Attitudes and practices of family paediatricians in Italy regarding infant feeding

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ABSTRACT

Aim: The aim of this study was to examine attitudes and practices of family paediatricians in Italy towards infant feeding.

Methods: A questionnaire was sent to 850 paediatricians across Italy, asking about attitudes and practices towards infant feeding with focus on the World Health Organization’s criteria.

Results: The response rate was 91.2%. Breastfeeding is recommended for 6–11 months (70.6%) or longer (29.4%). A 95% of paediatricians recommend introducing complementary foods throughout 4–5.9 months. Among paediatricians who give indications about the minimum acceptable diet (61.7%), recommendations agree with WHO in 71.3% and 83.3% of cases for infants aged 6–8 or 9–11 months, respectively. A 95.6% of paediatricians recommend consumption of meat for infants aged 6 months or more, and 98.4% use of formula milk for infants having breastfeeding stopped in the first year of life. Paediatricians reported own experience (73.4%) and reading (54.2%) as main sources of information. A 70% of paediatricians know the WHO Infant and Young Child Feeding Practices criteria regarding breastfeeding but <5% the complementary feeding indicators.

Conclusion: Family paediatricians in Italy have positive disposition towards infant feeding but their knowledge and practices are suboptimal with respect to the WHO criteria, especially regarding complementary feeding.

Adequate feeding benefits the nutritional status of the infant, plays a main role in determining growth and development, and can contribute to prevent later adult diseases (1–5). The World Health Organization (WHO) recommends exclusive breastfeeding until the age of 6 months (3,6,7) and continued breastfeeding throughout the subsequent period for up to 24 months of age or beyond (3,7–9). Use of cow’s milk is not recommended during the first year of life (9), although small volumes might be gradually mixed to complementary foods after the age of 9 months, in agreement with the WHO (9) and other International Committees on Nutrition (10,11). While exclusive breastfeeding confers several benefits on the infant (3,12,13), however, its optimal duration should be contextualized with respect to potential risks in some infants (3) for whom four to 6 months of age might be considered for the introduction of complementary foods (5,10,11,14–16). Indeed, optimal feeding depends not only on time of introduction of complementary foods but also on appropriate nutritional adequacy, consistency and safety of food (5,7,17). In the past, attention has been focused mainly on breastfeeding and the WHO defined standardized indicators to appraise this practice (e.g. 6, 8). Recently, clearly defined and updated criteria for Infant and Young Child Feeding Practices (IYCF) have been developed to assess accurately practices associated with complementary feeding (18, 19). There is need worldwide of epidemiological data about practices of feeding of infants with complementary foods evaluated using these criteria, to possibly improve knowledge, to guide towards a

Key notes
- Paediatricians can ultimately determine how an infant is fed. The WHO has introduced recently updated criteria for Infant and Young Child Feeding Practices to assess accurately practices associated with complementary feeding.
- Family paediatricians in Italy have positive disposition towards infant feeding, but their knowledge and guidance of the mothers are suboptimal, especially regarding complementary feeding.
- Family paediatricians need academic and continuous in-service training on infant feeding.
modernized culture of infant feeding and nutrition, and to hopefully define efficient intervention programs when appropriate.

Independently of socio-demographical and environmental factors, women’s approach towards infant feeding may be inclined by learning and guidance they receive by paediatricians, who, ultimately, can determine how an infant or young child is fed (9). In Italy, there are neither national nor local guidelines on infant feeding that include the IYCF criteria about complementary feeding, and it is important therefore to assess practices of paediatricians regarding infant feeding on the basis of WHO/IYCF criteria.

This study aims to describe the current attitudes and knowledge of family paediatricians in Italy, and recommendations they give to the mothers of term healthy newborns, about infant feeding practices.

PATIENTS AND METHODS
This descriptive observational study was conducted among family paediatricians practicing in Italy and signed in the registers of the National Reference Local Health Authorities. The survey was based on a 59-item questionnaire. The questionnaire was pretested, revised and then pretested again between January and June 2011, by physician members of the Department of Paediatrics at the San Paolo Hospital of Milan, resident family paediatricians and physicians with expertise in either breastfeeding or nutrition. During pretesting, evaluators answered a paper version of the questionnaire. They reported it was completed in approximately 15–20 min. Their comments were critically discussed by the research team together with specialists in infant’s nutrition and resulted in minor changes to the original questionnaire.

The questionnaire was organized into four sections. The first section included categorized and multiple choice questions assessing paediatricians attitude towards breastfeeding and recommendations they give to mothers. The second section contained categorized and multiple choice questions assessing paediatricians’ practices towards complementary feeding, including the time of introduction of specific foods or groups. The third section included questions about use of additional condiments and surveyed local feeding practices. The fourth section asked about knowledge of international definitions and criteria and recorded sample basic demographic characteristics.

Investigators sent to the selected paediatricians a maximum of three e-mail invitations at 1-month intervals (September, October and November 2011) to participate. Invitations contained an active link to the online questionnaire. Each paediatrician was requested to accept the participation in the survey, and in this case, he/she received a personal computer-generated code to access the questionnaire. Participants were allowed to complete only a single survey but over multiple sessions, if desired, and were required to submit the completed questionnaire within 30 days of acceptance. Survey data were transmitted anonymously, without any participant identifier, to the investigators for analysis.

Infant feeding practices described in this article were in accordance with WHO/IYCF (6–9,18,19). Breastfeeding practices included breastfeeding, exclusive breastfeeding and predominant breastfeeding. Full breastfeeding (exclusive breastfeeding and predominant breastfeeding merged together) was also considered, as well the use of nonhuman milk. Complementary solid, semi-solid or soft foods were categorized in seven main foods groups in accordance with IYCF (18), that is, grains, roots and tubers; legumes and nuts; dairy products (milk, yogurt and cheese); flesh foods (meat, fish, poultry and liver/organ meats); eggs; vitamin-A-rich fruits and vegetables; other fruits and vegetables.

The contacted paediatricians were selected by a computer-generated randomization list weighed on the number of family paediatricians registered at each Local Health Authority and geographical distribution, based on the 20 Italy’s administrative regions.

In the absence of a standardized criterion, in this study, a practice of paediatricians towards infant feeding was judged satisfactory when at least 95% of them counsel it in agreement with WHO/IYCF criteria. The sample size was calculated to detect an one-side absolute deviation of 5% or more from this target value. With an accepted type I error level of 0.001 and power of 95%, 587 respondents were required. To allow for a nonparticipation rate up to 15%, 691 paediatricians needed to be contacted. With an effective participation of 775 paediatricians, the real power was 98.7%.

The results are reported as mean (SD) and median (range) or number of observations (percentage). Age groups are described in intervals of months completed and categorized in accordance with IYCF (18), as appropriate. No inferential analysis was performed in this paper given its descriptive character. Estimates were calculated using the SPSS package version 19.0 for Windows (SPSS Inc., Chicago, IL, USA).

RESULTS
Sample
Among 850 contacted paediatricians, 794 (93.4%) agreed to participate and 775 (91.2%) returned the survey. No difference in the response rate occurred across regional areas (p = 0.748). Table 1 shows basic characteristics of respondents. The sample ratio women/men was 1.56. Mean (SD) age was 48.3 (8.5) years, and mean duration of paediatrician practice was 19.6 (7.3) years. Among paediatricians who give written advice to mothers about infant feeding, 8.0%, 11.2%, 42.2% and 38.6%, respectively, reported to include recommendations till-up 6, 9, 12 and 24 months or more of age. A 94.9% of respondents with children (n = 526) reported that at least a child had been breastfed.

Knowledge of international criteria on infant feeding
Most paediatricians reported own in-service experience (73.4%), reading professional literature (54.2%) and academic medical school (21.4%) as main sources of their knowledge about feeding of infants. All paediatricians recognized importance of breastfeeding and exclusive
breastfeeding. Sixty-two per cent of paediatricians reported to know the WHO criteria that define selected infant feeding practices focused on breastfeeding and related recommendations (3, 6). A 58.8% of paediatricians know the indications on infant feeding with complementary foods divulged by the European Committees or Authorities (5, 11), and 7.4% reported to know some guidelines released from the American Academy of Pediatrics (1, 14, 20, 21). A 95.6% of paediatricians declared to not know the WHO IYCF guidelines concerning complementary feeding (18, 22, 23). Specific core concepts of minimum dietary diversity, minimum meal frequency and minimum acceptable diet (18) were known by, respectively, 1.4%, 1.8% and 0.4% of paediatricians.

Breastfeeding and nonhuman milk
Table 2 presents the breastfeeding practices and use of nonhuman milk. All paediatricians reported to recommend both breastfeeding and exclusive breastfeeding and suggest breastfeeding for 6 months or longer. Continued breastfeeding for 12 months or longer is recommended by about thirty per cent of paediatricians (21.3% up to 15 months). Exclusive breastfeeding is recommended by more than 80% of paediatricians for 4–5 months, that is, 20.4% for 4–4.9 months and 63.8% for 5–5.9 months. Predominant breastfeeding is suggested by about 15% of paediatricians, starting from the median age of 2.2 months. Full breastfeeding is recommended by all paediatricians to be prolonged shorter than four (2.1%) or for 4–5 (95.3%) months of birth or longer (2.6%). More than 95% of paediatricians suggest to introduce cow’s milk at 12 months or later (21.8% at or after 36 months of age). A 1.9% of paediatricians also suggest goat or donkey milk. More than 95% of paediatricians suggest use of formula milk in infants having breastfeeding stopped within the first year of age and about 85% successive use of growing milk.

Nonmilk liquids
A 97.4% of paediatricians suggest nonmilk liquids during the first 6 months of age of the infant. Water is suggested by 87.7% of them, starting from the median (range) age of 3.6...
Practices of paediatricians regarding infant feeding

Solid, semi-solid or soft foods
All paediatricians counsel mothers about introduction of complementary solid, semi-solid or soft foods. A 3.5% of them suggest to introduce these foods before 4 months (1.7% before 3 months) of age of the infant, 24.6% during 4–4.9 months and 70.4% during 5–5.9 months. Paediatricians suggest first introduction with mixing of vegetables, cereals and meat (88.1%) or mixing of vegetables, cereals and cheese (9.5%) or fruit (apple) (2.4%). Table 3 reports the infant’s age for the introduction of specific complementary foods groups. Seventy-three per cent of paediatricians give indications about the minimum number of foods groups that infant should receive. Foods from four or more foods groups, that is, adequate minimum dietary diversity (18), are suggested at age 6–11 months by 84.6% of paediatricians, and by all thereafter. Advice to mothers about the minimum daily meals frequency based on complementary foods (including milk feeds for nonbreastfed infants) is given by 82.4% of paediatricians. The minimum is considered, for breastfed infants, as two times or more in the age groups 6–8 months by 82.4% of paediatricians and as three times or more in the age groups 9–11 and 12–23 months by, respectively, 97.5% and 100% of them. In nonbreastfed infants aged 6–8, 9–11 or 12–23 months, the minimum is considered four times or more by, respectively, 78.4%, 95.6% and 100% of paediatricians. A 61.7% of paediatricians give combined indications on the minimum dietary diversity and minimum daily meal frequency, which are in accordance with IYCF in 71.3% and 83.3% of cases for infants aged 6–8 and 9–11 months, respectively.

Iron-rich or iron-fortified foods
A 61.3% of paediatricians provide guidance to mothers about supply of iron to the infant before 6 months of age; 91.8% of them suggest to complement breastfeeding with meat at 5–5.9 months and 6.2% to supplement exclusive or predominant breastfeeding with iron-rich drops during 4–5.9 months. A 98.6% of paediatricians give recommendations about supply of iron to the infant from 6 months of age, that is, 95.6% of them suggest consumption of meat and 98.4% introduction of formula milk when breastfeeding is stopped.

DISCUSSION
This is the first study designed purposely to investigate attitudes and practices of family paediatricians in Italy towards infant feeding, evaluated on the WHO/IYCF criteria (3,6,8–10,18,19,22,23). The reference population included a sample of paediatricians homogenously representing the national geographical distribution. The participation rate was acceptably high (>90%).

Although paediatricians reported positive disposition towards breastfeeding and exclusive breastfeeding, a relatively low per cent (~30%) of them suggest mothers to breastfeed for longer than 12 months, and about 16% duration of exclusive breastfeeding outside ranges suggested by International Institutions or Committees (13,5–7,9,11,18). Indeed, more than eighty per cent of these paediatricians suggest to predominantly breastfeed the infant. Although theoretically this practice per se may be not negative in developed countries, the paediatricians might, however, transmit a misleading attitude to mothers, because predominant breastfeeding allows the infant to receive fruit juice, which may be questionable in infants under 6 months of age (24). In this study, about 10% of paediatricians reported to suggest juice fruit during predominant breastfeeding, starting from the median age of 5.6 months.

This survey found that about 95% of paediatricians suggest to introduce complementary solid, semi-solid or soft foods four to 6 months of the infant’s age. This result does not fit strictly the WHO’s recommendations about duration of exclusive breastfeeding but when contextualized it may be considered reasonable (5,10,11,14–16). Indeed, it has been also indicated that introduction of complementary foods should start when the infant exhibits developmental readiness, which commonly occurs four to 6 months (14). Anyway, the result that about 2% of paediatricians recommend currently in Italy very early (<5 months) introduction of complementary foods is discouraging, as this practice may really delay the timely appearance of some developmental milestones and increase the risk of infectious morbidity (5,14).

Concerning cow’s milk, the majority of paediatricians (>95%) suggest its introduction at 12 months of age or later. While this advice may be satisfactory with respect to the

<table>
<thead>
<tr>
<th>Food group</th>
<th>Age (month)</th>
<th>Mean</th>
<th>SD</th>
<th>Median</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grain, roots and tubers [764]</td>
<td>5.0</td>
<td>1.1</td>
<td>4.9</td>
<td>4.0</td>
<td>8.0</td>
<td></td>
</tr>
<tr>
<td>Gluten free cereals</td>
<td>5.1</td>
<td>1.3</td>
<td>5.1</td>
<td>4.0</td>
<td>10.0</td>
<td></td>
</tr>
<tr>
<td>Cereals with gluten</td>
<td>5.9</td>
<td>0.7</td>
<td>6.0</td>
<td>4.0</td>
<td>9.0</td>
<td></td>
</tr>
<tr>
<td>Legumes and nuts [765]</td>
<td>8.2</td>
<td>1.7</td>
<td>8.1</td>
<td>6.0</td>
<td>14.0</td>
<td></td>
</tr>
<tr>
<td>Dairy products [770]</td>
<td>6.7</td>
<td>1.2</td>
<td>6.9</td>
<td>6.0</td>
<td>9.0</td>
<td></td>
</tr>
<tr>
<td>Milkb</td>
<td>20.2</td>
<td>6.4</td>
<td>15.8</td>
<td>7.0</td>
<td>36</td>
<td></td>
</tr>
<tr>
<td>Yogurt</td>
<td>7.3</td>
<td>1.3</td>
<td>7.1</td>
<td>6.0</td>
<td>14.0</td>
<td></td>
</tr>
<tr>
<td>Cheese</td>
<td>6.9</td>
<td>0.9</td>
<td>7.5</td>
<td>6.0</td>
<td>9.0</td>
<td></td>
</tr>
<tr>
<td>Flesh foods [768]</td>
<td>5.1</td>
<td>0.7</td>
<td>5.0</td>
<td>4.0</td>
<td>7.0</td>
<td></td>
</tr>
<tr>
<td>Meat</td>
<td>5.2</td>
<td>0.6</td>
<td>5.1</td>
<td>4.0</td>
<td>8.5</td>
<td></td>
</tr>
<tr>
<td>Poultry and liver/organ meats</td>
<td>5.4</td>
<td>0.7</td>
<td>5.5</td>
<td>4.0</td>
<td>10.0</td>
<td></td>
</tr>
<tr>
<td>Fish</td>
<td>7.7</td>
<td>0.9</td>
<td>6.4</td>
<td>6.0</td>
<td>12.0</td>
<td></td>
</tr>
<tr>
<td>Eggs [762]</td>
<td>9.3</td>
<td>1.1</td>
<td>9.0</td>
<td>8.0</td>
<td>13.0</td>
<td></td>
</tr>
<tr>
<td>Fruits and vegetables [768]</td>
<td>4.9</td>
<td>0.8</td>
<td>4.9</td>
<td>2.0</td>
<td>8.0</td>
<td></td>
</tr>
<tr>
<td>Vitamin-A-rich fruits and vegetables</td>
<td>5.1</td>
<td>0.6</td>
<td>5.0</td>
<td>2.0</td>
<td>6.0</td>
<td></td>
</tr>
<tr>
<td>Other fruits and vegetables</td>
<td>4.8</td>
<td>0.9</td>
<td>5.0</td>
<td>4.0</td>
<td>8.0</td>
<td></td>
</tr>
<tr>
<td>Any complementary (solid, semi-solid or soft) food [775]</td>
<td>5.2</td>
<td>1.1</td>
<td>5.1</td>
<td>2.0</td>
<td>6.5</td>
<td></td>
</tr>
</tbody>
</table>

*Breast milk is not counted (18).
WHO criteria (9), at the same time paediatricians should inform mothers that appropriate fat consumption should not be restricted in the diet of infants because fat shortage may be associated with failure to meet recommended intakes of many nutrients (25,26).

The timely introduction of iron-rich complementary foods is important, especially for breastfed infants (27). In this study, for breastfed infants younger than 6 months, about 60% of paediatricians reported to suggest switching from exclusive or predominant breastfeeding to breastfeeding complemented with meat, at about 5 months of age, while more than one-third of them do not provide any recommendation, which may appear disheartening. For infants aged 6 months or more, almost all paediatricians recommend consumption of meat and use of formula milk in infants having breastfeeding stopped in the first year of life, which may be appropriate (14). Nevertheless, the results indicate increased attention would be warranted both when full breastfeeding continues longer than 4 months or breastfeeding longer than 6 months.

Knowledge of WHO/IYCF criteria regarding complementary feeding was dramatically low (<5%). This methodological deficiency was possibly a cause of the relatively low rate of paediatricians (60–80%) who advise mothers about the core concepts of minimum dietary diversity, minimum meal frequency and minimum acceptable diet. It should be additionally noted that their recommendations, as translated to IYCF indicators related to 6–11 months, appear to be adequate in around 70–80% of cases. These findings suggest that in-service experience (major source of knowledge for family paediatricians in Italy) may be insufficient to make overall ability of paediatricians satisfactory in supporting mothers towards correct practices of infant feeding. Other studies have emphasized that paediatricians with positive attitude towards infant feeding can show knowledge somewhat low (28,29). Country profiles about adherence to IYCF indicators have been in part described (23,30), and results even warn that knowledge of paediatricians about WHO/IYCF criteria may be lacking currently. Studies are needed to better examine this matter worldwide.

A potential limitation of this study is the expected accordance between agreement to participate in the survey and importance that the paediatricians attribute to infant feeding practices. Therefore, it may be that in the general population of family paediatricians in Italy, the real attitudes and practices towards infant feeding are less positive than as estimated here. The high participation rate indicates that this bias would be minor.

Lastly, it should be pointed out that this survey aimed to call attention in the core of those who translate in daily practice international professional guidelines and not to discuss evidence of international guidelines. Indeed, the Global Strategy for Infant and Young Child Feeding (8) is designed for local/country adaptation, and, based on the currently available evidence, many experts or organizations across Europe, Australia and North America have set local guidelines of infant feeding and nutrition (e.g. 5). In Italy, there are not accurate guidelines regarding infant feeding that is actually discussed by the paediatricians with mothers face-to-face. This supports that comparison with international criteria performed in this study was unbiased. Thus, while the WHO/IYCF guidelines might not be applicable to developing countries in its entirety, the concept and the findings derived from this survey might be truly useful.

On the whole, the results show that family paediatricians in Italy have a positive disposition towards infant feeding, but their knowledge and guidance of the mothers are suboptimal with respect to the WHO/IYCF criteria, especially regarding complementary feeding. Family paediatricians need academic and continuous in-service training on infant feeding. As suggested by Nakar and colleagues (28), it appears crucial to increase the ability of paediatricians and in turn improve feeding practices of mothers. In addition, advances in harmonizing definitions and criteria from different International Institutions and Committees are desirable to make available clear and well-defined guidelines. This might facilitate policies of health authorities towards improved guidance of paediatricians and women.

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References


