

What have we kept and what have we changed? A three generation study on nutrition and food handling

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Summary

Eating behaviour and food handling were compared across three generations – grandparents, parents and their adult children. In addition, within each generation, comparisons were made between current eating behaviour and eating behaviour in childhood. This comparison between and within the generations was based on questions put to students, their parents and their grandparents, about food intake, cooking, food storage and use of leftovers.

For milk and milk products, alcoholic drinks and fish and seafood, there were no differences between the frequencies with which these foods were eaten by the three generations during childhood. There are however differences in the frequencies with which these three generations now eat wholemeal products and alcoholic drinks. The older generation has a better opinion than the younger generation of their own cooking skills. Food storage is very similar. The grandparents master economic treatment of leftovers the best.

The study shows that, for some food groups, the frequencies of intake change during the course of a lifetime and over three generations; for other food groups, there were no changes. One of the factors influencing changes in eating behaviour may be the interactions between the generations; this should be investigated more closely.

Keywords: nutritional behaviour, food intake, food handling, generations, intergenerational differences

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Introduction

Eating behaviour is predominantly learnt during the processes of socialisation and adaptation to a culture. Parents and grandparents play an important role here. Thus, developments in eating behaviour should be considered in the context of intergenerational influences. Studies on mutual intergenerational influences within the family have been reviewed [1]. It is obvious from this that

changes and influences on eating behaviour over three generations (grandparents, parents and children) have hardly been examined. According to our researches, there have only been three studies: In the 1990s, STAFLEU et al. and VVAN STAVEREN et al. found that there were striking similarities between three generations of Dutch women with respect to opinions, attitudes and intentions with respect to selected foods and intake of energy, fat and cholesterol [2, 3]. A study was performed in Germany on cooking habits over three generations. The findings were i. a. that the intake of convenience products had increased, that children were no longer involved every day in cooking, but that the mothers nevertheless transmitted their “cooking experience” and “cooking knowledge” to their children [4]. IKEDA et al. (2006) examined the nutritional quality of dark-skinned American women over three generations. They found that the grandmothers influenced the mothers, but not their granddaughters. The nutritional quality of the mothers’ and daughters’ diets were not similar [5]. None of these studies examined the eating behaviour over all three generations.

Objectives

The primary aim of this survey was to test whether it is methodologically possible at all to use young

adults (students in this case) to obtain access to their parents and grandparents for surveys. This test of method concentrated on the frequency of intake of selected food groups and food handling at the time of the survey in 2013 by three generations – grandparents (F1), parents (F2) and their adult children (F3) –, as well as the frequency of intake in childhood.

Methods

The survey deliberately used students from the following courses related to nutrition: “Teacher Training in Everyday Culture and Health” (Karlsruhe Teacher Training College – PHKa), “Bachelor of Science in Foods, Nutrition and Hygiene” (HAW Albstadt-Sigmaringen – HSAS), “Bachelor and Master of Science in Nutritional Sciences” (Friedrich Schiller University Jena – FSU) and “Bachelor of Science in Food Technology” (Zurich University for Applied Sciences in Wädenswil – ZHAW). This is because it was expected that they would conscientiously follow the demanding instructions of the survey out of personal interest. The survey was performed from March to June 2013.

The students received at least three standardised questionnaire forms that they had to complete themselves. In so far as possible, this corresponded to one person in each generation. If possible, the forms were to be completed by their parents and grandparents.

The questionnaires contained 31 questions, i. a. with blocks of questions on the frequency of intake of selected foods, meal patterns, cooking, food purchase, storage, handling food packaging, attitudes to nutrition, both today and (where appropriate) during childhood. The survey was planned to be voluntary, anonymous and exploratory. The calculation of the mean frequencies of intake was based on the following:

daily = 7/week; 4 to 6 times per week = 5/week; 1 to 3 times per week = 2/week; 1 to 3 times per month = 1/month; less than once a month = 0.5/month; never = 0. The data were processed in the ZHAW as part of a student seminar project and analysed descriptively. In so far as possible, intra- and intergenerational differences in food intake were tested for significance with the χ^2 test ($\alpha = 0.05$) in Excel Version 14.0.

Results

Study Participants

In all, 249 persons participated in this study (75.7 % women, 24.3 % men), including 53 from F1 (80.8 % ♂, 19.2 % ♀; 78 ± 6 years), 96 from F2 (70.5 % ♀, 29.5 % ♂; 52 ± 5 years), and 100 from F3 (78.0 % ♀, 22.0 % ♂; 23 ± 4 years). Of the questionnaires, 51.0 % were from the PHKa, 27.3 % from the HSAS 27.3 %, 18.1% from the FSU and 3.6 % from the ZHAW; 96.4 % of the subjects lived in Germany. As regards profession, most in the grandparent generation (F1) were housewives and classical occupations that require training, e. g. in trades; most in the parent generation (F2) were in service professions, e. g. in administration or sales.

Frequency of intake of selected foods

♦ Table 1 shows the frequency of intake of selected food groups in the three generations, both in childhood and today (intergenerational differences).

For milk and milk products, alcoholic drinks, fish and seafood, no differences were found in the frequency of intake between the childhoods of the three generations. In contrast, in

Food group	F1 childhood	F2 childhood	F3 childhood	Difference F1, F2, F3 childhood ^{*)}	F1 today	F2 today	F3 today	Difference F1, F2, F3 today ^{*)}
fruit and vegetables	4.0	4.6	5.0	s.	5.8	5.6	5.7	n. s.
milk and milk products	5.0	5.2	5.5	n. s.	5.7	5.5	5.7	n. s.
wholemeal products	2.1	1.6	2.8	s.	3.8	3.3	3.4	s.
fish and seafood	0.5	0.9	0.9	n. s.	1.0	1.0	0.8	n. s.
alcoholic drinks	0.1	0.0	0.1	n. s.	1.4	1.9	1.0	s.
meat and sausage products	3.0	4.0	4.6	s.	4.1	4.2	3.7	n. s.

Tab. 1: Mean frequency of intake of selected food groups per week by grandparents (F1), parents (F2) and children (F3) in childhood and at the time of the survey in 2013 (intergenerational differences)

^{*)} χ^2 test, s. = significant ($\alpha = 0.05$); n. s. = not significant

Food group	F1 Δ today – childhood	F2 Δ today – childhood	F3 Δ today – childhood
fruits and vegetables	1.8 s.	1.0 s.	0.7 n. s.
milk and milk products	0.7 n. s.	0.3 n. s.	0.2 n. s.
wholemeal products	1.7 s.	1.7 s.	0.6 n. s.
fish and seafood	0.5 s.	0.1 n.s.	-0.1 n. s.
alcoholic drinks	1.3 s.	1.9 s.	0.9 s.
meat and sausage products	1.1 s.	0.2 n. s.	-0.9 s.

Tab. 2: Differences in the mean frequency of intake of selected food groups per week (Δ today – childhood) in the childhood of the grandparents (F1), parents (F2) and children (F3), compared with the time point of the survey 2013 (intragenerational differences)

^{*)} χ^2 test, s. = significant ($\alpha = 0.05$); n. s. = not significant

Cooking skills	Grandparents (F1) n = 49		Parents (F2) n = 94		Children (F3) n = 97	
	%	kum. %	%	kum. %	%	kum. %
very good	16.3	16.3	8.5	8.5	13.4	13.4
good	61.1	77.4	47.9	56.4	47.4	60.8
average	16.3	93.7	28.7	85.1	36.1	96.1
poor	6.1	99.8	12.8	97.9	2.1	99.0
absent	0	99.8	2.1	100.0	1.0	100.0

Tab. 3: Assessment of personal cooking skills by the three generations in percent and cumulative (cum.) percent (excluding participants who do not cook or who provided no information)

Criteria for preparing dishes	Grandparents (F1) n = 53	Parents (F2) n = 96	Children (F3) n = 100
quick is essential	1.9 %	22.9 %	23.0 %
another person decides	15.1 %	9.4 %	1.0 %
healthy is most important	37.7 %	29.2 %	21.0 %
must taste good to me	54.7 %	46.9 %	63.0 %

Tab. 4: Criteria for the decision in the three generations as to what is cooked, in percent. Multiple answers possible.

the intake of the food groups fruit and vegetables, wholemeal products and meat and sausage products, different frequencies were given. The frequency of intake was greatest in the youngest generation in each case. At the time of the interview, the frequency of intake of wholemeal products and alcoholic drinks was different for the three generations.

♦ Table 2 shows the intragenerational differences in the frequency of intake of these food groups. As expected, alcoholic drinks were consumed more frequently today than in childhood. The two older generations currently ate fruit and vegetables and wholemeal products more frequently than in their childhood. In contrast, the youngest generation ate fish and seafood and meat and sausage more rarely than in childhood.

Cooking skills and behaviour

♦ Table 3 shows how the subjects assess their own cooking skills. More than three quarters of the grandparents assess their own cooking skills as good or very good. This value was markedly lower in the generations of the children and, especially, of the parents.

In addition, ♦ Figure 1 shows the cooking skills as measured by the dishes which they have already cooked from the basic ingredients, i. e. without using ready-to-serve dishes. There were only clear differences for the traditional roast with gravy and (to a lesser extent) for rice/porridge.

♦ Figure 2 shows how, or from whom, cooking was learnt. In contrast to conventional opinion, in this respect, friends and relatives (mother, grandmother, father, friends) are much more important for the youngest generation than for previous generations. On the other hand, formal teaching (school and training, cooking courses) is becoming less important. It is interesting that learning cooking through

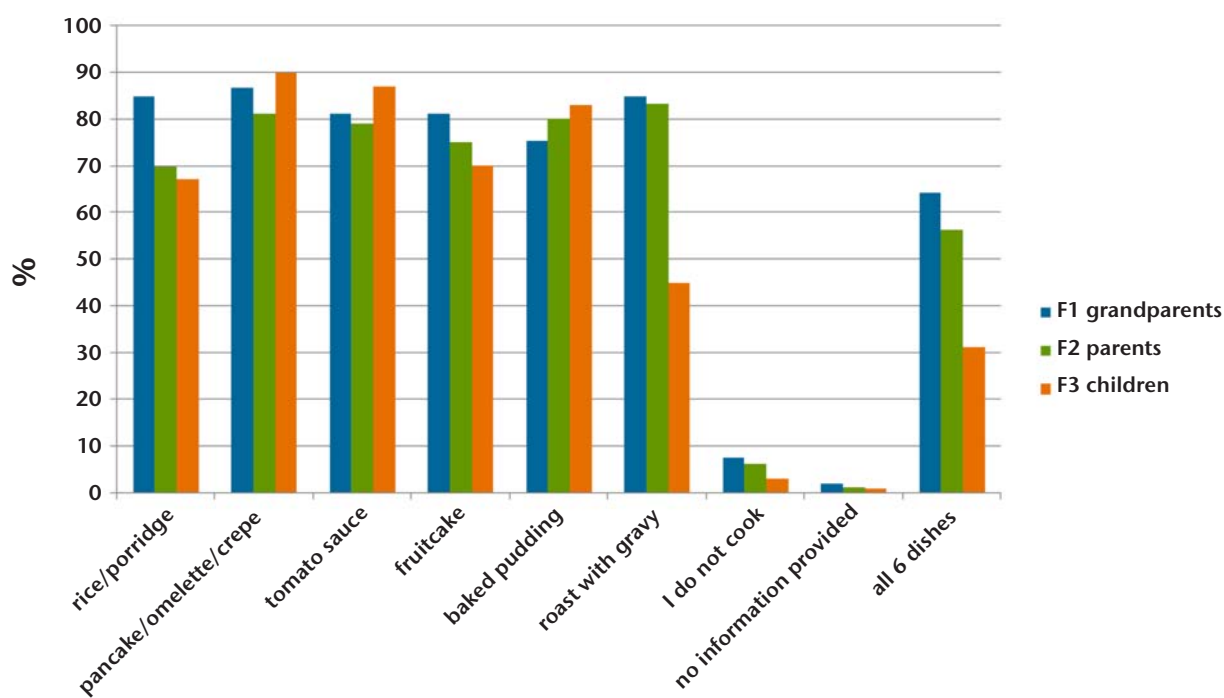


Fig. 1: Proportion of persons in the three generations who have already prepared the selected dishes from the basic ingredients. Multiple answers were possible.

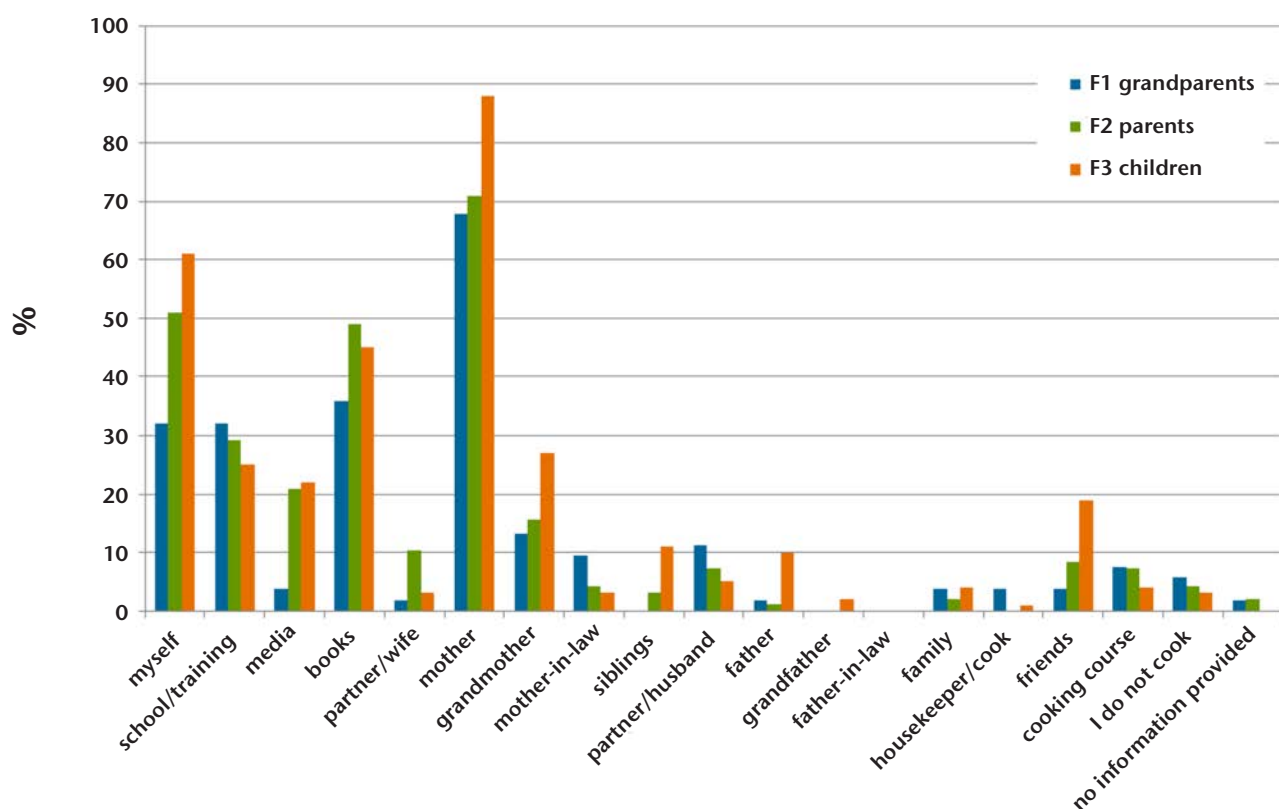


Fig. 2: How, or from whom, cooking was learnt – proportion of persons in the three generations. Multiple answers were possible.

the media became important for the generation of the parents. For the F3 generation, it was striking that the contribution from mothers and friends increased. Teaching yourself is an alternative for many people, but learning from books is becoming somewhat less important.

The criteria for preparation of dishes depend on the generation ($\chi^2 = 28.577$, $p < 0.001$). ♦ Table 4 shows the criteria used by the different generations to decide what they cook. More than half of the interviewed persons take care that the dishes they prepare taste good. This proportion is particularly high in the youngest generation. On the other hand, older people more frequently consider that it is important that the food is healthy. Almost a quarter of the persons in generations F2 and F3 thought that it was most important that dishes should be rapidly prepared.

Storage and handling leftovers

♦ Figure 3 shows how storage of different food groups is handled in the three generations. The behaviour of the grandparents and parents is rather similar.

The grandparents behaved most parsimoniously in this respect ($\chi^2 = 29.356$, $p < 0.05$).

Discussion

This is a pilot and exploratory study, with the principal aim of testing access to the different generations. There are therefore limitations and possibilities for improvement. Students studying subjects related to nutrition were deliberately selected, so that the sample was not representative. On the other hand, participation was good, as the students were interested in the theme. As the students' families were heterogeneous, the selection of this specific group may have had only a minor influence on the results [6]. Because of the low number of cases and the imbalanced distribution, evaluation by

gender, region or social status was not sensible. It is also unfavourable that the sequence of ages overlaps between the groups. Although this effectively reflects reality, it makes cluster formation more difficult. It is also conceivable that current intake biases the memory of childhood intake. Any follow-up survey should include stricter instructions on selecting the subjects (e. g. only mothers and grandmothers; specification of the age range of the generations etc.). Nevertheless, the main finding is that it is possible to use young adults to obtain easy access to their parents and grandparents and to carry out surveys on nutritional behaviour in three generations. The objective of this survey was to provide an insight into the eating behaviour of three generations, both in childhood and today, and to compare their current food handling. The results of this exploratory test of the method may not be generalised and should be interpreted with caution. Nevertheless, some aspects and comparison with other studies are striking. In January 2013, the Techniker Krankenkasse [a German health insurance fund] performed a population-based representative survey on the nutritional behaviour of 1,000 persons aged over 18 in Germany [7]. This showed that the significance of the health value of food increased with age and that personal cooking skills are generally assessed as good or very good. An earlier survey of mother-daughter pairs found more economic handling of leftovers, with a greater variety of leftover recipes. Moreover, the mothers threw out leftovers more rarely [8].

It was found that the frequency of intake of some foods – but not others – changed in the course of life. As expected and in accordance with the time passed, the grandparents exhibited the most marked and the children the least changes.

Within a single family, there were marked similarities in nutritional

patterns and in food handling (data not shown) and this indicates inter-generational influences. Several studies [8–17] have found that parents influence their children's nutritional habits, or that there are similarities in nutritional behaviour. On the other hand, links over three generations have been rarely examined [1–5].

Conflict of Interest

The authors declare no conflict of interest according to the guidelines of the International Committee of Medical Journal Editors.

The survey was performed with internal university funds. The present article complements a poster at the 51st Scientific Congress of the German Society for Nutrition on 12.–14.3.2014 in Paderborn.

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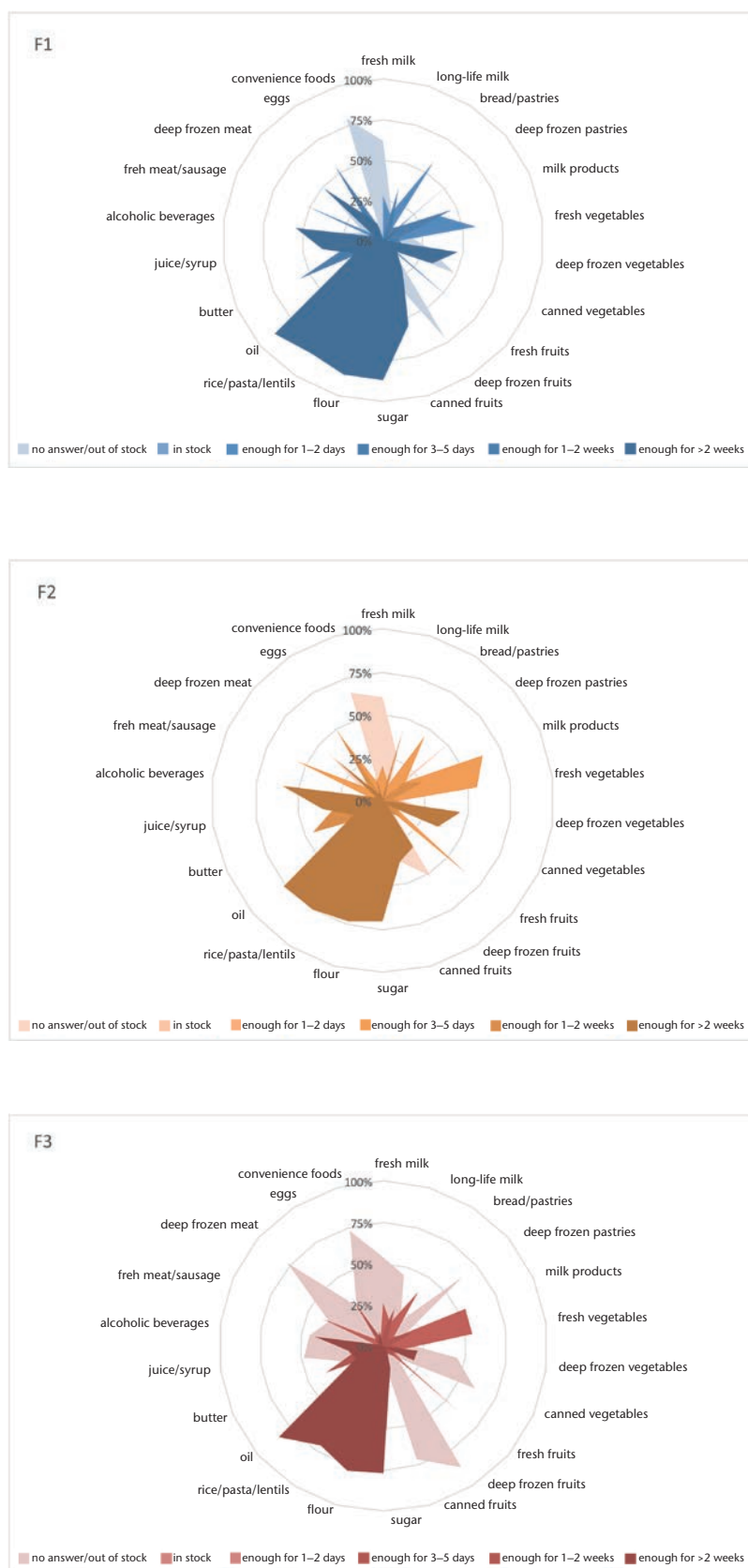


Fig. 3: Storage of different food groups – portion of people in the three generations

F1 = grandparents, F2 = parents, F3 = children

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