

## KNOWLEDGE AND PRACTICES OF CHILD CAREGIVERS IN FEEDING CHILDREN AGED 6–36 MONTHS AT THE NUTRITIONAL CLINIC OF CHILDREN'S HOSPITAL 1, HO CHI MINH CITY

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### ABSTRACT

**Aims:** To determine the caregivers' knowledge of complementary feeding timing and the practices of breastfeeding and feeding children.

**Methods:** A cross-sectional study was carried out from January 2022 to March 2022 on 256 caregivers of children aged 6-36 months who visited the Nutritional Clinic of Children's Hospital 1, HoChiMinh City, Vietnam. Face-to-face interviews with caregivers were applied to collect data by questionnaire.

**Results:** More than half of caregivers did not have the proper knowledge about the timing of complementary feeding. The correct knowledge about when to feed children with powder, porridge, and rice was respectively 70.3, 29.7, and 7.4%. The rate of breastfed children was 23.0%. The rate of children using bottles with artificial nipples was 60.8%. The children fed four food groups during the weaning period accounted for 62.1%.

**Conclusions:** The study indicates the limitations in knowledge and practices of breastfeeding and complementary feeding in caregivers. It is necessary to continue promoting communication measures to guide the child's feeding during the complementary feeding period.

**Keywords:** complementary feeding, breastfeeding, bottles with artificial nipples

### I. INTRODUCTION

In children from 6 to 36 months old, nutrition plays a significant role in developing weight and height [1]. If not correctly nourished, children increase the risk of malnutrition in all forms, such as underweight, stunting, and wasting and also increase the frequency of infections, especially diarrhea [2]. In addition, undernutrition and micronutrient deficiencies in children can also increase

mortality by 45% [3]. However, not all caregivers have the proper knowledge and appropriate child-rearing practices. According to the General Nutrition Survey 2010 in Vietnam, only 19.6% of children exclusively breastfeed in the first six months. The percentage of children who continue breastfeeding until 12 months old and those who continue breastfeeding until 24 months

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old are 67% and 23%, respectively [4]. Children are weaning food early, and foods are not suitable for the digestive system's development process. The data from UNICEF (The United Nations Children's Fund) in 2019 also show that the rate of children eating solids at the right time is 69.5%, eating a variety of food groups at 29.3%, children eating enough meals at least 53.1%, children with a proper diet is 18.9% [5]. Children's Hospital 1 is the leading pediatric specialist hospital in South Vietnam. Children who visit the nutritional clinic of the hospital are diverse in terms of epidemiological

factors and risk factors, which is an important feature to help the study to be able to summarize vividly and clearly. The research question is, how is the knowledge and practice of nurturing caregivers of 6-36-month-old children at the nutrition clinic? To answer this question, the study on caregivers of children aged 6-36 months who visited the Nutritional Clinic of Children's Hospital 1, HoChiMinh City, to determine the caregivers' knowledge of complementary feeding timing and the practices of breastfeeding and feeding children.

## II. METHODS

### 2.1. Study design and participants

The cross-sectional study of the participants included children aged 6-36 months and their caregivers visiting for nutrition counselling at the nutritional clinic of Children's Hospital 1, Hochiminh city, from January 2022 to March 2022.

*The child was excluded from the study when having one of the following criteria:*

- \* Emergency or severe signs: cough, fever, diarrhea, respiratory disease...
- \* Congenital disabilities in the mouth, cleft lip, cleft palate, and congenital malformations.
- \* Down syndrome and mental retardation.
- \* Interviewed for information during the previous visit.
- \* The person who takes the child to the clinic was not a direct participant in child care or had psychological, neurological, or social problems leading to incorrect interview answers.

### 2.2. Sample size and sample selection

The sample size was calculated using the formula:

$$n = Z^2_{(1-\alpha/2)} \frac{p(1-p)}{d^2}$$

- n: required sample size.

-  $Z_{(1-\alpha/2)} = 1.96$  ( $\alpha=0.05$ )

-  $p = 0.33$  (% subjects nourished in right complementary foods according to research at Children's Hospital in Nam Dinh province [6])

-  $d = 0.05$ : Absolute precision required.

Calculated  $n = 200$  children. The study selected 256 children in reality.

### 2.3. Data collection

Face-to-face interviews with caregivers were applied to collect data by a questionnaire including the below questions:

- \* The right time for children to feed powder, porridge, and rice?
- \* The breastfeeding and using bottles with artificial nipples?
- \* The groups of food in feeding?

## 2.5. Statistical analysis

Data were entered, checked and fixed using Epi-Info version 3.4.1 and SPSS version 28.0 for windows. Categorical variables are expressed as a number (%), and quantitative variables test for normal distribution. If the variable is a normal distribution, it is expressed as mean  $\pm$  SD. If the variable is not a normal distribution, it is expressed as the median (interquartile range, IQR).

## 2.4. Ethical issues

The scientific and ethical aspects approved the Council of Science and Ethics study in biomedical research at Children's Hospital 1, study number: CS/N1/21/75, certificate number 37/GCN-BVND1 dated 09/02/2022. The caregiver who took the child to the clinic agreed to participate in the study and signed a consent form.

## III. RESULTS

### 3.1. Characteristics of the participants

**Table 1.** Characteristics of children and their caregivers in the study (n=256)

Characteristics	n (%)	Characteristics	n (%)
Relationships with children		Reason to take a child to the nutritional clinic	
<i>Mother</i>	223 (87.1)	<i>Nutrition examination (Feeding difficulties, underweight, stunting, etc.)</i>	160 (62.5)
<i>Father</i>	23 (9.0)	<i>Digestive examination (Vomiting, diarrhea, constipation, etc.)</i>	37 (14.5)
<i>Other</i>	10 (3.9)	<i>Pediatric examination (Fever, cough, difficulty breathing, etc.)</i>	59 (23.0)
Education level		Current residence	
<i>Primary school</i>	12 (4.7)	<i>Ho Chi Minh City</i>	87 (34.0)
<i>Junior high school</i>	84 (32.8)	<i>Other</i>	169 (66.0)
<i>High school and above</i>	160 (62.5)	Total income of father and mother	
Occupation		<i>Under 5 million VND</i>	8 (3.1)
<i>Housewife</i>	80 (31.3)	<i>From 5 to 10 million VND</i>	97 (37.9)
<i>Purchase</i>	54 (21.1)	<i>Over 10 million VND</i>	151 (59.0)
<i>Office staff</i>	73 (28.5)	Number of children in the family	
<i>Worker</i>	21 (8.2)	<i>1 child</i>	132 (51.6)
<i>Teacher</i>	5 (2.0)	<i>2 children</i>	100 (39.1)
<i>Medical staff</i>	5 (2.0)	<i>3 or more children</i>	24 (9.4)
<i>Other</i>	18 (7.0)		

Of the total 256 children, 143 (55.9%) were boys. The highest rate of visited children is in the 13-24 mo group (46.9%), followed by the 6-12 mo group (27.3%) and 25-36 mo group (25.8%).

Table 1 shows the characteristics of the child and caregivers in the study. Most caregivers were mothers who graduated from high school and above and official staff. Most children visited the nutritional clinic for nutritional and digestive problems.

### 3.2. Caregivers' knowledge about when complementary feeding

The caregiver's knowledge about the timing of complementary feeding presents in Table 2. Only 29.7% of caregivers knew correctly the recommended time for children to start eating solid porridge. Most children eat rice early, from 9 to 18 months (87.1%). Caregivers with correct knowledge accounted for only 7.4%.

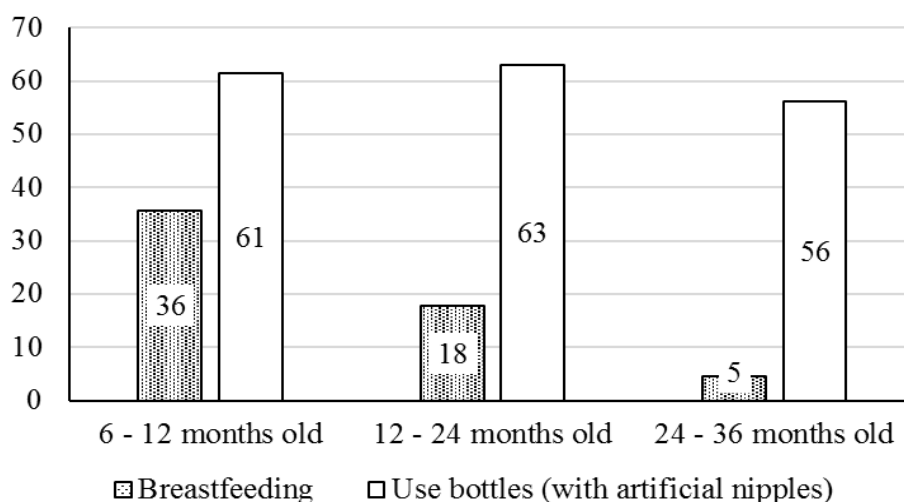
### 3.3. Practices on breastfeeding and complementary feeding

Figure 2 shows the percentage of breastfed children and used bottles with artificial nipples. Breastfed children include breastfeeding by a wet nurse and feeding expressed breast milk. There was a difference in the breastfeeding rate by age group ( $p < 0.001$ ). The highest breastfeeding rate finds in the 6-12-month-olds infants (36%). In this study, most children were weaned from breastfeeding earlier than recommended (median=6.0 months, IQR: 3.0-9.0). The reasons given by the caregivers were that the mother ran out of milk, the child

**Table 2.** Caregiver's knowledge about the timing of complementary feeding

Patterns	n (%)
Time for children to eat powder	
Less than 4 months	3 (1.2)
From 4-6 months	73 (28.5)
Over 6 months	180 (70.3)
Time for children to eat porridge	
Less than 9 months	180 (70.3)
From 9 to 18 months	76 (29.7)
Over 18 months	0
Time for children to eat rice	
Less than 9 months	14 (5.5)
From 9 to 18 months	223 (87.1)
Over 18 months	19 (7.4)

weaned herself, and the mother started working. Meanwhile, the median time to start giving the child other formula milk differed from breast milk at a median of 5.0 (IQR: 1.0-7.0) months old. Some infants were given formula milk right from birth.



**Figure 2.** Percentage of children who were breastfeeding and use bottles (with artificial nipples) by age groups

**Table 3.** *Percentage of feeding supplemented with nutrient groups in the diet*

Patterns	<i>n</i> (%)
Group 1. Foods that provide carbohydrate	255 (99.2)
Group 2. Foods that provide protein	221 (86.0)
Group 3. Foods that provide fat	194 (75.5)
Group 4. Foods that provide vitamins and minerals	205 (79.8)

Table 3 shows the results of the practice of using groups of foods. The percentage of using each food group was over 75%. However, the assessment results on the use of food diversity showed that only 62.1% of children were feeding all four food groups in their diets. The rate of

children fed with three groups of food, two groups of food, and one group of food, was 23.4, 8.2, and 5.5%, respectively. The children without complementary feeding accounted for 0.8%.

#### IV. DISCUSSION

Our results study indicates proper knowledge about when to feed children with powder, porridge, and rice was respectively 70.3, 29.7, and 7.4%. The World Health Organization recommends that children start eating solid foods from 6 months of age. Children who eat complementary foods early have an increased risk of diseases, diarrhea, malnutrition, and allergies due to complementary foods that are not suitable for their ability digestive and immune functions are not yet fully developed in children. In addition, the recommended time for children to eat porridge is from 9-18 months old; during this period, children start teething, gradually perfect their chewing and swallowing reflexes, and increase their nutritional needs from the diet. In addition, the time for children to start eating rice is from 18 months of age or older; at this age, children have complete molars and can chew rice [6]. According to the research results, most caregivers (70.3%) know when to start giving children six months or older

complementary foods. This rate is lower than the study by author Thu Hau in 2010 at Children's Hospital 2; most caregivers who started to feed infants before six months of age accounted for 95.6% [7]. But, this rate is higher than Thanh Huyen's research in 2019 at Children's Hospital in Nam Dinh province; the percentage of caregivers who had correct knowledge about the timing to start giving complementary feeding is 33.3% [8]. However, caregivers' knowledge about when to give porridge and rice is still low, at 29.7% and 7.4%, respectively, compared with a 2010 study at Children's Hospital 2, it was 18.1% and 19.4%, respectively, and in the 2019 study at the Children's Hospital in Nam Dinh province, it was 60.8% and 20.4%, respectively [7,8]. The above results show that knowledge about when to give children appropriate solid foods is still not widely disseminated to caregivers, mainly applied in kindergartens, kindergartens, and schools to perform with each age-appropriate.

In 2014, the government issued Decree No. 100/2014/ND-CP, which prohibited advertising and promoting breast milk substitutes for children under 24 months old [12]. However, due to work or life requirements, caregivers still use them to ensure convenience. Other caregivers do not know the disadvantages of formula and bottles with artificial nipples.

During 6-12 months of age, breast milk is still the primary source of nutrition, accounting for half of the child's nutritional needs. From 12 to 24 months of age, breast milk provides at least one-third of energy needs. Breast milk, in addition to nutritional values to help children grow and develop comprehensively, also provides immune cells such as white blood cells, immunoglobulins, and some antibodies to protect babies against infections [6]. In our study, the percentage of breastfeeding from 6 to 12 months was 36%, and those from 12 to 24 months were 18%. These results are lower than some studies in Vietnam recently. According to the General National Nutrition Survey results in 2020, the percentage of children under six years of age who exclusively breastfeed in the first six months is 45.4%, and the percentage of children 12-24 months who continue to breastfeed is 26.0% [9]. The research results of UNICEF in Vietnam in 2021, the percentage of children continuing to breastfeed at one year of age is 67%, and the rate of children continuing to breastfeed until the age of 2 is 23% [10]. In fact, in urban and delta areas, mothers with good education and high socioeconomic conditions often believe breast milk is not as nutritious for children as dairy products or formula. Besides that, because the maternity leave period is not

much, the mother needs to continue working, so she does not have enough time for the child to continue breastfeeding but has to use breast milk substitutes. The epidemic of COVID-19 also affects breastfeeding as many mothers infected with COVID-19 or after vaccination cannot continue to breastfeed... For the above reasons, the caregivers prefer the formula for children.

Using bottles (with artificial nipples) can also lead to several problems for children's health. Some problems are gastrointestinal infections, tooth decay, skin irritation, increased incidence of eczema, anemia, obesity, hypertension, and atherosclerosis. So recommendations guide children to drink milk from a cup and spoon. In this study, the percentage of children using bottles (with artificial nipples) accounted for 60.8%. Most of them were high in age groups and higher than the proportion of children using bottles surveyed in 2013, which was 43.6% [11].

According to the World Health Organization guidelines, children need to eat four food groups. The first group provides carbohydrates (rice, cereals, ...), the second group provides protein (meat, fish, legumes...), the third group provides fat (fat, butter...), and the last group provides vitamins and minerals (green vegetables, fruits...). In general, in each group of food used in child feeding practice, over 75%, but children using all four groups of nutrients only reached 62.1%, lower than the study at Children's Hospital 2 in was 77% [13]. However, this result is higher than the General Nutrition Survey in 2020, accounting for 52.1% [9]. Each recommended food group plays an essential role in a child's development. Children who do not eat

fat are at risk of energy deficiency, affecting the nervous system's development. Children who do not eat vegetables and fruits are deficient in fibre and vitamins. Children who do not eat protein will lack essential amino acids for body structure. Therefore, it is necessary to provide guidance and knowledge for caregivers to practice appropriately.

To conclude, knowledge and practices of feeding children are necessary. Incorrect knowledge and practice can affect a child's development. Nowadays, most children take to nutrition clinics for reasons such as being underweight, stunting, wasting etc. However, when we assess caregivers' knowledge and practice feeding, we also

find incorrect knowledge and practices. So, medical staffs need to provide the correct knowledge to them.

This research is the first survey to assess knowledge and practices feeding children 6–36 months old in the Nutritional clinic of Children's Hospital 1, which was a simple cross-selection for three months. The research results show common incorrect in knowledge and practice of complementary feeding. It also opens the way to further research on the relationship between nutritional status and caregiver's knowledge and practices or evaluate the effectiveness of nutrition counselling on knowledge and practice of child feeding in case-control or cohort studies.

## V. CONCLUSION

Research results show that more than half of caregivers who do not have the proper knowledge about the timing of complementary feeding, about one-third of caregivers did not practice breastfeeding and the combination of food groups in the diet correctly. Consequently, it is necessary to continue promoting communication measures to

guide the child's feeding during the complementary feeding period. For example: when to start feeding children appropriate foods, the role of breastfeeding, and the influence of children when using bottles (with artificial nipples) to support children develop physically and mentally in the most comprehensive way.

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