



CONSUMER KNOWLEDGE ABOUT ASPECTS OF FOOD HYGIENE AND FOOD SAFETY. RESULTS OF A NATIONWIDE SURVEY IN GERMANY.

Introduction

A dramatic increase in the incidence of food-borne infections, especially by Salmonellosis, can be observed in Germany in recent years (Fig.1).

The estimated number of unrevealed cases is more than 2 millions per year (over 2500 cases/100.000 inhabitants).

The reasons of this observation are manifold. One often discussed factor is an increased neglecting of basic rules in food hygiene practices in private households and an underestimating of the hazards of food borne infections. Such diseases were for long time rare experiences, due to an efficient food quality control along the food chain. They could be regarded as forgotten hazards.

Since there are no recent representative data on the awareness, knowledge, practices and evaluation of food hygiene related risks by the German population a special survey was carried out, which had the following objectives: collecting of up-to-date information

- of consumer practices regarding cooled foods; and
- knowledge in relation to food hygiene and safety.

Results

The Knowledge of Food-borne Infections -

Most Germans (83%; Fig.2) name Salmonellosis as a food-borne infection; that might be caused by the many reports on this issue in German mass medias. It is surprising that many people know many other relevant infections (Fig.2 - their responses were not supported by lists).

As well a right association with Salmonellosis-prone foods like raw egg (87%), poultry (68%), meat (51%), minced meat (48%) and dressings (46%) could be registered.

The German population has at least formal knowledge on food-borne infections.

Control of Cooling during Shopping -

Although in almost all German households are refrigerators (99%) and deep-freezers (69%), in the daily routine of handling with foods many people neglect common rules. A fifth (18%) pays no attention to the shelf-life date of frozen food. In this respect the attention is better in East Germany (esp. in Saxony and Thuringia), households with children, housekeepers and those, who are married and with higher income.

More than half of the population (57%) transport the bought cooled foods without any protection at home (Fig.3). Results of a similar survey ten years ago indicate no change within the last decade. Half of the people answered to be at home within 10 minutes (49,3%). About a fifth (22%) uses deep-frozen food immediately, but 70% store it for some time.

Fig.3 Transport of chilled foods from shop to home in Germany (Question 2a/GFM-GETAS/Nov.1992 / N=1728)

	Total	Female Male (in percent)	East West Germany
without special care	56,7	54,7 59,8	64,1 54,6
with some special insulating devices	24,8	24,0	24,6 24,5

More careless are the following groups: the younger, the civil servants, the singles, urban population, low income.

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Fig.1 Incidence of food-borne infections in Germany (Source: Official Health Statistics)

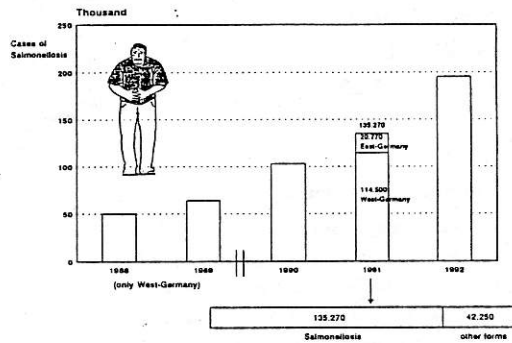


Fig.2 Knowledge of food-borne infections by the German population (Question 12a/GFM-GETAS/Nov.1992 / N=2500)

Infection	Total	Female	Male	East West Germany
Salmonella	82,6	83,2	82,0	83,8 82,4
Tapeworm	45,2	45,8	44,5	48,4 44,4
Trichina	32,2	33,2	31,0	37,9 30,7
Hepatitis	25,9	25,0	26,9	22,9 26,7
"No"	10,3	9,6	11,0	7,2 11,0

Responses in the range from 5-12%: ergotism, staphylococcus, toxoplasmosis; below 5%: Bacillus cereus, botulism, brucellosis, campylobacter, clostrids, E.coli, listeria, sarcosporidias, shigellosis.

Following groups indicated a knowledge which was

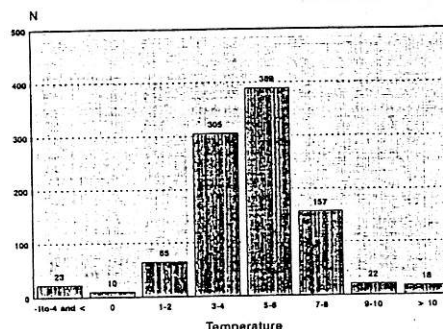
above	below	average
high income	low income	
South East Germany	North East Germany	
middle age (35-54)		
civil servants		
married		
middle town (50-100T)		

Control of Cooling within the Households -

Only a minority of the German population (6%) controls the temperature of their deep freezer; ten years ago it were even less (3%). More than half (58%) do not know the actual temperature of their refrigerator. A relatively better attention in this respect have only East Germans (39,1%); relatively worse are the young (71,9), the singles (65,7) and the population of Hesse and Rhine-land-Palatinate (71,6).

The distribution of the temperature of the refrigerators in German households is shown in Fig.4; but this is a positive selection, since obviously only the part who controls the temperatur (about 40% of the sample) could be included here.

Fig.4 Temperature of the refrigerators in German households (Question 8d/GFM-GETAS/Nov.1992 / N= 985)



Method:

Description of the sample:

A representative sample (14y of age and more; all German countries; all German-speaking and in Germany living); random route (the interviewer received start point, random route and quota - age, sex, size of locality); sample size N=2500 (2000 in former "Federal Republic of Germany" ("FRG") = further named West Germany and 500 in former "German Democratic Republic - "GDR" = further named East Germany).

Description of the interviews:

A study-specific questionnaire was developed and included as a part of an "Omnibus-Survey"; personal interviews by interviewer of a commercial marketing company (GFM-GETAS, Hamburg) during the time of 11-11-1992 to 03-12-1992. Coding and basic statistics were done by GFM-GETAS; raw data were given to our institute for further evaluation of the data.

Food Hygiene Practices in Households -

In a food hygiene test (9 items) nobody could reach maximum score. Almost 3/4 of the German population does not control efficiently the temperature of the refrigerator (Fig.5) and ignores the importance of proper stirring during rewarming meals in microwave ovens. In proper cleaning of the refrigerator, insufficient separation during storage between perishable and other food and usage of fresh meat leftover for grilling the other day are further indicators for carelessness of about a half of the population. About a third thaw frozen poultry slowly in a refrigerator. Only the remaining three rules for food safety are commonly applied: thawed frozen food is not re-frozen, raw eggs are kept in the refrigerator and a knife, which is used for cutting raw meat, is not used simultaneously for other purposes (Fig. 5). Women perform only slightly better than men in this test (Fig.5). East Germans gave only concerning the microwave use (Fig.5) more wrong answers (the same could be noted in older people); in general they showed better results in this test than West Germans. In most population groups the results were very similar; only the young generation and the singles gave even worse results.

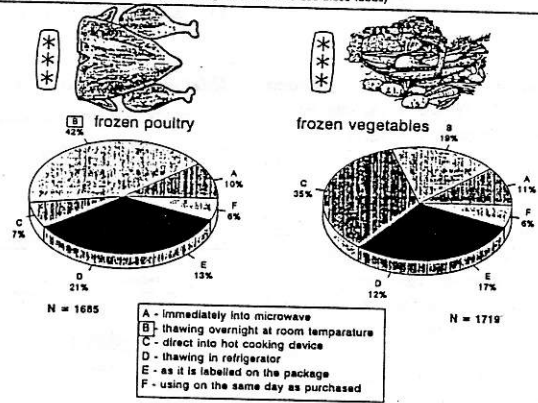
These insufficient test results are supported by reported risky handling of cooled foods in German households, e.g. frozen poultry is thawed by far too many by keeping it overnight at room temperature (Fig.6).

Too many people are of the wrong opinion to be able to control foodborne infections by their own senses (taste, smell, appearance). That might be true in some cases (like milk), but it is risky to rely solely on one's own sensoric control, especially in cases like poultry and dressed salads. According to these only 15,6% and 7,9% respectively gave the right answer "this cannot control by myself".

Fig.5 Percentage of German population who gave wrong answers in a food hygiene test
(Question 10/GFM-GETAS/Nov.1992)

Item	Total (N=1321)	Female Male		East West Germany	
		(N=1179)	(N=500)	(N=2000)	(N=2000)
stirring goods in microwave (no)	78,3	77,1	79,7	89,3	75,6
refrigerator control (no)	76,6	74,3	79,1	61,1	80,5
separate chilling of perishable foods (no)	56,7	54,4	59,3	57,0	56,6
cleaning of refrigerator (no)	54,2	49,6	59,4	49,2	55,5
reusing grill leftover (yes)	42,5	39,6	45,7	29,3	45,8
slow thawing (yes)	36,5	38,2	34,7	27,0	38,9
raw meat knife using (yes)	20,3	19,6	21,1	17,5	21,0
raw egg in refrigerator (no)	16,9	16,8	17,6	9,4	18,7
re-freezing thawed food (yes)	8,8	8,6	9,0	5,1	9,7

Fig. 6 Handling of frozen poultry and frozen vegetables in German households
(Question 5/GFM-GETAS/Nov.1992)
(Percentage of those who use these foods)



Conclusions and Summary

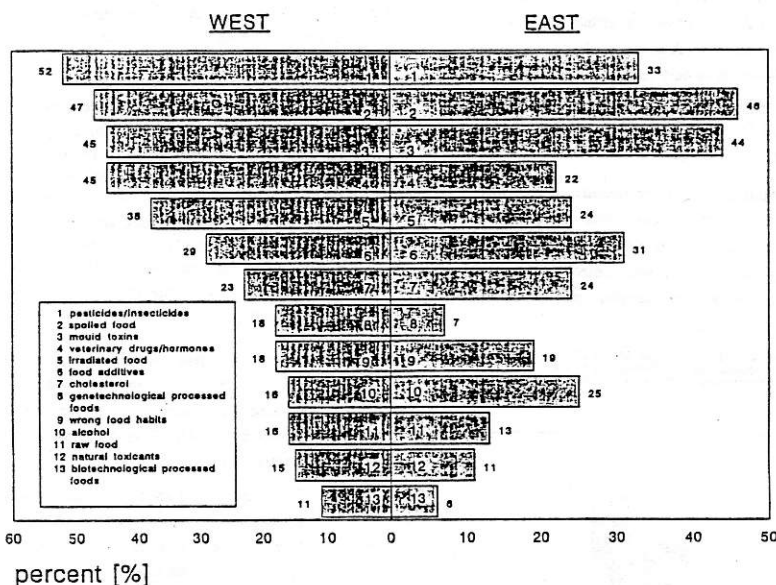
The survey results indicate an obvious lack of concern and knowledge on the good rules of proper food hygiene during the daily household activities. There is obviously some awareness, but that is merely knowledges of names of food-borne infections. The experiences and practices are lacking in important segments of the population, that are young people and singles.

These kind of food risks are underestimated by the German population, compared with other health risks (Fig.7).¹

There is an important task for nutrition education to improve saver food handling practices (like those issued by the WHO - Fig.8) in German households.

¹ ref. Survey of our institute: Differences in German Consumer Concerns over suggested Health and Food Hazards

Fig.7 Ranking of Food Risks by the German Population
(Question 9/GFM-GETAS/Nov.1992 / N=2000 - West, N=500 - East Germany)



The 10 Golden Rules of WHO for a Hygienic Food Preparation

- 1) Certain foods should not be consumed raw (e.g. raw milk)
- 2) Meals have to be sufficiently cooked.
- 3) Prepared meals should be eaten immediately.
- 4) Prepared meals have to be stored properly.
- 5) Stored meals have to be rewarmed sufficiently.
- 6) Avoidance of contacts between raw and prepared foods.
- 7) Washing one's hands frequently.
- 8) Working benches in kitchen have to be kept clean.
- 9) Foods have to be protected against insects, rodents and other animals.
- 10) Using of safe water.