

SWIFS – Swiss Infant Feeding Study

**A national study on infant feeding and health in the
child's first year**

Executive Summary

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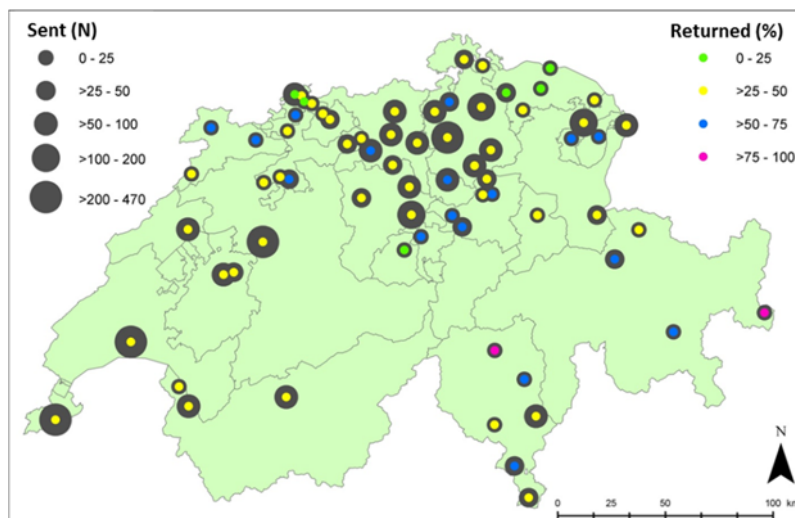
1. Background

The first few months of a child's life are characterised by rapid physical growth and development of the nervous system, organs and psyche. This is accompanied by changes in infant feeding: moving from prenatal nutrition, to a diet of infant milk and complementary food, and ultimately eating the same as the rest of the family [1]. A balanced infant diet makes a substantial contribution to a healthy development. Its effects are not only evident in infancy but continue into adulthood. Since 2001, the WHO recommends exclusive breastfeeding for the first six months and the introduction of appropriate complementary foods from month seven, while continuing breastfeeding until the child's second year [2]. This recommendation goes back to a systematic review [3]. The WHO recommendations are targeted primarily at countries where breast milk is not only the appropriate diet for infants but also represents a low-cost and hygienically safe choice. In European countries where such considerations are of less importance, a gradual introduction of infant formulae is recommended between five and seven months of age [4]. This recommendation is supported by the Swiss Society of Paediatrics and the Swiss Society of Nutrition [5, 6].

The Swiss Infant Feeding Study (SWIFS) is the third study on breastfeeding and infant nutrition in Switzerland. Same as the studies in 1994 [7] and 2003 [8], its essential aim is to monitor the prevalence and duration of breastfeeding and infant nutrition in Switzerland. The use of identical survey instruments to collect breastfeeding and infant feeding data allows a comparison of the present results with those from 2003 and, in part, from 1994. The repeated collection of data on determinants such as socio-economic status, nationality, lifestyle and conditions in hospital permits a trend analysis of influencing factors in Switzerland. The additional inclusion of new determinants such as employment conditions, child and maternal health, health-related behaviour and social networks allows assessing the current context of infant feeding.

2. Study design and study population

SWIFS is a cross-sectional study and was conducted by means of a written postal questionnaire. It is based on a randomised sample of mothers and infants from the German, French and Italian-speaking regions of Switzerland. As in the previous studies in 1994 and 2003, the questionnaires were sent out via local and regional Swiss Parent Counselling Services (Mütter- und Väterberatungsstellen). The only exception was the Canton of Geneva, where questionnaires were sent out by the Maternity unit of the Geneva University Hospitals. A satisfactory coverage of births registered in the canton was therefore achieved for the majority of cantons. The parent counsellors randomly selected mother/child pairs from their birth-registers in the previous 11 months. Most of the Parent Counselling Services sent out the questionnaires between February and April 2014. Exceptions were the cantons of Geneva, Neuchâtel and Bern, where additional requests for clarification led to delays. All mothers were sent a reminder two weeks after the questionnaire had been sent.



40 % of the questionnaires were returned (n=1650). The rate of returns varied widely depending on the canton and language region. The rate of returns in German-speaking Switzerland was 41 %, compared with 34 % in the French-speaking region and 51 % in the Italian-speaking canton of Ticino (see Figure 1).

Figure 1: Sending and return of questionnaires per Counselling Service

The breastfeeding indicators corresponded with the WHO definitions and were defined accordingly (Figure 2). The time of introduction of complementary food corresponds with the age at which the child was first given complementary food. These indicators were based on the retrospective data on breastfeeding and infant nutrition, and a 24-hour nutrition log. Vitamin D and folic acid supplementation were also considered main monitoring questions, as well as general information about health, health precautions for parent and child, pregnancy and birth. For sake of comparison with earlier studies, the analysis of the data on prevalence and duration of breastfeeding was

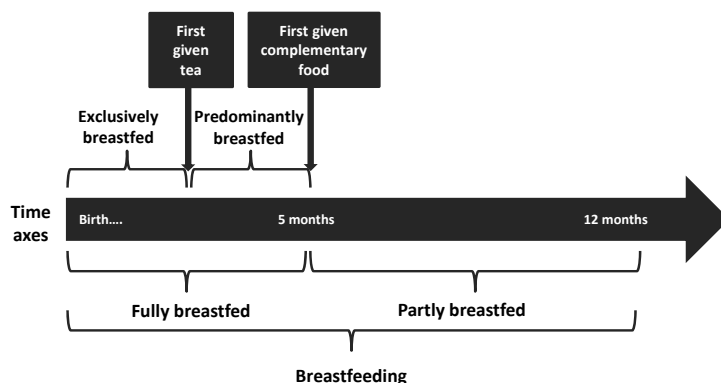


Figure 2: Definition of breastfeeding indicators on the basis of time axis

carried out in infants aged 0-12 months. For all other questions, the total sample (infants aged 0-15 months) was used. Descriptive analyses were supplemented with univariate significance tests and multivariable regression and event-time analyses (Kaplan Meier survival analyses) of determinants of breastfeeding duration and introduction of complementary food.

3. Results

Apart from a higher level of education and a slightly higher maternal age, the study population is largely comparable with the participants of the previous study in 2003. The average age of the mothers was 33, one year older than in 2003, reflecting the trend towards older motherhood in Switzerland (<http://www.bfs.admin.ch>). Half of the women (53 %) were first-time mothers. A quarter of the participants (23 %) were non-Swiss. Most of these women were from European countries. The average age of the children (7.8 months) was higher than in the 2003 study (target group 0-9 months), which was expected on the basis of the current target group of children aged 0-12 months.

The SWIFS study data indicate a high level of correspondence between current breastfeeding practice and the current Swiss recommendations on breastfeeding and introduction of complementary foods [5]. In summary, the recommendations advocate exclusive breastfeeding until the end of month four, followed by a gradual introduction of complementary food in months five to seven.

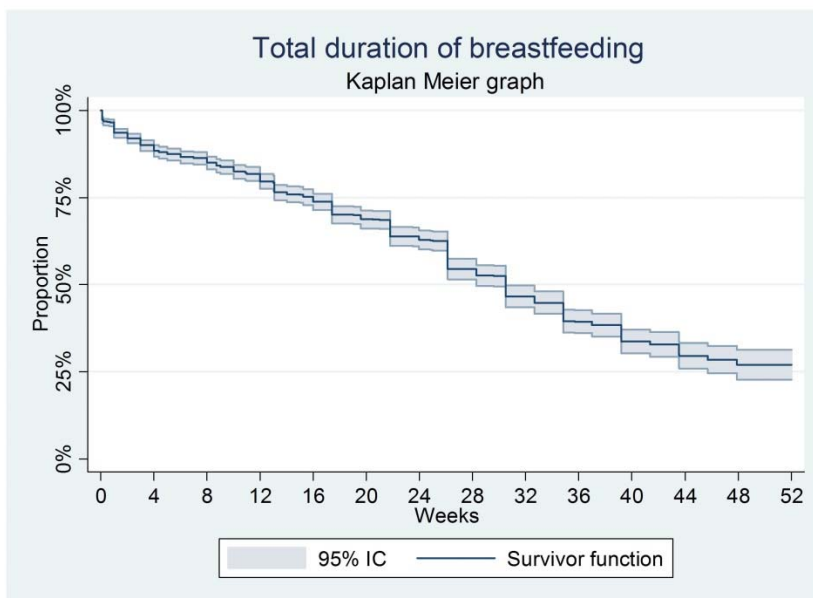


Figure 3: Total duration of breastfeeding in

The data indicate a high initial prevalence of breastfeeding: 95 % of the mothers had breastfed their children from the start. Over 50 % of the children had been breastfed exclusively for at least 12 weeks¹, and the median total duration of breastfeeding¹ was 31 weeks.

The prevalence of breastfeeding had shown a marked increase between 1994 and 2003. However, the current trend analysis indicates a stable, high prevalence of breastfeeding. It also shows that, while the total duration of breastfeeding in the current study is the same as in 2003, mothers breastfed longer exclusively in 2014 (see Table 1). Ten years ago, it was significantly more common for mothers to give additional water or tea in the first few months.

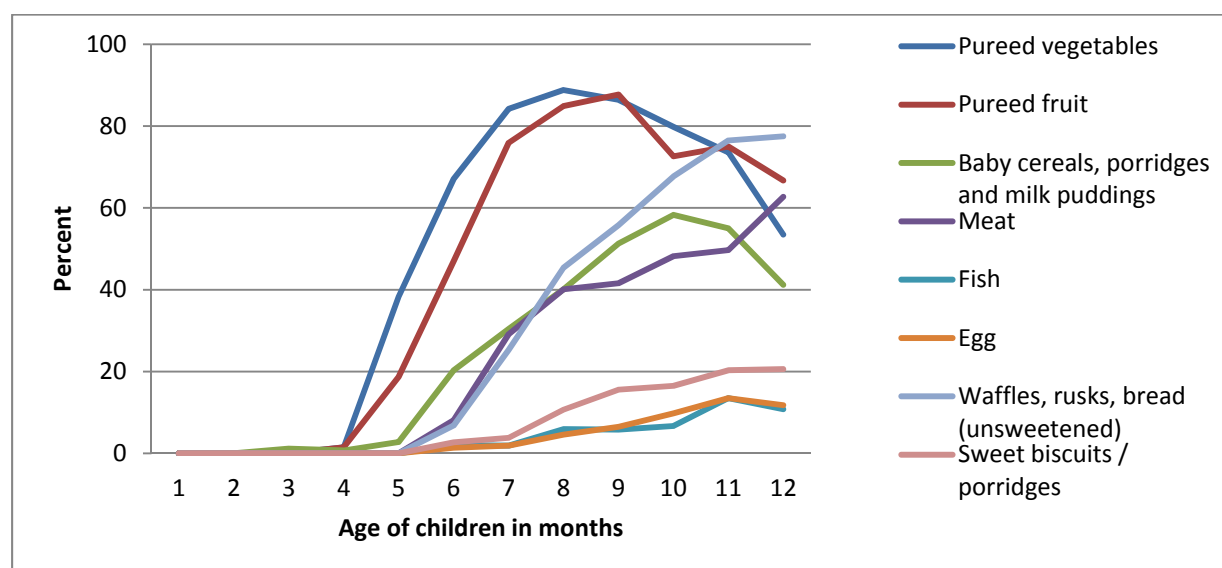
¹ *Exclusive breastfeeding*: child receiving breast milk only

Total duration of breastfeeding: period of time in which the child receives breast milk, irrespective of any additional fluids or foods.

Table 1: Infant nutrition at different ages: 24-hour nutrition log in 2003 and 2014

	In the past 24 hours									
	Exclusively breastfed		Wholly breastfed		Breastfed at least once		Received infant milk once		Received baby food once	
	2003	2014	2003	2014	2003	2014	2003	2014	2003	2014
1st and 2nd month	58 %	71 %	73 %	74 %	83 %	85 %	23 %	26 %	5 %	0 %
3rd and 4th month	53 %	62 %	64 %	68 %	76 %	82 %	34 %	32 %	5 %	2 %
5th and 6th month	21 %	26 %	27 %	27 %	60 %	65 %	51 %	48 %	57 %	66 %
7th, 8th and 9th month	2 %	1 %	2 %	1 %	40 %	40 %	61 %	68 %	97 %	97 %
>=10th month	0 %	0 %	0 %	0 %	29 %	25 %	60 %	61 %	99 %	99 %

Supplementation of breast milk feeding with complementary food, water, tea and, in some cases, infant milk, generally occurs between the 5th and 7th month, in line with the recommendations [5]. Although complementary food is being introduced significantly earlier than in 2003, almost no mothers did so before month five. Foods with special recommendations should be highlighted. For example, 50 % of the children had already been given sweetened drinks or foods before their first birthday, although sweetened foods are not recommended until after the age of one. However, this practice had declined in comparison with 2003, especially in German-speaking Switzerland. The recommendation that cow's milk should not be introduced until after the first year is not always followed: 5 % of children under the age of 12 months had been given cow's milk. The study also found that cereals containing gluten were still being introduced with caution, although there is no longer any scientific evidence to support this.

**Figure 4: Consumption of different foods in the past 24 hours, according to month of age in 2014 (24-hour nutrition log)**

Regarding the time of complementary food introduction, there was no significant difference between children with or without an allergic predisposition. This has changed compared with 2003. The proportion of children with an allergic predisposition was still high, at 40 %, but this was 4 % lower than in 2003. The data also revealed regional differences in the choice of complementary food, pointing to cultural differences in infant feeding between the language regions. For example, fish was introduced much later in German-speaking Switzerland; on the other hand, this region introduced bread earlier than the French and Italian-speaking regions. Overall, a wide range of foods was used once complementary food had been introduced. By 6 months, 42 % of the mothers had already introduced at least four foods and, at 8 months, almost 70 % of the infants had already been given at least six different foods.

Multivariable regression analyses were used to study determinants of breastfeeding and timing of introduction to complementary food. They showed that children of mothers aged 30 to 39, of parents with a higher educational status and of fathers with a positive attitude to breastfeeding were breastfed longer. Smoking and oral contraception were associated with shorter durations of breastfeeding. Complementary food was introduced earlier in French-speaking Switzerland and by non-Swiss mothers of European origin, as well as by mothers returning to work. Boys were fed complementary food earlier than girls were. Multiple births were associated with later introduction of complementary food but also with an earlier end to exclusive breastfeeding. A recurring factor was the additional stress on the mother. A quarter of mothers cited "exhaustion" as a reason for giving up breastfeeding. Working mothers, mothers who had multiple births, and mothers without support from a partner breastfed for shorter periods of time. Once again, it was confirmed that certain conditions to be met by "baby-friendly hospitals" can promote breastfeeding. Rooming-in and exclusive feeding of breast milk in the postpartum period were associated with a significantly longer duration of breastfeeding.

Compared with 2003, mothers returned to work sooner and, on average, with a higher workload. The Kaplan-Meier analysis showed that 50 % of all mothers had returned to work within seven months. Most of the mothers had had 14-16 weeks of maternity leave, and half of the fathers had received paternity leave from their employers. Only 10 % of the women were informed by their employers about their rights as breastfeeding mothers. The provision of lactation rooms is another aspect that appears to require action. According to SWIFS, time spent breastfeeding or using a breast pump during working hours was remunerated in whole or in part in a third of cases. The revision of the Swiss Employment Act (*Arbeitsgesetz, ArGV 1*) [9], which contains new provisions on remuneration of breastfeeding time, entered into force on 1.6.2014, so is not reflected in the current data.

The study showed that a third of the mothers had suffered from chronic conditions before and during pregnancy (28 %, e.g. hypertension, diabetes, allergies), or from pregnancy or birth complications (29 %, e.g. premature labor, eclampsia, haemorrhage), and that just under a third of the children had been ill at least once by the time of the survey (26 %, e.g. fever, gastrointestinal infection). Most of the mothers had their first antenatal check-up within the first trimester, although in some cases important preventive measures or messages were not discussed during the pregnancy. For example, topics such as "smoking", "alcohol in pregnancy", "nutrition" and management of pre-existing chronic conditions were not discussed with around a third of the mothers. In response to the question on breastfeeding problems, mothers reported good experiences with the counselling they had received, both in the postpartum period and at home, and were predominantly satisfied with the services. Children, who

had been sick, had most frequently infections that could be treated in an outpatient setting; only a minority had been hospitalised. Most of the mothers had followed the medical recommendations for their infant's health. Only 4 % had failed to attend some or all of the preventive medical check-ups; however, 10 % had not complied with the recommended vaccinations. However, over three quarters of the children in the study had received Vitamin D in the past 24 hours; this was a much higher proportion than in 2003. Breastfed children in particular, who have a greater need for supplements, were given Vitamin D. Specialist associations and the FSVO recommended folic acid supplements and additional vitamins or minerals to pregnant women or women hoping to become pregnant. Almost all of the mothers (96 %) had taken folic acid or preparations containing folic acid during their pregnancies. Two thirds of the mothers had taken folic acid supplements before conception, in line with the recommendations. Multivitamin supplements continued to be taken after giving birth, especially by breastfeeding women (74 %).

Due to the high educational level and the fact that the non-Swiss women came predominantly from within Europe, this study is of limited value in studying social gradients or differences between different nationalities living in Switzerland. Nevertheless, the example of folic acid shows that differences do exist. Mothers who (or mothers whose partners) came from the former Balkan countries were less likely to take folic acid than other mothers and low income was also an influencing factor. Duration of breastfeeding and timing of introduction of complementary food also showed differences between income groups, levels of education and nationality.

4. Conclusion

Overall, mothers in Switzerland appear to adhere closely to the Swiss recommendations on breastfeeding and infant nutrition. This high compliance is apparent for the various breastfeeding indicators, as well as for the introduction of complementary food and the supplementation of Vitamin D. This third monitoring study on breastfeeding and infant nutrition shows that there is a stable, high prevalence of breastfeeding in Switzerland. The monitoring variables proved to be relevant and suitable for the purposes of trend analyses. Positive trends over time were identified for Vitamin D and folic acid supplementation. Public health measures in recent years, together with appropriate advice, have evidently had a positive effect.

The inclusion of new topics, namely antenatal care and the content of advice received, highlighted a need for action. Around a third of the smokers had not received any advice on smoking in pregnancy. Other lifestyle-related risks to pregnancy and child health, such as alcohol and obesity, also appear not to have been addressed, or not to have been addressed sufficiently clearly, during antenatal care. Women with pre-existing health conditions also reported that they had not received appropriate advice. From a public health perspective, there is a need for further clarification here. On the other hand, almost all of the pregnant women and mothers received breastfeeding advice and were generally very satisfied with the services. The vast majority of mothers attended medical check-ups in the child's first year. Around 10 % of the children had not been vaccinated in accordance with the recommendations. This finding, which tallies with the prevalence of vaccine refusal in Switzerland, indicates that the subject of vaccination should therefore be raised at an early stage, ideally during pregnancy.

SWIFS also shows that certain determinants of breastfeeding duration and introduction of complementary food have remained unchanged over the years. Of particular note are the links with maternal exhaustion, employment, socio-economic characteristics, low income and migration background. These factors, which are associated with lower compliance with guidelines, should be addressed by public health experts. Whether the revision of the Swiss Employment Act in June 2014 will improve compatibility between breastfeeding and employment remains to be seen. The topic of exhaustion should be taken seriously as it has potential long-term consequences not only for the child but also for the mother [10, 11]. There is a need for research to clarify which types of support women require from families, social networks and experts in order to avoid such exhaustion or its consequences.

The importance of the father for successful breastfeeding and infant nutrition, as well as in relieving the mother's strain and workload, should not be underestimated. The finding that fathers increasingly take paternity leave and receive support from their employers, is therefore welcomed. Current efforts to promote this development nationally should be stepped up.

Conclusions about breastfeeding and infant nutrition in families from a migrant background are difficult to draw due to low participation in the study. Nevertheless, the data point to a disadvantage for these children and mothers, which could be counteracted by better information and support. To this end, however, it would be useful to undertake a targeted study of infant nutrition and medical care for mother and child and their determinants in this population group.

5. References

1. Grote, V., M. Theurich, and B. Koletzko, *Do complementary feeding practices predict the later risk of obesity?* *Curr Opin Clin Nutr Metab Care*, 2012. 15(3): p. 293-7.
2. WHO, *The optimal duration of exclusive breastfeeding. Report of an Expert Consultation*, 2001, World Health Organization: Geneva.
3. Kramer, M.S. and R. Kakuma, *Optimal duration of exclusive breastfeeding*. *Cochrane Database Syst Rev*, 2002(1): p. CD003517.
4. ESPGHAN Committee on Nutrition, et al., *Complementary Feeding: A Commentary by the ESPGHAN Committee on Nutrition*. *Journal of Pediatric Gastroenterology and Nutrition*, 2008. 46(1): p. 99-110.
5. Schweizerische Gesellschaft für Ernährung, *Ernährung des Säuglings im ersten Lebensjahr*, 2012, Schweizerische Gesellschaft für Ernährung: Bern.
6. Schweizerische Gesellschaft für Pädiatrie *Einführung der Lebensmittel beim Säugling*. 2011.
7. Conzelmann-Auer, C. and U. Ackermann-Liebrich, *Frequency and duration of breast-feeding in Switzerland*. *Soz Präventivmed*, 1995. 40: p. 396-398.
8. Dratva, J. and S. Merten, *Säuglingsernährung in den ersten 9 Lebensmonaten. Nationale Studie 2003. Schlussbericht*, 2004, Institut für Sozial- und Präventivmedizin der Universität Basel: Basel.
9. SECO, S.f.W., *Arbeitszeit und Stillzeit bei Schwangerschaft und Mutterschaft (Art. 35 und 35a ArG)*, 2014:
<http://www.seco.admin.ch/themen/00385/00390/01899/05413/index.html?lang=de>.
10. Corwin, E.J. and M. Arbour, *Postpartum fatigue and evidence-based interventions*. *MCN Am J Matern Child Nurs*, 2007. 32(4): p. 215-20; quiz 221-2.
11. Kurth, E., et al., *Crying babies, tired mothers: what do we know? A systematic review*. *Midwifery*, 2011. 27(2): p. 187-94.