Feeding practices in the Netherlands during the first four months of life. A study of the motives for discontinuing breastfeeding and for the subsequent feeding method selected
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Chapter 1

Introduction
1.1 Medical care in well-baby clinics

In well-baby clinics care is given by specially trained nurses and doctors. The doctors in these clinics are responsible for giving socio-medical and development-related care. Screening and prevention programmes aim at the early detection of problems in health and development.

In The Netherlands the training of well-baby clinic doctors has taken two forms. After their medical studies most doctors follow a short course in well-baby health care and some follow a specialised course of at least 2 years. They have to pass one of these courses successfully before the health care organisations give them permission to work in a well-baby clinic. Due to the shortage of well-baby clinic doctors, doctors are sometimes allowed to work for health care organisations even if they have not followed a special training course.

Dutch well-baby clinic doctors took the initiative to organise additional professional training in order to raise professional standards. In 1986, unions of well-baby clinic doctors were formed. A national federation called the ‘Landelijke Federatie van Consultatiebureautersartsverenigingen (LFC)’ was founded to serve as an umbrella organisation for these unions. The first aim of this federation was to improve working conditions, salaries and the social security of her members. After a short time, the LFC became concerned with the quality of care given in well-baby clinics and the development of standards of care. The federation created a registration system of doctors working in well-baby clinics. It also started to organise congresses and courses to raise the level of professional expertise. To increase professional quality it seemed appropriate that the doctors at these choices would themselves do scientific studies. An important spin-off of the first conference for well-baby clinic doctors, ‘the Oranjewoud conference’, was the setting up of a scientific project. Participants at the conference were asked to formulate questions for a research project that would be important for their day-to-day practice and that was related to nutrition or feeding methods. The outcome was to find answers to the following questions: why do mothers change the feeding method chosen at the day of birth of their baby so soon and so often? Particularly, why do mothers stop breastfeeding so early, much earlier than the WHO recommendation? If the reasons were known it would be easier for well-baby clinic doctors to promote breastfeeding.

Well-baby clinic doctors all over the country were asked to participate in the study. The study was designed by a small group of doctors that included a general practitioner and an epidemiologist (see appendix 1). The study started half a year later. One out of ten well-baby clinic doctors, in total 115, participated in the study. The study covered 4438 infants, each doctor seeing on average 38 infants, but the actual numbers ranged from 1 to 116 infants per doctor. Nearly all participating doctors collected the data without receiving extra payment and collected the data partly outside office hours. The names of participating doctors and of those who
designed the study are listed in the appendix.

Initially it was difficult to persuade the employers of the well-baby clinic doctors, i.e. the governors of the home-care organisations (‘thuiszorginstellingen’) to support the study. At the time there were 63 more or less independent home-care organisations in The Netherlands. Well-baby clinic doctors working for 40 organisations participated. The governors of two organisations refused to participate and two organisations imposed so many restrictions that the doctors were unable to participate. On the other hand, the governor of one organisation stimulated the doctors to participate and paid them for the extra time involved.

1.2. Outline of the study

The study was designed as a survey with follow-up. It included all infants younger than four months who first visited a participating well-baby clinic doctor between 1 April and 1 July 1998. Parents were asked personally for their consent. All infants whose parents agreed to participate were included in the study without any selection. There were no exclusion criteria. Reasons why participation in the study ended were recorded; these included the death of the infant, the parents moved house or mothers no longer had any interest in attending a well-baby clinic.

In The Netherlands 98% of infants are taken to a well-baby clinic. Usually the first visit takes place at the age of 4 weeks. Mothers bring their babies to the clinic every month, so normally they attended the clinic four times during the study period. Upon the advice of a doctor or nurse or on the initiative of the mother more than four visits were possible.

Methods

During the first visit to a well-baby clinic a number of demographic characteristics were recorded. Data were collected about the mother’s age, parity, native language, educational level and marital status. In addition a record was made of the infants’ date of birth, gender, gestational age, birth weight and the type of feeding the infants received on the day of birth and at the age of two weeks. Up to the age of four months, at each visit to a well-baby clinic all changes in nutritional practices as well as the infants’ age at the time of each change were noted.

In addition a record was kept of who initiated the change or who advised the change. Advisers could be parents (or their relatives or friends), maternity workers (midwives and nurses), professionals in preventive health care (well-baby clinic nurses or doctors), general practitioners and paediatricians or other people who could be approached by phone: breastfeeding organisations or nutritionists in the food industry. Mothers were also asked to give the reasons why changes in feeding had been made. The reasons were divided into three categories: those connected
with the mother (physical problems, return to work, depression, any other reason),
those connected with the infant (insufficient weight gain, hunger, colic, crying,
vomiting, constipation, eczema, other skin problems, refusal to drink, any other
reason) and non-mother, non-infant related reasons such as availability and price
of the milk product. Frequently a combination of reasons was given. Medical reasons
were noted as described by the mother or another adviser; they were not tested
according to specific medical definitions.

Furthermore mothers were asked about the outcome of the change in feeding
method in relation to the initial problem(s) and this information was recorded
(improvement, no change, worsening). If the current situation differed from the
previous situation, mothers were asked to say how many days after the change
the effect became visible and whether and how long the beneficial effect lasted (yes,
no, not clearly; positive effect in weeks).

Feeding methods were grouped into the following categories: exclusive
breastfeeding (EBF), meaning feeding exclusively with breast milk whether or not
expressed; complementary feeding (CBF) meaning breast milk complemented by
infant formula (irrespective of the proportion) and/or solid food. When the word
'breastfeeding' is mentioned in the following text it includes all feeding practices with
breast milk (EBF plus CBF). Bottle-feeding was grouped into five types of formulae:
regular (humanised) formulae, formulae for premature babies and infants small for
gestational age, formulae with special adaptations, soy-based formulae and
hypallergenic formulae. Within each group a subdivision was made into brands
available in The Netherlands.

Other categories were home-made bottle-feed together with a goat-milk
based formula, finally a remaining group of other non-classifiable types of formulae
and solid food. (see appendix 1)

The collection of data on nutritional practices ended when the infant reached
the age of four months.

At 4 months of age the weights of the included infants were recorded. Thus
the mean and median weight gain over four months could be calculated and related
to the feeding practices used.

A sub-study was conducted among 11 doctors to discover the numbers of
parents refusing to participate in the study.

The participating doctors were contacted once with regard to missing data.
Statistical methods
The study was descriptive in character. No hypotheses were tested and no p-values were calculated. All data were collected in SAS (R) system release 6.12 (SAS Institute Inc, Cary, NC, USA). This system package was used for the statistical analysis.

Feeding methods
First prevalence at weekly intervals of specific feed among the infants were calculated with their 95% confidence intervals (CI) to study the occurrence of the various feeding practices. Then potential determinants of and reasons for changes to and from specific feeding methods were evaluated using univariate and multivariate logistic regression analysis. The course of breastfeeding in various subgroups of mothers and infants was analyzed with Cox's Proportional Hazard Models. Therefore, all continuously recorded variables were categorised. We have chosen categories based on biological relevance, not on size.

Weight gain
We had only two measurements of weight per infant that were not all measured at the same age. We calculated the weight gain in grams per day for each infant. However, weight gain is not linear over time, so we had to correct average weight gain per day for the number of days between both measurements. It turned out that, when we restricted the day of second measurement to day 118-147, the average weight gain was linearly associated with the number of days over which was averaged. We therefore corrected the average weight gain per day for the number of days that lay between birth and second day of measurement. Then linear regression analysis was used to evaluate determinants of weight gain.

1.3. The choices made in the design of the study
We wanted the study to be of nationwide interest. Therefore data of 3500 infants were needed, approximately 10% of all infants that could had been included in a period of three months and secondly a good spread over the country of the participating doctors. Data for 4438 infants were collected and there was a good geographic spread over the country. However, areas that were less urbanised were a little under represented compared to the national mean, but it is known that people in the 20-40 year age group (i.e. most of the mothers) tend to live in more urbanised areas than the population as a whole.

Non-participation of parents was low (0.4% in the sub study) and only 53 infants (1.2%) dropped out of the study.

Several choices were made with regard to the collection of demographic and
physical data. For instance, we decided not to collect data on the height of the baby at birth, because measuring height at birth is difficult and unreliable. Besides this factor height is measured incompletely in many home deliveries (30% of the deliveries in The Netherlands in 1998).

To determine the social status we decided to use the highest educational level reached by the mother and in order to identify the ethnic origin of the infant we noted the native language of the mother. Another method to classify the ethnic descent would have been to record the native countries of the mother and her parents and the native countries of the father and his parents, if not The Netherlands. In that case a differentiation of first and second generation immigrants could have been made. Especially the different feeding methods of first generation immigrant mothers were of interest, so we recorded the native language of the mother as a reliable method for the differentiation in ethnic descent. Another consequence of noting the native language of the mothers was that we could not separate Dutch-speaking mothers with a Surinam and a Dutch Antilles background from Dutch-speaking mothers with a Dutch background.

Although it would be interesting to know why mothers initially started with breastfeeding we did not collect these data because this had happened before mothers visited a well-baby clinic doctor and careful collection of the data would had taken too much time. The time factor was also the reason why we decided not to collect data on the mothers' smoking habits, use of alcohol, drugs or medicines, such as oral contraceptives and the mother having breastfed herself.

In the study design, the reasons for a change in feeding practice were divided into three groups: mother-related reasons, infant-related reasons and other reasons. Of the mother-related reasons the reasons for discontinuing breastfeeding were particularly important. Mothers mentioned more reasons for stopping breastfeeding than had been foreseen. Therefore, after the collection of these results we divided again the reasons given for discontinuing breastfeeding into a broader range of categories, such as a particular dislike of breastfeeding and restriction of personal freedom.

The data concerning the immediate outcome of a change in feeding method and particularly the data about improvements in the behaviour or health of the infants were analysed. However, data about 'lasting' improvements after a change in feeding practice were too incomplete for an analysis to be performed.