

Influencing factors on school milk consumption in Germany

Findings from the accompanying research for the “Focus on School Milk” pilot project

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Summary

A number of studies were carried out to identify the influencing factors and their relative importance on the demand for school milk; these studies used different quantitative and qualitative methods. Data was gathered from directly concerned parties such as pupils, parents, teachers, head teachers and caretakers in North Rhine-Westphalia via written surveys and in other federal states via face-to-face interviews. Factors influencing the demand for school milk and its consumption include pupils' wishes, which were also based on their taste preferences, product characteristics, the nature of the offer and the organisational procedures in schools. Existing attitudes, the commitment of parties involved, information and the level of participation among parties also had an effect on the demand for school milk products. The price played an important role among low-income families, but was otherwise not a significant reason for not ordering school milk.

Keywords: school milk, milk, demand, school milk programme

this corresponds to a decrease of more than 78% since 1993 [7]. As a result of falling sales, the *Bundesministerium für Ernährung, Landwirtschaft und Verbraucherschutz* (BMELV) (Federal Ministry of Food, Agriculture and Consumer Protection) and the *Ministerium für Umwelt und Naturschutz, Landwirtschaft und Verbraucherschutz* (MUNLV) (Ministry for Environment and Conservation, Agriculture and Consumer Protection) in NRW agreed to the coalition initiative submitted in March 2007 to develop a pilot project to provide school milk in primary schools as part of the “*Gesunde Schulverpflegung*” (Healthy School Catering) initiative [8]. This project aimed to provide basic data for use in developing possible solutions to improve school milk distribution as part of a healthy diet in future school milk policies.

The pilot project began in August 2008 and was implemented in primary schools in NRW for the duration of two academic years. The accompanying research for the “Focus on School Milk” pilot project was carried out by the Max Rubner-Institute (MRI) and the Thünen-Institute (TI). These institutes studied the influence of price and other factors on the demand for school milk. MRI also supplied basic data for TI's econometric models via written surveys [9]. In addition to the study in NRW, the MRI also worked on three other studies (♦ Table 1) which aimed to identify the various factors influencing the demand for school milk and which did not focus primarily on price.

Introduction

The demand for school milk has fallen steadily over the last 20 years. Four studies carried out at the Max Rubner-Institute in 2008 and 2009 considered which factors had a favourable or detrimental effect on demand. Only partial findings from two studies have been published to

date [1, 2]; the findings from one of these studies relate exclusively to North Rhine-Westphalia (NRW). More recent studies with further findings on the factors determining school milk consumption in Germany have not been identified.

Starting situation

Background

The *Bundesministerium für Ernährung und Landwirtschaft* (BMEL) (Federal Ministry of Food and Agriculture) announced that sales of school milk in Germany have fallen steadily since 1993. In 1993 the total amount of milk sold was 130,223 tonnes (t), yet by the academic year of 2008/2009 it had fallen to 36,746 tonnes. 28,133 tonnes were sold in the academic year of 2013/2014;

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Framework conditions: laws, regulations and support in federal states

The European Union's decree on school milk provides the legal framework for the provision of school milk [3], which is defined in detail by member states through national implementing regulations. In Germany the authorities in each individual state determine conditions based on the applicable decree on school milk subsidies (SchulMBhV) [4], which vary e.g. in regard to the highest price for school milk. The number of authorised school milk suppliers and the product ranges also vary. Individual states have also introduced financial subsidies and funding programmes. For example, at the time the data was collected, the state of Hessen was the only state to grant a school milk benefit to counteract the falling consumption of school milk [5]; this benefit was discontinued at the end of 2010 [6].

These studies enabled the MRI to incorporate the management and experiences of the school milk programme in other federal states into the pilot project.

Objective

Apart from studies from the 1970s and 1990s [10–13], there was little established information about the factors which caused (high) participation and/or an impediment to or rejection of participation in the school milk programme in schools for Germany. The accompanying research carried out at MRI therefore aimed to establish which factors determined demand and consumption. The subject of research was to be considered from different perspectives using studies which had adopted different methodological approaches. Reliable information on the factors influencing the demand for school milk was to be obtained primarily from directly concerned parties such as pupils, parents, teachers, head teachers and caretakers. Suppliers were questioned as part of TI's econometric accompanying research [14].

This article collates the most important findings from the various studies led by MRI, focusing on the description and importance of the influencing factors identified which may encourage or impede the demand for school milk.

Method

A total of four studies were conducted: a quantitative study with a large sample size in primary schools in NRW and three qualitative studies in primary and secondary schools and in private households in other federal states. The situations and experiences in other federal states were to be incorporated into the pilot project through these qualitative studies.

♦ Table 1 provides an overview of the studies whose findings were used.

The quantitative study (**NRW Study**) aimed to gather representative data which could provide an overview of and information on existing school milk provisions and their organisation in schools as well as people's criticisms, desires and attitudes in relation to school milk in NRW. The quantitative method was selected because although information was available about many elements of the research subject [10–13, 15], no information was available about their extent. Statistically representative data was also provided for calculations used in TI's econometric models.

As the latest (primarily sales-oriented) studies on school milk originated from 1987 to 1997 or earlier, the three other studies used qualitative methods in order to move toward more recent developments and phenomena with maximum transparency [16]. Two of the qualitative studies used semi-standardised interviews, allowing for a deeper analysis of the backgrounds, conditions and practices of (school) milk provisions and the attitudes of parties

in schools. As pupils' participation in the school milk programme varied significantly from school to school, schools with particularly high participation levels were able to provide important indications of the combination of factors influencing the demand for school milk.

The **BP Study** (Best Practice) determined the schools with a high level of participation in the school milk programme by means of the respective federal authorities' school milk statistics for subsidy administration for the month of April 2008 in the respective federal states (excluding Saarland); three to four schools from each state with high participation levels were included. This study design therefore focused primarily on identifying the promoting factors.

A different approach was selected for the **OSM Study**. This study looked at schools in different federal states which offered milk and milk products *outside* the school milk programme. The aim was to study the reasons and the type of arrangements for selling milk in schools which offered non-subsidised milk, as well as the range of products, the organisation of purchasing, distribution, etc. This study also recorded the reasons which had led to non-participation in the school milk programme. The attitude towards milk and school milk as a factor influencing the demand for school milk has been insufficiently studied to date.

The aim of **Study R** was to examine the role of milk and school milk in the diet of pupils and parents via problem-centred interviews [17].

Type of study	Survey methods/tools	Type and number of schools	Befragte Personen/Zielgruppen	People/target
BP Study: Best Practice – Study of schools with high participation in school milk programme				
qualitative study	personal, semi-standardised interviews interview guidelines with mostly open-ended questions	60 schools in total: 50 primary schools and 10 secondary schools in 15 federal states	parents	40
			teachers	36
			head teachers	53
			school milk managers ¹	60
OSM Study: Study of schools which do not take part in the school milk programme but offer milk and milk products [2]				
quantitative study	personal, semi-standardised interviews interview guidelines with mostly open-ended questions	57 schools in total: 16 primary schools, 29 secondary schools, 12 schools with primary and secondary levels in 5 federal states	parents	22
			teachers	33
			head teachers	50
			milk coordinators ¹	57
NRW Study: Influencing factors on the demand for school milk in primary schools in North Rhine-Westphalia (NRW) [1]				
quantitative study, representative sample of schools with school milk provision in NRW written surveys	self-administered questionnaires with predominantly closed questions, including socio-demographic questions	118 primary schools in NRW	primary school pupils	11 850 (67%) ²
			parents	11 359 (64%) ²
			teachers	687 (88%) ²
			head teachers	115 (98%) ²
			school milk managers ¹	116 (99%) ²
Study R: Role of milk and school milk in pupils' diets				
qualitative study	qualitative (problem-centred) individual interviews guidelines with core themes, images, questionnaires for social demographics	in 4 federal states	23 primary school pupils, 46 secondary school pupils	69
			16 parents of primary school pupils, 25 parents of secondary school pupils	41

Tab. 1: Description of studies led by the Max Rubner-Institut in 2008 and 2009 as part of the accompanying research on school milk [own data]

¹ School milk manager/milk manager: person responsible for organising (school) milk (usually the caretaker)

² Response rate

Quantitative data was evaluated with the statistics programme PASW® Statistics Version 17.0 (SPSS Inc., Chicago, Illinois, USA); group differences were tested with Cramers V. The problem-centred individual interviews were recorded, transcribed and evaluated according to MAYRING'S qualitative contents analysis [18] using the text analysis programme MAXQDA. Citations with case numbers come from individual interviews (Study R); citations without case numbers come from the categorised responses to open-ended questions in the quantitative study

(NRW Study) and qualitative studies (BP Study and OSM Study).

In this publication, the term "school milk programme" is used to refer to the EU School Milk Scheme; the term "school milk" to the products subsidised as part of the EU School Milk Scheme. This primarily concerns pure milk (milk without chocolate or flavour) and flavoured milk (milk with chocolate or flavour).

Contrary to established practice in nutritional science, these studies treated milk and flavoured milk as drinks, rather than as food – even though they are not regarded as thirst-quen-

ching. Pure milk and flavoured milk are regarded as drinks in the children's world of experience.

Results

Pupils' wishes

Pupils' wishes are a key factor in the demand for school milk. 57% of the 4,792 parents in the NRW Study who ordered school milk and gave reasons referred to the child's wishes in their response to the open-ended question "Why do you order school milk for your child?" Findings from

Study R confirm that the decision on milk consumption is made by the pupil irrespective of age.

["So we don't mind if she orders any kind of milk (...) And if she doesn't want to, that's ok too." ¹ /122422]

Existing preferences were pivotal for the children questioned in NRW; 83% of the 6,725 children who drank school milk chose it because they thought it tasted good. Preferences were also relevant to the 4,788 children who did not drink school milk because they did not like school milk or milk (26% and 24% respectively). Parents' responses also took their children's taste preferences into account; of the 5,451 parents who did not order school milk and gave reasons, 26% and 17% respectively said that their child did not like school milk products and/or milk.

The pupils surveyed in Study R cited three requirements for the consumption of school milk: it had to taste good, they had to have money to buy and they had to want to have school milk.

["And why do you almost always buy it?" "I don't know, it tastes good." /114211; "And what decides whether you want to or not?" "Whether I have money or not. Whether I have money and want to buy milk with it and not something else." /129321]

Sufficient consumption of milk and milk products at home and the taste of school milk were cited as reasons by the pupils who had decided against consuming school milk.

["I already drink quite a lot of milk in the morning and in the evening, and then again at lunchtime in school would be too much milk." /129312; "Well one doesn't taste of strawberries, the other doesn't taste of vanilla (...) And it all doesn't really taste of milk or something." /329321]

The importance of the pupils' wishes is also reflected in statements in the BP Study and the OSM Study in the responses to questions about the main criterion for selecting (school) milk products. The major-

ity of schools adjust their range to the demand for specific products. This applied to 75% of schools in the BP Study, which had narrowed the selection down from the suppliers' choice of products; 76% adjusted the range according to demand.

Parties' attitudes to school milk

All four studies show that a positive attitude to school milk is a promoting factor in the demand for school milk. Positive attitudes can be seen as the basis for high levels of participation in the best practice schools (BP Study); 98% of head teachers, school milk managers, teachers and parents believed that the provision of school milk was important. A positive attitude can also be observed in the surveys of teachers and school milk managers in the main NRW study; 88% and 94% respectively personally support school milk provision.

Head teachers, teachers and school milk managers also cited health aspects ("Because milk gives children valuable nutrients", "because milk contains calcium") and catering aspects ("Children often come to school without breakfast", "some parents don't provide sandwiches, ordering milk is easier for them") as **important reasons for school milk provision** in the NRW and BP studies. Followed by practical aspects ("Children have a lighter backpack", "more practical and hygienic", "School milk is chilled, if they bring it themselves it gets warm or goes bad"), community aspects ("milk tastes better in a group") and tradition ("it's always been like that", "There's been milk at this school since it was part of the GDR (...) it's an old tradition").

Similar reasons were also given by parents in the NRW Study in response to the question "Why do you order school milk for your child?" The most common reason for ordering milk – health aspects – was cited by 59% of the 4,792 parents who ordered school milk. In contrast, only 32% of the 6,725 children who drank school milk in NRW stated "because it is healthy".

Reasons why parents do not order school milk

are principally based on the fact that their child is given enough milk and milk products at home (62% of 5,451 parents who do not order school milk and gave reasons, NRW Study) or because they gave their child milk and milk products for school (21%). Of the 4,788 children not drinking school milk, 76% stated that they "bring something else to drink", and 36% drank "enough milk at home".

Findings from Study R on general attitudes to milk and milk products are also important. A majority of pupils and parents had a positive attitude to milk. This food group was particularly regarded as healthy:

["Milk is a very valuable food (...) with valuable ingredients" /219511; "I see milk as something healthy, which is part of a balanced diet, which tastes good, which I like to eat, yes, it's part of it. I wouldn't like to miss it" /311412; "Milk is important to me. And I think it's one of the healthiest foods there is." /122421]

It must be emphasized that parents regard milk as an essential part of life and diet and classify it as a staple food. Parents and pupils also refer to milk as the basis for milk products which they don't want to give up as justification for the importance of milk:

["It's a part of life for me." /215511; "Milk means health, life, freshness (...) So yes, for us, milk is simply a part of life. Yes, you need milk every day and it's simply there every day, yes." /229512; "Yes, milk is actually a basic building block in our diet. I mean, there is a lot based on milk, cheese, yoghurt, Quark." /418613]

Provision factors

The **duration of school milk provision** also appears to play a considerable role in the demand for school

¹ ■■■ See German original article for original German citations.

milk. There was no information for 16 (27%) of the best practice schools; however 24 (40%) schools had provided school milk for 16 years or more, 8 of which for more than 30 years. In schools with routine organisational procedures school milk was regarded as a fixed component of the school day and was simply part of it (*“Tradition creates calmness”*). Tradition and ritual were likewise regarded as a reason for high demand by those surveyed; this reason was cited more frequently by people from schools with a continuing tradition. In states in the former East Germany, today’s school milk provision can be seen as a continuation of tradition, harking back to the milk provided as part of the nationwide free school meals offered in the former GDR [19], and this still may have an impact on school milk consumption today. A comparison of current participation rates in individual federal states revealed that school milk consumption in the new states (former East Germany) during the study period, although still falling, was on average significantly higher than in the old states (former West Germany). In the BP Study, 51% of schools in the old federal states exhibited a low participation rate (17–40%), whereas only 8% of schools in the new federal states had such low rates.

Variety and flexibility in choice are also important factors which encourage a demand for school milk. 70% of schools in the BP Study offered pupils four or more varieties. The most commonly combined options were pure milk, cocoa, strawberry milk and vanilla milk and, in the event of five options, banana milk. School milk managers listed the “favourite” varieties at these schools as cocoa (95%), vanilla milk (72%) and strawberry milk (65%). Findings from Study R illustrate a desire for variety, as only a few pupils liked all the varieties; most pupils had a favourite. Many pupils ranked their preferences for more and less

favoured varieties and classified juices and iced tea in this ranking. Juices and iced tea are therefore perceived as equal substitutes for school milk. [*“But I always choose vanilla” /327212; “Mostly strawberry milk, but when there’s none, then banana milk and when there’s none of that, then vanilla milk or when there’s none apple juice and when there’s none then orange juice or another juice and when there’s none of them, then I’ll take chocolate milk.” /221111*]

The suggestions for improvement made by parents ordering school milk also indicated the importance of variety and flexibility in the selection in the NRW Study. As the children usually settled on one product for a certain period, which could stretch for up to several weeks (or months), 28% of parents wanted their child to be able to choose from school milk products more frequently and 25% wanted a wider selection. Statements relating to a wider selection of products consistently referred to yoghurt and drinking yoghurt in all the studies.

In their suggestions for improvement, parents ordering school milk (n = 1,633) and teachers (n = 419) criticised the **nutrient composition** of the available products, with 64% and 85% respectively mentioning “less sugar”, 50% and 75% respectively “less flavour” and 36% and 40% respectively “less fat”. 19% and 23% respectively demanded the exclusive provision of pure milk.

Drink temperature appears to play a major role in the consumption of milk. Findings from Study R show preferences for warm or cold milk (and milk drinks); however, the desire for colder milk was expressed much more frequently. The desire for warm milk was often linked to the cold season. In one school the provision of milk at three temperatures (chilled, room temperature, warm) was particularly appreciated and highlighted:

[*“Yes, like drink pouches, only with milk, and you could, so there was some at room temperature or cold or warm,*

as you wanted.” /419311]

The NRW Study confirms this finding. The question “Should the milk be colder?” was answered in the affirmative by 47% of children drinking school milk (n = 6,725); the question “Should the milk be warmer?” was answered in the negative by 81%.

The preference for cold milk was factored at most schools in the BP Study; 68% of these schools had fridges or cold-storage rooms and therefore sufficient chilling options. 82% of school milk managers were correspondingly “satisfied” or “very satisfied” with the chilling options.

This was followed by the question as to what extent price was a determining factor in ordering or not ordering school milk. In the NRW Study, 22% of parents who did not order school milk and gave reasons thought school milk was “too expensive”. In contrast, parents ordering school milk stated that they would still order school milk if the pack was 5 or 10 cents more expensive (63% and 35% respectively).² Significant differences were identified depending on monthly household net income (♦ Figure 1).

Study R also confirmed that price was a criterion affecting demand primarily among low-income families, but also that respondents reacted sensitively to price increases.

[*“.. that it gets more and more expensive (...)” “And if it got cheaper again, the milk, when would you buy it again?” “If it got cheaper I would buy it again.” /321122*]

Organisational procedures

School milk is usually pre-ordered in primary schools, whereas in secondary schools it is mainly purchased independently from vending machines, student businesses or cafeteria personnel. Shorter ordering periods are perceived as time consuming in schools with advance

² Price of school milk at date of survey: €0.35 or €0.30 per 250/200 mL [14].

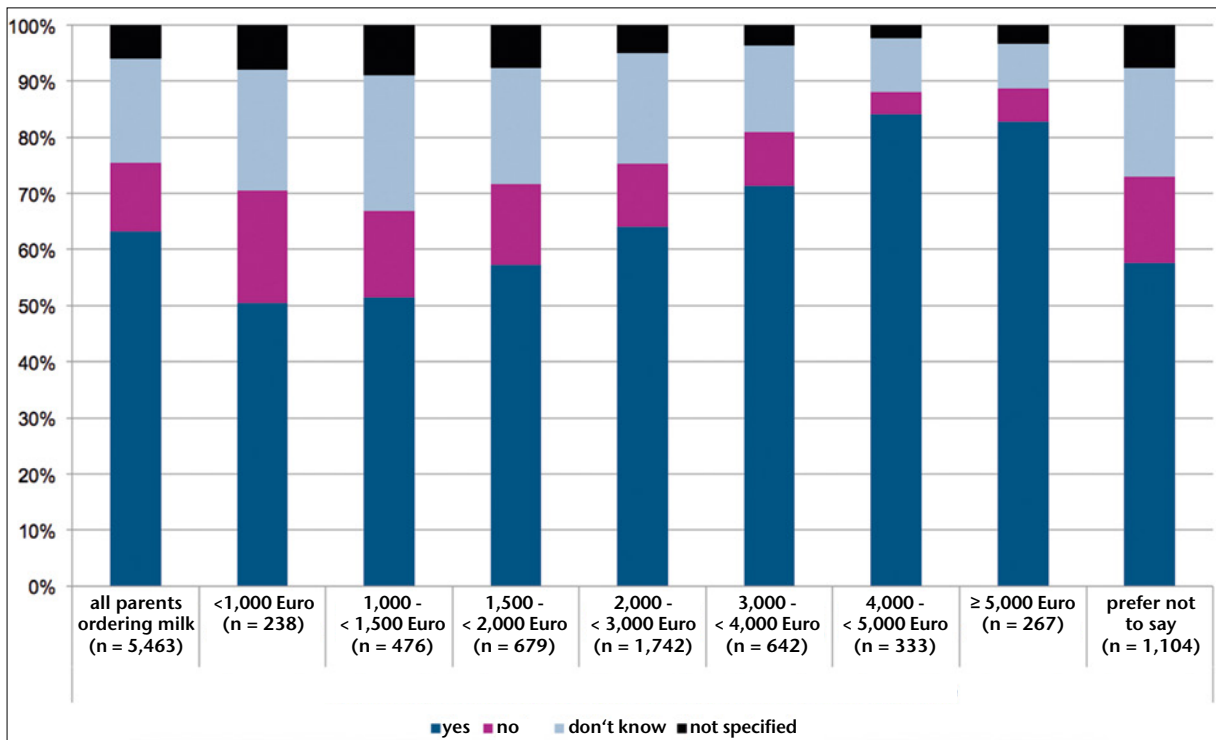


Fig. 1: Proportion of parents ordering school milk on the question of whether they would order school milk if the pack costs 5 cents more – according to monthly household net income –NRW Study

ordering. The time spent collecting money was regarded as “far too much” by some 6% of teachers and school milk managers and by 13% of head teachers, and regarded as “somewhat too much” by more than a fifth of teachers and school milk managers and by a third of head teachers (NRW Study). The BP Study also showed that the **distribution of tasks** among many people and/or groups of people with **explicit responsibilities** in some schools contributed to a reduction in the time burden per person and to **optimum organisational** procedures. In 40% of schools the tasks were divided among three groups and in 28% among four groups. Those most frequently involved were pupils, teachers, caretakers and secretaries. Those involved were also identified with the subject of school milk and its related tasks; school milk therefore became a matter for the entire school. Further findings in the BP Study show that organisational procedures and their respective regulations have a considerable influence; more

than a fifth of those surveyed cited “good organisation” as a reason for the high demand from pupils and 90% were “satisfied” or “very satisfied” with the school milk organisation process. The importance of the organisation of school milk tasks was also illustrated by survey results in the OSM Study. The associated organisational burden was cited as a reason for non-participation in the school milk programme by 22% of those surveyed who knew about the school milk programme. The BP Study clearly showed that communal consumption of school milk as part of a communal school breakfast could have a positive effect on the demand for school milk. School breakfast was integrated into regular school operations in 88% of primary schools involved in this study and in 40% of secondary schools. **School breakfast taken together** as a class was slotted in before break, did not compete with break time and allowed the children to breakfast calmly.

Commitment and participation of parties

People’s level of **commitment** is also closely linked to positive attitudes towards school milk. The BP Study paid particular attention to the commitment aspect; of the 189 people surveyed, more than 70% responded to the question on the general commitment of parents and teachers at the school. 86% of these regarded parents’ commitment and 92% teachers’ commitment at the school as “high” or “very high”. 58% of those surveyed believed that the commitment of parents and teachers had an influence on the demand for school milk. This was also clear in the responses to an open-ended introductory question: “Why do you think school milk is more accepted at this school than at other schools?” 36% of the comments by the 148 people who answered the question fell within the category of “commitment” of school personnel.

["A lot depends on the secretary. Who could do it all on the side, collect money, provide receipts, calculate days, nobody else could do that on the side. You really have to commit and that is what she does. That's why it works so well." / "Because the teachers are more committed and because the caretaker and the secretary are prepared to organise it here. Ordering the milk and organising payments is a lot of work."]

Active participation in all matters relating to school milk appears to be a promoting factor in the demand for school milk. The BP Study shows that teachers and parents were involved alongside school management in the decision to offer milk in 35% of the schools studied. In a fifth of all schools, pupils participated in the selection of school milk products, more frequently than parents, caretakers and teachers.

Pupils were actively involved in school milk organisation processes in more than three quarters of best practice schools, e.g. in pre-sorting or distribution as "milk servers" or in direct sales as a member of a student business. Comments by those surveyed prove that the pupils' sense of responsibility was strengthened through collaboration and they identified with the school and school milk tasks. Everyday skills were also transferred and promoted through e.g. adding up after sales or telephone ordering of school milk.

["There is also the milk service in the class and in the business environment. The responsibility lies with the children. They feel important." / "The pupils identify more closely with the project thanks to their own involvement." / "They learn a lot of things, e.g. adding up and dealing with money."]

Awareness of school milk programme and information

A demand for school milk presupposes an awareness of the existence of the school milk programme and of the actual range of products offered in schools taking part in the school milk programme.

Results from the OSM Study and Study R prove that there are considerable information deficits in relation to the school milk programme. The OSM Study also focused on determining awareness of the European School Milk Scheme and on detecting barriers to participation in the school milk programme. Of the 161 people surveyed who provided information on **awareness** of the school milk programme, 57% did not know about the school milk programme and 43% knew about it or had heard of it (♦ Figure 2). People who knew about the school milk programme (n = 69) were asked to briefly describe the school milk programme. 23% provided information on its objective and benefits, 20% on the responsibility of the EU, 41% knew that milk was subsidised as part of the school milk programme.

The school milk programme was also unknown to many parents in Study R: *["And this school milk is milk which is subsidised by the state. (...)", "What do you think about something like that being offered?" "I think it's good. I think it's really good that it exists, like I said, I didn't know about it before, perhaps it should be made more public or it passed me by somehow, no idea." /229512]*

There were also **information deficits** among parents in Study R about existing provisions in their own children's schools. These deficits were, on the one hand, of a general nature, e.g. they didn't know whether school milk was offered or whether their child drank school milk and, on the other hand, these deficits related to specific details, e.g. the price or the range or the ordering process.

["I didn't know until this survey for example – V. had never said anything about it to me – that there was school milk in school. I didn't know at all (...) I also didn't know that there are drinks machines there, because they actually have everything with them and I haven't really thought much about it." /229512]

In contrast, the few informed parents said that they had received information via their children, circulars or parents evenings. However, there was only a little or almost no communication about school milk between parents and children at home, except about the ordering system if they participated in the school programme.

["School milk was a subject once (...) at a parents evening, I think I remember, whether or to what extent the children use school milk or like or don't like it. But otherwise no (.) I can't remember many conversations (...)" /112414]

Suggestions made by those surveyed in the BP Study and the NRW Study on how to increase school milk consumption demonstrate that information is a factor which influences the demand for school milk. More advertising for school milk and more nutritional education were both mentioned. School milk managers and head teachers in NRW expressly asked for more work on raising awareness and providing information among parents and children; the "awareness of a healthy diet" must be improved and parents must be better informed "about the importance of milk in children's diets". More information in lessons via "healthy nutrition as a taught subject" or via corresponding projects and campaigns was also mentioned in the catalogue of suggestions for improvement. The demand for nutrition-related campaigns and information measures in lessons had already been taken into account in 74% of the schools studied. Milk was usually discussed in the context of a healthy diet.

Advertising on the subject of milk and/or school milk was not only regarded as beneficial in the form of campaign weeks with special prizes or free trial campaigns in school, but also outside school via "advertising in the media" such as "TV, radio, newspaper".

Discussion and conclusions

The major influence of preferences (“the child’s desires”, “milk tastes good – like milk/milk doesn’t taste good – don’t like milk”) on the demand for (school) milk products becomes evident in all four studies. The importance of preferences in relation to milk and/or cocoa is also reflected in the drinks consumed daily or almost daily at home. Milk and milk drinks are not ranked first by children, but are high up in the drinks preference scale. In 1999 DIEHL established that cocoa was one of the five most popular drinks among 10- to 14-year-old boys who “like/particularly like” drinking cocoa [20]. School milk therefore definitely competes directly with other drinks in preferences. The largely positive attitude to milk which was mainly founded on the evaluation of milk as a healthy food was further reinforced in relation to school milk. The advantages of school milk were seen in the

fact that children could experience a guaranteed supply in school in a way which was convenient and practical for parents, particularly if the children did not have breakfast.

Despite these positive attitudes to milk, criticisms and suggestions for improvement from a not insignificant proportion of parents and teachers referred to the composition of the available flavoured milk. This could be due to the fact that drinks recommendations for schoolchildren mention water and unsweetened fruit or herbal teas [21]. Milk and milk drinks are not seen as appropriate thirst-quenching drinks due to their nutrient composition. Only milk with 1.5% fat and self-prepared milk shakes are recommended as snacks in school [22]. Daily consumption of milk and milk products is however recommended due to their high nutrient concentration, particularly as a component of a first or second breakfast [23].

There is a contradiction in the “living environment school” between the demand for an extensive range of products which allow flexibility and nutritional demands for a healthy diet. The natural sugar content in milk is approx. 4.5% (lactose); the EU School Milk Scheme restricts the amount of added sugar in school milk products to 7% [3]. At the time of the survey, sugar content in flavoured milk supplied as part of the school milk programme was and still remains under 10%. We should note here that flavoured milk is regarded as drink in the children’s world of experience and compete with drink alternatives such as soft drinks which have at least as much sugar but also contain no comparable important nutrients. (School) milk is however most likely to be accepted as a varied proposition. Against this background and given the fact that a certain proportion of children and young people in NRW come to school without breakfast

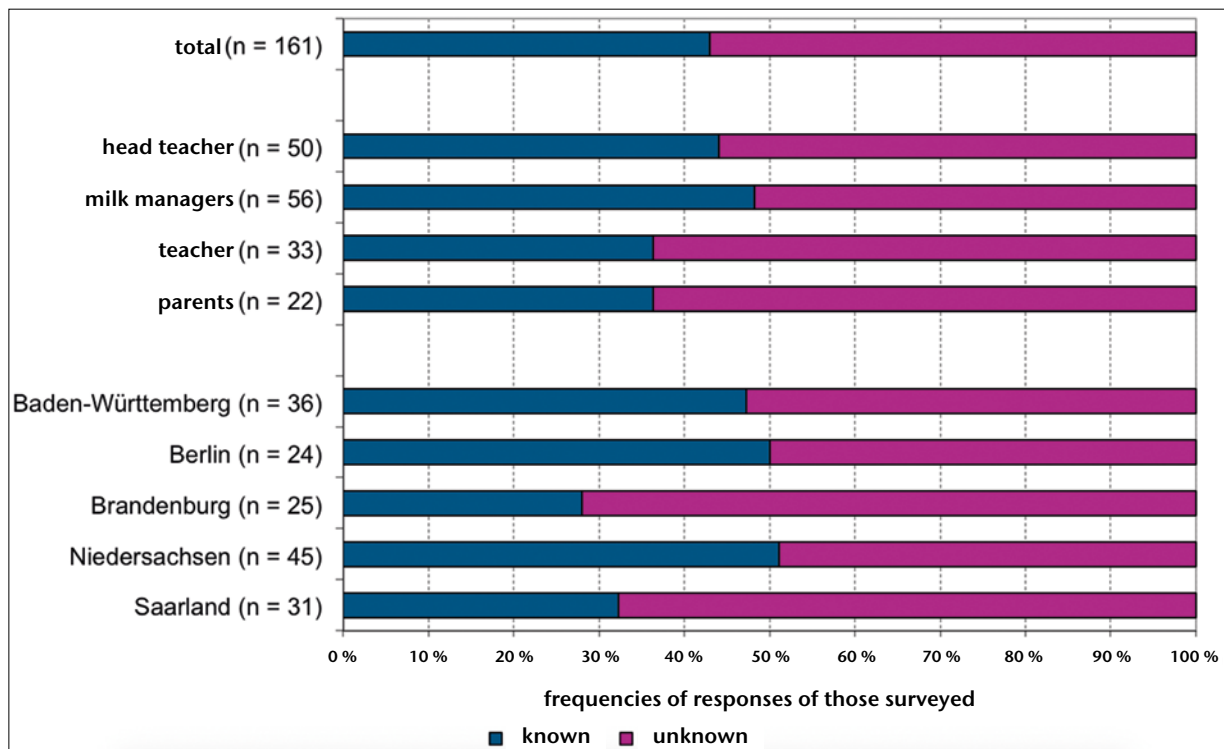


Fig. 2: Awareness of the school milk programme according to the role of those surveyed and/or state – OSM Study

– 18.9% according to data from the HBSC Study for NRW [24] – it should be noted that flavoured milk still contains the valuable ingredients of milk despite the added sugar. They can therefore be regarded as an advisable element of a snack or breakfast in comparison to soft drinks with high sugar content.

Irrespective of nutritional characteristics, an expansion of the **product range** in accordance with parents' wishes could also be considered, to include drinking yoghurt and whey products. The provision of chilled products could also contribute to higher acceptance rates. These demands are not new; they have also been found in earlier studies [13, 15], but have obviously not been sufficiently implemented. Survey results from the NRW Study showed that **price** was not the decisive reason not to order school milk – expect among low-income families. Free distribution of milk was largely rejected by all parties (children were not asked this question); however, free distribution to children from low-income families was largely supported. We can therefore recommend free distribution of school milk products to children from low-income families.³

All the studies indicate great potential for (positive) changes, particularly in **organisational procedures**. In particular, **ordering and payment processes** are often old-fashioned and are felt to be too time-consuming by some of those concerned. We might suggest a more flexible ordering process, which also allows for changes in the product range over long-term periods. Cashless payment processes such as e.g. transfers or direct debits are also feasible as well as rechargeable cards which debit the corresponding amounts. Payment of lump sums biannually may also be pos-

sible, particularly if other catering options are available, such as school breakfast or lunch. The process could be further simplified by uncoupling the payment process from the purchase and consumption process by issuing vouchers or stamps. A project report from 2014 looked at the possibilities of cashless payment processes [25]. There is currently no information about the extent to which the options illustrated therein have already been implemented.

The results of the BP Study demonstrate that higher participation rates in the school milk programme are connected to higher **rates of participation** by individual groups in the processes related to school milk. If we take the participation levels in WRIGHT et al. as a basis, greater levels of participation were found in schools in which parents and pupils took part alongside school management and teachers and also had some decision-making powers [26].

Information deficits about school milk were recorded in schools and among parents. A higher degree of awareness of the school milk programme could be attained via the provision of corresponding information, campaigns and advertising by dairy associations and suppliers in the respective states.

This finding is also not new; WIETBRAUK [12] pointed out the necessity of promotional advertising even for price reductions. Advertising as a promotional measure is also strongly emphasised in the findings report by WEINDLMAIER and FALLSCHEER [13]. Advertising prohibitions are enshrined in most school regulations; these are however often relaxed if advertising is relevant to education and is approved [27, 28].

Strengths and weaknesses of the studies

This accompanying research has enabled us to study a given question via different methodological approaches and from different perspectives. The quantitative study with a large sample size provided a reliable overview of the products and processes in schools and the most important themes associated with school milk, particularly from the perspective of users in one federal state. This study was for NRW, so is therefore not representative of Germany, i.e. the results cannot be transferred to Germany as a whole.

The qualitative studies enabled us to examine other aspects in more detail, such as general attitudes to milk and milk products and collaboration between different parties. Practices in other states could also be included. We were thus able to establish that the situation in NRW was echoed in other states in a number of different areas, such as e.g. the importance of children's wishes, the nature of milk provisions and the organisation. These changes in perspective and the inclusion of both schools with school milk programmes and schools which offered milk without being linked to the school milk programme provided considerable insights into organisational procedures and existing information deficits.

Outlook

These different studies identified a variety of factors which have a favourable and/or detrimental influence on the demand for school milk and its consumption. Other studies might illustrate whether and to what extent these factors

³ For further results on price influence see [14].

have already been taken into account and whether changes have arisen.

In regard to catering situations in schools, the fundamental question arises as to whether it would be sensible to establish and/or continue the school milk programme and the school fruit and vegetable programme [29], which has since been established in nine federal states, as isolated measures with a one-off expenditure in schools. The inclusion of nutritionally valuable food groups such as milk and milk products and fruit and vegetables in a (state-wide) concept for catering provisions in schools would be desirable. This concept should be developed specifically to each school for both break provisions and for the hot lunch meal. In regard to the school milk programme, however, this requires flexible management of the respective funding and easy implementation into the daily school routine.

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Conflict of Interest

The authors declare no conflict of interest.

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→ www.ernaehrungs-umschau.de

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