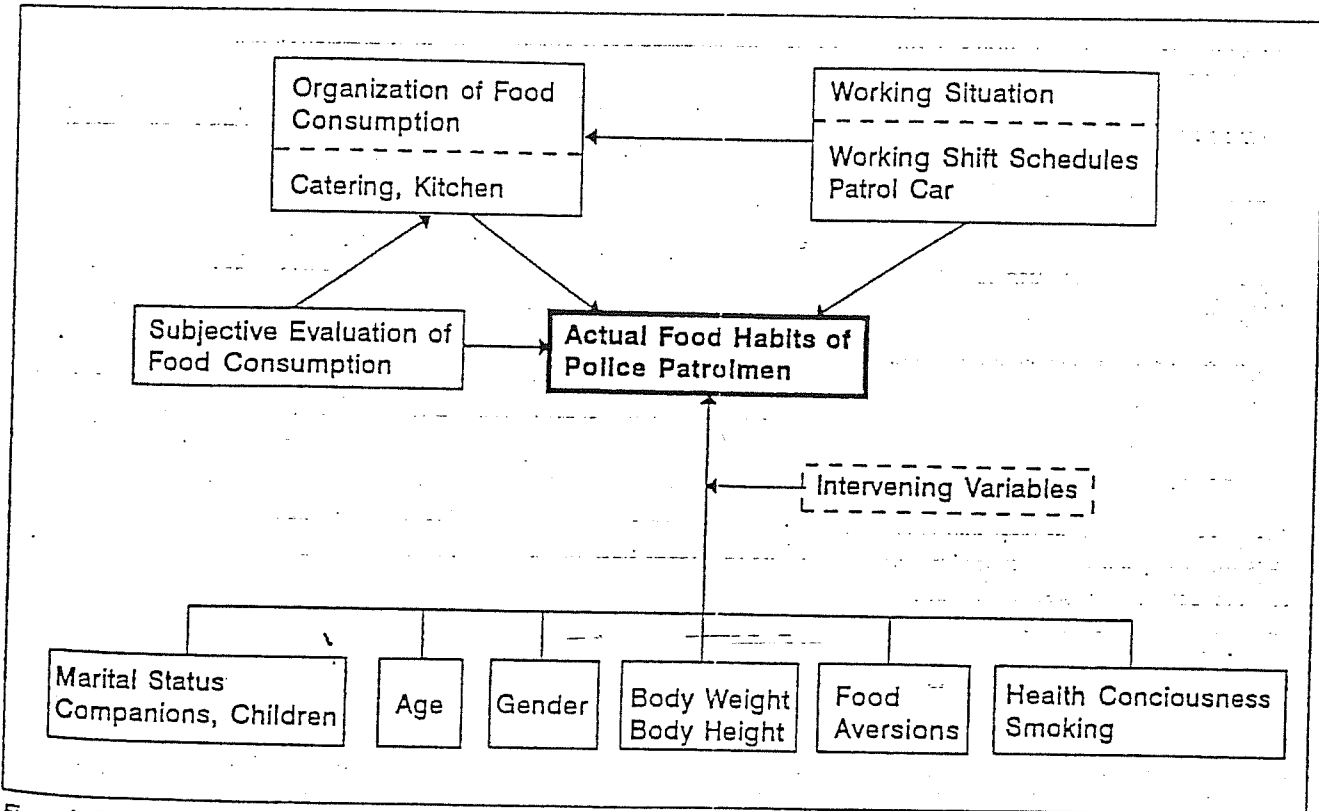


Figure 1: Study model.

## Sample

The policemen were on duty at police stations, radio control stations, patrol cars, etc. Working times changed daily in a 4-days shift cycle (Table 1) which is fixed for each policeman at the beginning of the year independently of Sundays and holidays. The majority (96%) of police officers were men. 4% women corresponded approximately to the quota of female patrol officers in Stuttgart. Most of the officers were quite young and married (Table 2).

## Results

Subjective evaluation of the nutritional situation: The majority of officers (about 70%) lived on usual food, i.e. did not adhere to special diets. The rest preferred "Vollwert" (i. e. wholesome) food and tried to make sure the meals were balanced. 44% of the male officers were smokers; this corresponds to the share of smokers (45%) of the German total population. Hence the assumption, that policemen on duty resort occasionally to a cigarette rather than to something to eat has not been confirmed.

Most officers find their nutritional situation unsatisfactory which is strongly determined by their occupation (Figure 2). Points of criticism were in particular:

- eating times,
- inadequate storage facilities for food at the station,
- inadequate supply of warm meals during duty hours,
- lack of information about diets adapted to shift work.

### Meal pattern

Eating times of police officers obviously shift towards the evenings (Table 3); on all four days of the shift cycle, dinner (evening meal) was the most frequent meal. First breakfast followed in the second place. Police officers usually have a second breakfast only when on duty. For police officers on duty chances of having a warm meal are rare. Less than one third only has a warm midday meal on days on duty, the rest usually eats sandwiches in-

Table 1: Complete 4-Day Circle of Working Shift of Stuttgart's Police Patrolmen.

Day	Shift	Hours on Duty
1st	late	13:00-20:00
2nd	early	06:00-13:00
3rd	night	20:00-06:00
4th	off duty after end of night shift	

Table 2: Sociodemographic Data of the Sample of Stuttgart's Police Patrolmen (N = 403)

Male	96 %	Female	4 %
Age	≤ 25		30 %
	26-30		29 %
	31-40		33 %
	41-50		7 %
	> 50		1 %
Single	40 %	Married	60 %
		w/o children	65 %
		with children	35 %
		- 1	39 %
		- 2	50 %
		- 3	11 %
		- 4	1 %

Table 3: Number of meals by Stuttgart's police patrolmen during a complete shift (N = 403)

	1st Day	2nd Day	3rd Day
1st Breakfast	360	320	316
2nd Breakfast	61	271	65
Lunch	194	225	294
Afternoon snack	326	66	156
Dinner	388	356	362
Night meals	76	327	49
In between	229	129	168

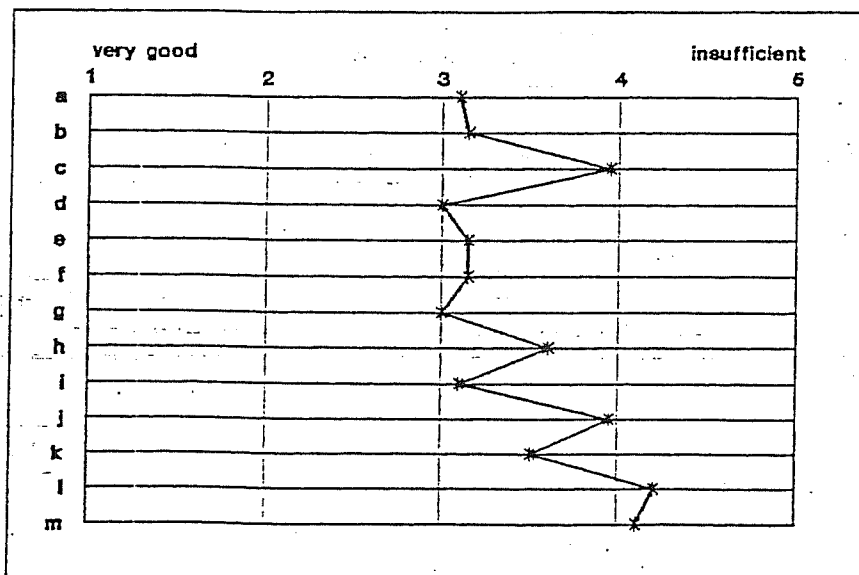


Figure 2: Subjective evaluation of food consumption of Stuttgart's police patrolmen. Evaluated criteria: a Equipment for food preparation at working place (office), b Room/place for food consumption during work, c Time of food consumption, d Food consumption during early shift, e Food consumption during late shift, f Food consumption during night shift, g Obtaining of foods on duty, h Storage of foods at working place (office), i Availability of beverages on hot weather days, j Availability of warm meals on duty, k Vitamin supply, l Information on food and nutrition, m Overall evaluation of one's food consumption.

Table 4: Location of Meals (in %)

	A	B	C	D	E	F	G
<p>A 1st breakfast B 2nd breakfast C lunch D afternoon snack E dinner F night meals G in between</p>							
1st Day							
at home	97.5	63.9	52.6	1.2	71.1	60.5	22.7
on duty/patrolcar	1.4	21.3	32.5	89.6	21.1	17.1	70.7
snack bar	1.1	11.5	6.2	8.9	7.7	22.4	5.7
canteen	-	3.3	8.8	0.3	-	-	0.9
2nd Day							
at home	44.1	2.9	71.7	78.8	68.8	1.5	20.9
on duty/patrolcar	54.7	92.9	16.4	10.6	28.9	95.7	77.5
snack bar	0.9	4.4	6.2	9.1	2.0	2.4	0.8
canteen	0.3	0.4	6.2	1.5	0.3	0.3	0.8
3rd Day							
at home	93.7	86.2	96.6	93.6	92.3	91.8	88.1
on duty/patrolcar	6.0	4.6	-	-	-	-	-
snack bar	0.3	7.7	3.1	6.4	7.7	8.2	11.9
canteen	-	1.5	0.3	-	-	-	-

Table 5: Comparison of nutrient intake of Stuttgart's police patrolmen with recommendations (RDA, 1991) of the German Society of Nutrition (DGE). (Results of 4 day food protocol; N = 62)

Nutrient	RDA	Intake mean (%)	Intake range (%)	Intake <95% RDA (%)
Energy	2,500 kcal (10.5 MJ)	113	73-173	24
Protein	0.8 g/kg body weight	146	73-233	3
Fat	30 E %	118	66-151	5
Carbohydrate	> 50 E %	87	58-123	42
Dietary fibre	30 g	65	22-145	52
Alcohol	-	86	56-137	-
Calcium	900 mg	103	31-254	24
Magnesium	350 mg	117	57-230	15
Iron	10 mg	151	80-270	3
Vitamin A	1 mg Eq	103	36-420	28
Vitamin B <sub>1</sub>	1.4 mg	124	54-306	17
Vitamin C	75 mg	112	29-302	24
Folate	300 µg	44	18-104	57

Table 6: Food energy supply of Stuttgart's police patrolmen during the shift work cycle

Day Shift	1 late	2 early	3 night	4 off duty
Energy (MJ)	12	10.8	11.2	11.6
% Protein	14	15	14	13
% Fat	37	37	36	32
% Carbohydrate	42	44	42	45
% Alcohol	7	4	9	10

Table 7: Body mass index (BMI) of Stuttgart's police patrolmen (SP), in comparison with BMI in general German population (GP) - former FRG only

BMI	Weight	SP	GP
20-25	normal weight	61 %	47 %
< 20	underweight	2 %	4 %
25-30	overweight	34 %	45 %
> 30	obesity	3 %	4 %

stead. 17% are in fear of malnutrition and supplement their daily food by vitamins and mineral preparations. Table 4 shows the places of food intake. It becomes obvious that extremely few police officers working in shifts ever go to a canteen.

#### Nutrient intake

Energy supply of the police officers questioned was about 13% on the average above the recommendations of the German Society of Nutrition (Table 5). Intake of protein, fat, calcium, magnesium, iron, vitamin A, vitamin B, and vitamin C complied with or exceeded the recommended values, while supply of carbohydrates, dietary fibre and folic acid was insufficient. There were no great differences in energy supply on the individual days of the shift cycle (Table 6).

#### Conclusions

Looking at the officers' weight one finds that two thirds of them are of normal or even of slight underweight. This is no reason to conclude they take balanced diets. One should bear in mind rather that more than 90% of the persons questioned were younger than 40; they do a lot of sport and their occupation is not exclusively sedentary (Table 7).

An analysis of the food intake has shown nutritional inadequacies typical of the German total population: diets are too fat, too sweet, contain too many proteins (too much meat), but not enough complex carbohydrates and dietary fibre, i.e. not enough fruit and vegetables.

The nutritional situation during duty hours, especially during the late and the night shifts, could be improved, for instance by special nutritional programmes for police officers. Such a programme is being prepared. Nutritional education in the sense of dietary advice in compliance with the conditions of the job should be included into the training of policemen. Specific nutritional information brochures and leaflets disseminated to all concerned would also be helpful; as would some adjustments in working conditions, including improvements in food services and food preparation facilities.