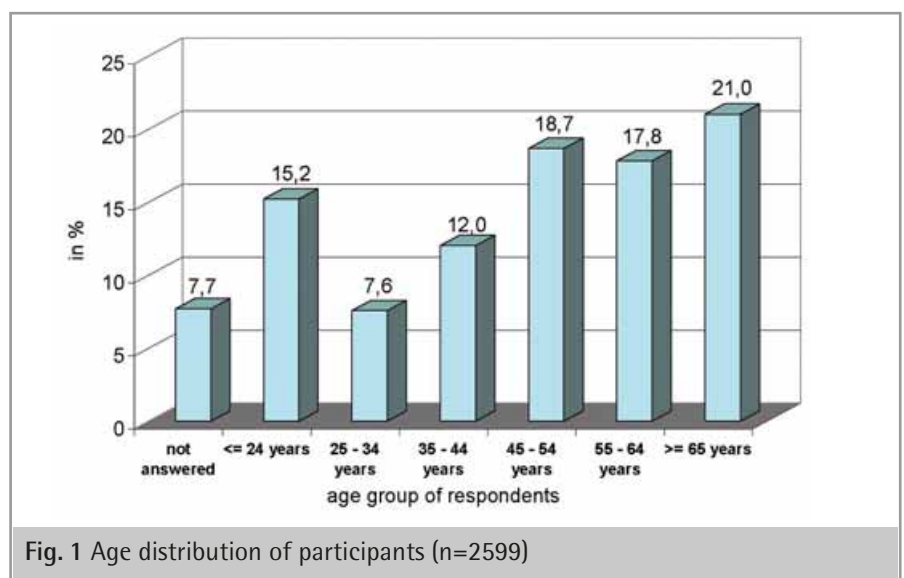


R. Stamminger, C. Streichardt*

Selected Aspects of Consumer Behaviour in the Manual and Mechanical Dishwashing in Germany

■ Methods

Overall, 2599 completed questionnaires were analysed as being returned to the University of Bonn, Section Household and Appliance Technology for the census about the dishwasher consumer behaviours. They were collected by various stakeholders during public actions in the contexts of the Germany wide action day for 'Sustainable Washing' in 2006 (4). The questionnaire was split up into two subject areas. While the initially questions were on demographics, such as age, sex and household size in order to determine a possible connection or influence on the issue (dishwashing). The sec-



Introduction

This article intends to shed some light to the consumer behaviour in the manual and automatic dishwashing area. Recently published articles have highlighted quite significant differences in the way manual dishwashing is done in Europe (1), based on tests done in a laboratory atmosphere. Another article has summarised published data on the historical development of resource use and costs for manual and automatic dishwashing in Germany (2), but is based mainly on results gathered for a complete load of dishes washed. Another article has shown that washing-up of smaller loads will tentatively increase the use of water, energy and cleanser by the consumer (3). All these tests and comparisons are based on relative small numbers of people observed.

In the context of sustainable consumption it is of interest to learn more about the actual consumer behaviour of washing up of dishes. In this context following question are interesting:

- How much dishes need to be washed?
- Which dishwashing practices dominate in the German households?
- Which cleaning products are adopted if a dishwasher is available or not?
- How satisfied are the people with the cleaning and drying result of a dishwasher and are there correlations to their behaviour?

ond subject area adverts to the manual and mechanical dishwashing.

Focus on data collection ranged from frequency and way of washing up by hand or using a dishwasher over the dishes needed to be washed up to the satisfaction with the results achieved. Additionally the use of cleansers and other chemical components was investigated.

■ Results

The sample consists of 2599 people, where 79% of them quoted as female and 11% as male. 10% of the questioned people didn't answer the question on gender at all.

The age distribution (Fig. 1) depicts a high number of older people (above 45 years) and some youngsters.

The household size is between 1-person to 6-person households, while two-person households define the majority of the sample (Fig. 2). This reflects the way the questionnaires were collected and no representativeness can be assigned to the results. Nevertheless they reflect some interesting learning, especially when normalised data can be extracted.

Following, the questionnaire is split into two groups of households: Households with a dishwasher (with DW) and households without a dishwasher (without DW). 64% of the people answering the questionnaire possess a dishwasher which corresponds very well to the official penetration of dishwashers in Germany (65% in the year 2005 (5)). A deeper look into the data shows that multi-person households tend to have higher penetration of dishwashers the more person are living in the household, while only 32% of the single households own a dishwasher (Fig. 3).

Regarding the frequency of manual dishwashing it is somehow surprising to see, that for households not owning a dishwasher this happens for 9,9 times while household with dishwashers still record a frequency of 7,2 manual washing cycles per week. This comparison is influenced by the different household sizes. Therefore it is more relevant to compare this on an equal household size basis. Selecting only 2-person households still 6,8 manual dishwashing processes

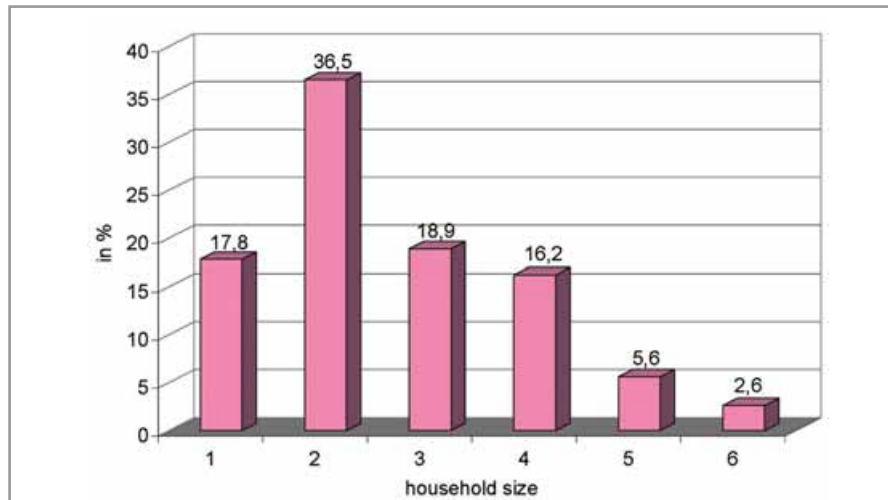


Fig. 2 Distribution of the size of household

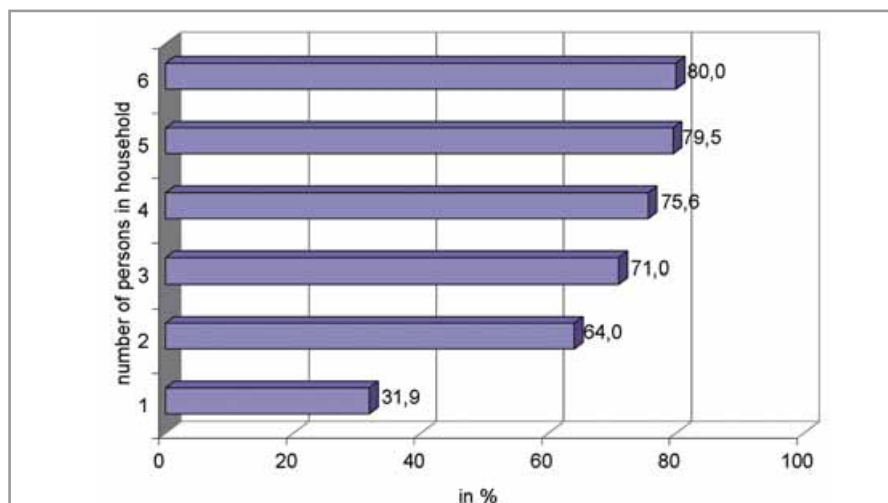


Fig. 3 Dishwasher penetration versus number of persons in household

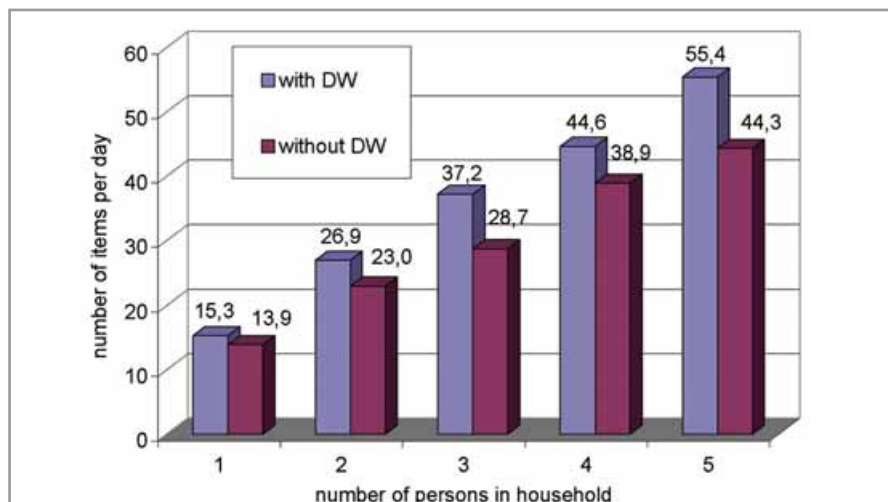


Fig. 4 Number of items washed per day

are done in households owning a dishwasher, while household without dishwasher run 10,1 washing cycles per week. The number of items washed per day depends primary on the household size (Fig. 4), but secondary also on the availability of a dishwasher. This may be due to a more flexible use of items when they are not to be washed manually afterwards, but it may be also just caused by the opposite: households having more items to be washed (e.g. as they are at home all time) may tend to have more likely a dishwasher!

Concentrating again on 2-person households owning a dishwasher the type of items washed are mainly cutlery, plates, cups and glasses (Fig. 5). Pots and pans and wooden items are more frequently washed up by hand as in a dishwasher. Regarding the way dishes are washed 51% quote to wash the dishes mainly in a sink while 7,7% commit to do it under running tap water. While this practices show no difference between mal and female persons, there show up some differences between owners and not owners of dishwashers (Fig. 6): households owning a dishwasher are more likely to use the running tap water for doing their dish work. This may be correlated to the number of items to be washed, but no prove of this hypothesis is possible using the data collected.

Looking on the households owning a dishwasher, its use is highly depending on the number of persons living in the household (Fig. 7). In average it is operated for 1,6 cycles per week per person living in the household or 4,2 cycles per household per week. Many of the items loaded into a dishwasher are subject of some pre-treatment (Fig. 8). Wiping off the residues does not use much additional resources, but soaking and pre-rinsing use at least some water and perhaps energy and cleanser. This needs to be considered as an additional consumption for automatic dishwashing (6). Consumptions are also mainly depending on the age of the dishwasher (2) and on the program selected. Average age of dishwasher used in those households owning a dishwasher was reported to be 6,0 years. The programs selected (Table 1) were estimated on the response on the question about which program was se-

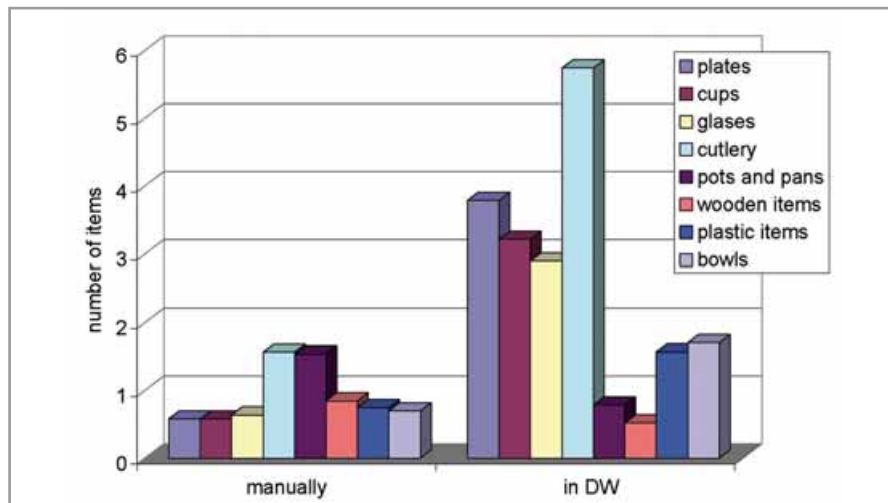


Fig. 5 Type and number of items washed in average in a 2-person household owning a dishwasher per day

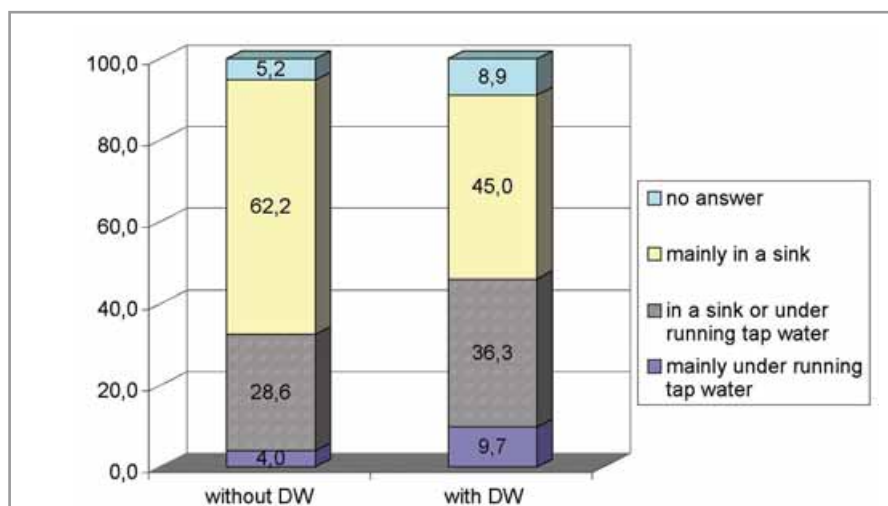


Fig. 6 Manual dishwashing practice

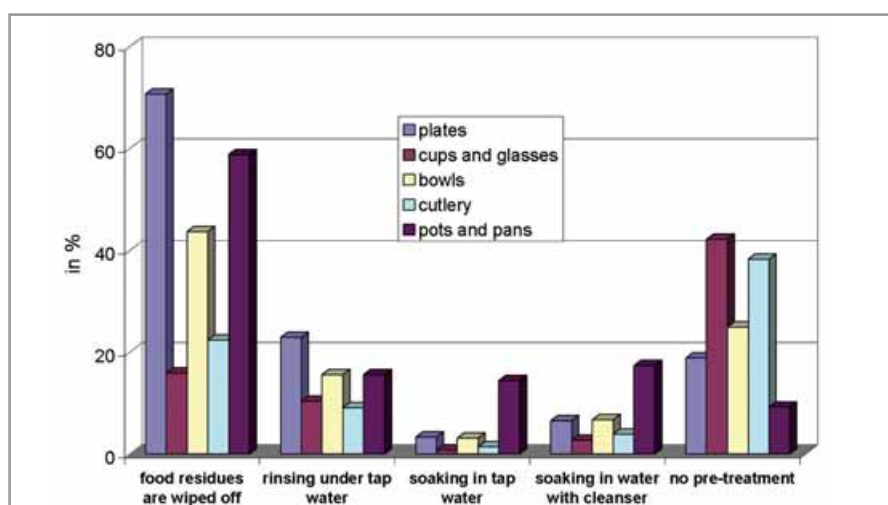


Fig. 7 Pre-treatment of items before loading in a dishwasher (multiple answers allowed)

Auf den Punkt gebracht



Program type	Usage in %
Intensive	8.9
Normal 60-65°	29.1
Normal 50-55°C	27.7
Eco- or saving program	17.7
Quick program	8.7
Autoatic program	7.8
Pre-rinse	6.0

Table 1 Estimated program selection

But it has to be kept in mind that programs may be named differently on machines or may be not present at all.

Regarding the use of cleansers and additives in automatic dishwashing, the survey shows that a majority of people use tablets (76,2%), especially multifunctional tablets (64,7%). Somehow surprising, 60,7% of all consumers do also use rinse-aid in their dishwashers and even 49,7% of those using multi-functional tablets also claim to use rinse-aid.

lected always, often, sometimes, seldom and never and transferring this into digital values by assigning 100%, 75%, 50%, 25% and 0% to each of these categories.

Asked also about the satisfaction or dissatisfaction with the performance delivered by their dishwasher consumer reported a very high level of satisfaction.

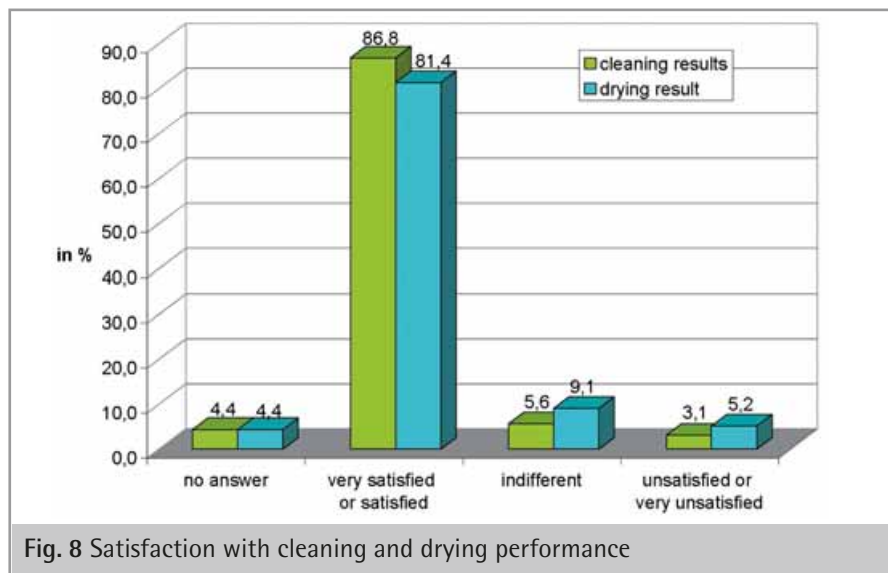


Fig. 8 Satisfaction with cleaning and drying performance

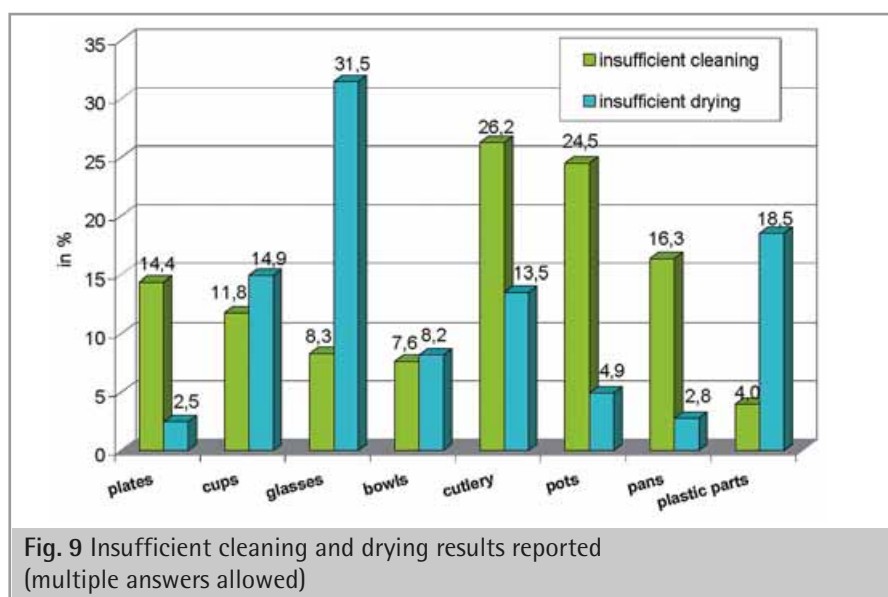


Fig. 9 Insufficient cleaning and drying results reported (multiple answers allowed)

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The percentage of consumers not satisfied with the performance is well below 5%. Surprisingly, there is no significant difference in the result, when comparing the usage of powder or tablets or the use of additional rinse-aid to multifunctional products.

Asked about the items where insufficiencies of cleaning and drying are observed there are many more replies than on the previous question about the general satisfaction (Fig. 9). While cleaning is reported to be insufficient mainly on cutlery, pots and pans drying is reported to be insufficient mainly on glasses and plastic items.

■ Conclusion

With this study a first clear insight into dishwashing practice in German households is done. Not surprising, the replies recorded do not answer all questions, but raise even more:

- Why do people show different manual washing-up practice when owning a dishwasher?

- How much additional energy and water is used for pre-treatment of items before putting them into a dishwasher?
- How much do cleanser and/or the machine influence the satisfaction with the result?

These questions may need to have a closer look to the real life behaviour and it may not be possible to be answered just by asking consumer to fill a questionnaire. Anyhow, it must be kept in mind that answering a questionnaire may not reflect the absolute truth. So care must be taken in interpreting all data reported.

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