

**ERASMUS MUNDUS SCHOLARSHIP PROGRAMME**

**Knowledge, Attitudes and Practices addressing young child  
diarrhoea in Moramanga, Madagascar:  
The MOSAIQUE cross cultural qualitative study**

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Faculty of Medicine and Dentistry  
University of Bergen, Norway  
2011

*The same goes for me too, what savings can be done while we must now find what to eat today, and even the next day when the child gets sick, we must cope.*

(Mother of 5 children, seller, 30 years old, FGD)

*Mm (...) yes, there is an impact ... there is an impact on society because the person has nothing and the society something... Sometimes the family is asleep without eating and the neighbours help.*

(Community Health Worker, SSI)

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## ***Declaration***

Where other people's work has been used (either from a printed source, internet or any other source) this has been carefully acknowledged and referenced in accordance with departmental requirements.

The thesis *Knowledge, Attitudes and Practices addressing young child diarrhoea in Moramanga, Madagascar: The MOSAIQUE cross cultural qualitative study* is my work.

Signature and Date: *Karine RENAUDIE*

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## 1. ABSTRACT

### KNOWLEDGE, ATTITUDES and PRACTICES addressing YOUNG CHILD DIARRHOEA in MORAMANGA, MADAGASCAR: The MOSAIQUE CROSS CULTURAL QUALITATIVE STUDY

#### Author and Year

RENAUDIE Karine, Paediatric Nurse, Euro Msc Candidate in International Health, Centre for International Health, Bergen, Norway & Pasteur Institute of Madagascar, 2011.

#### Problem Statement/ Objective

Severe dehydration due to diarrhoea leads to 19.8% of deaths among children under 5 years of age in Madagascar (1). The Ministry of Health identified infant diarrhoea as a public health priority. Several studies show that there is an association between infant and young child feeding practices and diarrhoea morbidity (2,3). A conceptual framework allowed a description of child undernutrition as immediately linked to poverty with diarrhoea as a short-term consequence (4). A cultural construction of diarrhoeal illness one was proposed by Weiss with the KAP model (5). Thus, there is a need to understand how young child diarrhoea is managed with regard to knowledge, attitudes, feeding and treatment practices in the households of Moramanga (Madagascar).

#### Material and Methods

This study is a qualitative study and the following methods were used: 1) 5 focus groups discussions (FGDs) were conducted with mothers, grandmothers and fathers in an area close to the Maternal and Child Health Centre (CSMI); 2) 5 semi-structured interviews (SSIs) with health professionals (doctors, midwife and community health workers) were made in Moramanga to supplement the information and explore the reality of caregivers during child diarrhoea episodes with regards to the education. The information analyzed was triangulated between the data provided by FGDs and SSIs. Reliability was improved by leading FGDs only in the local language and translating from Malagasy to French with two independent local translators and then comparing the translations with two independent doctors.

#### Findings

Health and diarrhoea treatment are not a priority requirement for people in Moramanga. Their opportunity to pay for the health care is limited and the financial charge in relation with the illness leads them to a bigger poverty. Even the cost of ORS is expensive for the population who prefer using traditional medicine. Health workers confirmed sub-optimal treatment practices and varied acknowledgement of the socio-economic burden of diarrhoea was seen.

#### Discussion and Conclusion

Considering all these results, most of the children could be treated at home with zinc and ORS or a family preparation with salt and sugar. Population has to learn how to rehydrate properly the child. Health workers must now implement a preventive programme involving people targeting the financial constraint of the population. This programme will be differentiated for each group in the population and will not only implement a global programme. Understanding the priorities of the population can assist in improving the diarrhoea programme in this region.

#### Key words

Diarrhea, Diarrhoea, Madagascar, Qualitative study, Rehydration, Socio-economic management

## ACRONYMS AND ABBREVIATIONS

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<b>CHD1</b>	Centres Hospitaliers de District de niveau 1 : District Hospital Level 1
<b>CHD2</b>	Centres Hospitaliers de District de niveau 2 : District Hospital Level 2
<b>CHR</b>	Centres Hospitaliers Régionaux : Regional Hospital
<b>CHU</b>	Centre Hospitalier Universitaire: University Hospital
<b>CHW</b>	Community Health Worker
<b>CNE</b>	Comité National d’Ethique Malgache : Malagasy Ethics Committee
<b>CSB</b>	Basic Health Center
<b>CSB1</b>	Basic Health Center 1
<b>CSB2</b>	Basic Health Center 2
<b>CSMI</b>	Centre de Santé Maternelle Infantile: Infant Maternal Health Center
<b>DHS</b>	Demographic Health Survey
<b>FGD</b>	Focus Group Discussion
<b>IPM</b>	Institut Pasteur de Madagascar: Pasteur Institute of Madagascar
<b>KAP</b>	Knowledge, Attitudes and Practices
<b>MD</b>	Medical Doctor
<b>MGA</b>	Malagasy Ariary
<b>NGO</b>	Non Governmental Organization
<b>NOK</b>	Norwegian Kroner
<b>ORS</b>	Oral Rehydration Salts or Solutions
<b>ORT</b>	Oral Rehydration Therapy
<b>PCIMEC</b>	Prise en Charge Intégrée des Maladies de l’Enfant au niveau Communautaire: Integrated Management of Childhood Illness at Community level
<b>SD</b>	Standard Deviation
<b>SRO</b>	Sels de Réhydratation Orale: Oral Rehydration Salts or Solutions
<b>SSI</b>	Semi-structured interview
<b>TFR</b>	Total Fertility Rate
<b>US\$</b>	United States Dollar
<b>WHO</b>	World Health Organization
<b>WHZ</b>	Weight for height Z score

## KEY DEFINITIONS

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### **Diarrhoea** (cf. appendix1)

- i. “*Diarrhoea* is an alteration in a normal bowel movement characterized by an increase in the water content, volume or frequency of stools. A decrease in consistency (i.e., soft or liquid) and an increase in frequency of bowel movements to 3 stools per day have often been used as a definition for epidemiological investigations (Guerrant et al. 2001:332) (6,7).” WHO defines diarrhoea as “the passage of loose or watery stools, usually at least three times in a 24 hour period (...) Frequent passing of formed stools is not diarrhoea. Babies fed only breastmilk often pass loose, "pasty" stools; this also is not diarrhoea. Mothers usually know when their children have diarrhoea and may provide useful working definitions in local situations (WHO 2005:4) (8).”
- ii. *Acute diarrhoea* is an episode up to 14 days in duration (6,7). It is classified in two types by WHO:
  - 1) “*acute watery diarrhoea* (including cholera), which lasts several hours or days
  - 2) *acute bloody diarrhoea*, which is also called dysentery (8)”
- iii. “*Persistent diarrhoea* is diarrhoea of 14 days in duration or longer (Guerrant et al. 2001:332) (6,7,8).”
- iv. “*Chronic diarrhoea* is diarrhoea for 28 days or more (WHO 2010:7) (9).”

### **Feeding methods**

- i. “*Exclusive breastfeeding* is when the infant receives breast milk (including milk expressed or from a wet nurse). It allows the infant to receive Oral Rehydration Salts (ORS), in addition to drops and syrups (vitamins, minerals, medicines).
- ii. *Predominant breastfeeding* is when the infant receives breast milk (including milk expressed or from wet nurse) as predominant source of nourishment. It includes liquids (water, and water-based drinks, fruit juice) ritual fluids and ORS, drops or syrups (vitamins, minerals, medicines). It does not allow the infant to receive anything else (in particular non-human milk, food-based fluids).
- iii. *Complementary feeding* is when the infant receives breast milk (including milk expressed or from wet nurse) and solid or semi-solid foods. It allows the infant to receive any food or liquid including non-human milk and formula (WHO, 2010:4) (10).”
- iv. *Prelacteal feeding* is during the first three days of life, when infants are given something else than breast milk, before they started to breastfeed regularly (11).

## Qualitative methods used

- i. “A *focus group discussion*, (FGD) is a loosely structured discussion among six to ten individuals that is used to gather information on a particular research or program topic. A moderator, who guides the discussion, encourages participants to talk freely and reveal their thoughts and feelings about the research topic (Adapted from Debus, 1998 in De Negri & Thomas, 2003:6) (12).”
- ii. *Semi-structured interviews*, (SSIs) are “usually scheduled in advance at a designated time and location outside of everyday events (...) They are generally organised around a set of predetermined open-ended questions, with other questions emerging from the dialogue between interviewer and interviewees. (...) Most commonly they are only conducted once for an individual (...) and take between 30 minutes to several hours to complete (DiCicco-Bloo & Crabtree, 2006:314) (13).”

## 2. INTRODUCTION/BACKGROUND

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### *2.1 Statement of the research problem*

We want to understand how child diarrhoea is managed in the context of Moramanga, Madagascar, in 2011.

### *2.2 Literature review*

#### 2.2.1 Diarrhoea morbidity

According to WHO, in developing countries, diarrhoea is the major cause for child death when children are less than five years old (14). Worldwide, acute diarrhoea kills 2 million infants each year (15,16) and 1.4 million child deaths per year due to diarrhoea can be prevented (14). Diarrhoea mortality is mainly due to dehydration which is the first direct consequence (8). Diarrhoea morbidity is one of the major health burdens among infants and young children in low income countries (14). An incidence of 3.2 episodes of diarrhoea per child per year among children below five years old was estimated between 1990 and 2000 within 20 countries (17). The immediate impact of diarrhoeal infant diseases in terms of morbidity, hospitalization and death has been proved in several studies (2,3). In developing countries, diarrhoea diseases represent one third of the hospitalizations (14). Stunted children, children who were not looked after by their mother, boys and partially breastfed or weaned children are at risk for diarrhoeal morbidity (2). The long term consequence is undernutrition when episodes are repeated and prolonged (18). There is a lack of considering the long term impact regarding the socio economic cost (19). Poor socio economic status, sanitation and living conditions, nutrition and hygiene behaviour are the health determinants for diarrhoea prevalence (20). In Madagascar, diarrhoea affects 15% of young children between 6 and 23 months and 6% of infants below 6 months (1). During the rainy season from November to March, the incidence of diarrheal episodes increases (1).

#### 2.2.2 Fluids

Dehydration is the most common risk with diarrhoea, thus WHO recommends giving more fluids to prevent it (*appendix1*) (8,9). The frequency of breastfeeding should be increased for infants below 6 months of age (8). At home, salted drinks (e.g. salted rice water or a salted yoghurt drink) or salted soup, like vegetable or chicken soup with salt should be given by adding 3g/l of salt to usual fluids (e.g. plain water). It is important to notice that most soft drinks (“fluids which are sweetened with sugar”), sweetened fruit drinks and sweetened drinks are potentially dangerous for children because of the osmolarity. “This can draw water into the intestine by their high osmotic activity, thus making the diarrhoea worse, aggravating dehydration and causing the concentration of sodium in the serum to rise to dangerous levels (hypernatraemia) (WHO, 1993:3) (21).” In addition, coffee and some medicinal teas or infusions should be avoided because of their purgative, diuretic or stimulant effects (21). A food-based oral rehydration can reduce stool output (6). In Madagascar, diarrhoea is treated at home for most of infants and young children (1). The demographic health survey (DHS) in 2008-2009, shows that 28% of

infants below 6 months of age, 34% of infants between 6 and 11 months and 34% of children between 12 and 23 months receive less fluids intake during diarrhoeal episodes. In addition, 52% of children between 12 and 23 months received less food (1). Hence, this DHS suggests that WHO nutritional advices are not followed during diarrhoeal episodes of the infant or young child in Madagascar (1).

### 2.2.3 Electrolytes and zinc supplements

Infants and young children should take ORS which is currently used and recommended by WHO to treat acute non-cholera diarrhoea (22). In Madagascar, only 42% of the mothers knew ORS (1). It was proved that rehydration with ORS given with a spoon is more effective than by using a nasogastric tube in case of moderate dehydration (23).

Diarrhoeal diseases can lead to zinc deficiency. Zinc supplementation has been shown in numerous studies to significantly reduce the severity and duration of diarrhoea and the occurrence of future episodes (24,25). WHO recommends to give 10 mg per day of zinc for infants below six months of age and 20 mg per day to all children with diarrhoea older than 6 months for 14 days (8). Zinc was proved to reduce the duration of acute diarrhoea among children over the age of six months and it has no impact on infants below six months of age (26). However, in Madagascar, in 2009, only 2% of the infants between six and eleven months and 2% of the children between 12 and 23 months were supplemented in zinc (1).

### 2.2.4 Undernutrition

The second major consequence of diarrhoea is undernutrition (27). WHO child growth standards defines undernutrition as a weight for height z score (WHZ)<sup>1</sup> below -2 standard deviations (SD), severe acute malnutrition as a WHZ below -3 SD and a moderate malnutrition with WHZ up to -3SD and below -2 SD. Children who have a WHZ below -3 SD have a high risk of death (28). Undernutrition affects more than 1 in 3 child death worldwide (29). Undernutrition is one of the major health burdens among children in Madagascar which affects 48% of children under 5 years old and 13% of them suffer from severe acute malnutrition and the problem increases with age (1,30). Stunting affects 24% of infants below 6 months and more than half of the children (53%) between 18 and 23 months old (1). According to the DHS, after 2 years old, the growth retardation cannot be put right, thus there is a need to target infants and young children below 2 years old (1). A nutrition working group defines seven essential nutrition actions<sup>2</sup> to fight against child undernutrition (31,32). To respond to that issue, a large scale community- based nutrition programme called SEECALINE started in Madagascar in 1999 (33). The nutrition intervention aims to reduce malnutrition and improve growth among children under three years old. The education level of the mother is considered important in the health education because on average, higher undernutrition prevalence and lower nutritional status is shown for children from less educated women

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<sup>1</sup> Zscore: "The deviation of an individual's value from the median value of a reference population, divided by the standard deviation of the reference population (or transformed to normal distribution)" (WHO, 2009: xiv) (30).

<sup>2</sup> "The Seven Essential Nutrition Actions: 1) Promotion of optimal nutrition for women; 2) promotion of adequate intake of iron and folic acid and prevention and control of anaemia for women and children; 3) promotion of adequate intake of iodine by all members of the household; 4) promotion of optimal breastfeeding during the first six months; 5) promotion of optimal complementary feeding starting at 6 months with continued breastfeeding to 2 years of age and beyond; 6) promotion of optimal nutritional care of sick and severely malnourished children; 7) prevention of vitamin A deficiency in women and children"(USAID et al., 2011) (31).

(33). This programme has shown a positive impact on the nutritional status of children under 3 years old. In addition, Community Health Workers (CHWs) were designated as main actors for prevention of undernutrition. The programme is called PCIMEC (*appendix 2*) (34). This programme aims to 1) promote child growth and development; 2) prevent diseases such as malaria, diarrhoea, acute respiratory infections, measles which are the fifth main causes of mortality among children below 5 years old; and 3) home care, seeking care outside home (34).

#### 2.2.5 Feeding practices

It has been shown that promotion of exclusive breastfeeding until 6 months with primary health-care services leads to a risk reduction of diarrhoea (3). In reality, despite the fact that a lot of women breastfeed their children worldwide, few infants below six months of age are exclusively breastfed according to WHO guidelines in low income countries (35,36). The Ministry of Health in Madagascar has set up an objective for 2015, of a 90% increase in the prevalence of exclusive breastfeeding between 0 to 6 months (33). However, in 2009, in rural areas of Madagascar, there was a median duration of 2.3 months exclusive breastfeeding (1). 98% of infants were ever breastfed. Regarding initiation of breastfeeding, 72% were breastfed within the first hour of life which increased to 92% within the first day of birth. Prolactal feeds were given to 24%. In rural areas, 24% of infants received prolactal feeding (1). At 1 year of age, 91% of infants were breastfed and it was reduced to 64% at 2 years of age (10). Between 4 to 6 months, 44% received complementary feeding (1). This information could be interpreted as sub-optimal duration of exclusive breastfeeding (37). There is limited information about the reasons for stopping exclusive breastfeeding and introducing solid food in the first part of infancy. Moreover, only 87% of infants between 6-8 months were complementary fed (1). This information suggests a delay of sufficient complementary feeding at 6 months.

#### 2.2.6 Safe water and sanitation facilities

Water is sort in improved or unimproved drinking water sources<sup>1</sup> (39). Safe drinking water is categorised as “any piped water, public tap, borehole with a pump, protected well, and springs or rainwater” (1,40,41). The Millennium Development Goal 7 aims to ensure environmental sustainability. One of the targets is to “halve, by 2015, the proportion of the population without sustainable access to safe drinking water and basic sanitation” (42). 88% of cases of diarrhoea worldwide are attributed to insufficient hygiene, inadequate sanitation and unsafe water cause (14,2). The systematic review of Waddington H and Sniltveist B shows that 32% to 37% reduction prevalence in diarrhoeal diseases can be done by improving sanitation (43). The incidence of diarrhoea episodes among infants is associated with households who have unprotected water supply In 2008, in rural areas of Madagascar, 71% of the households used unimproved drinking- water sources versus 29% in urban areas (1,38). In rural areas,

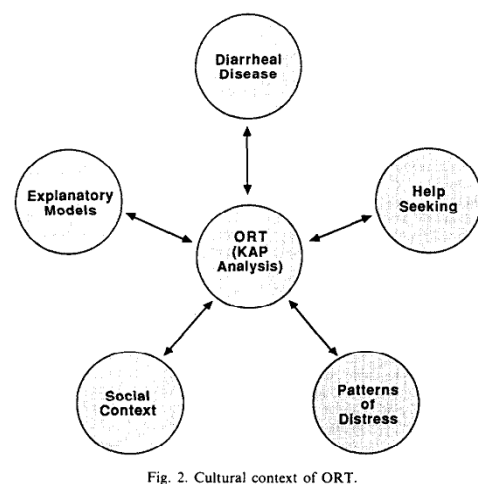
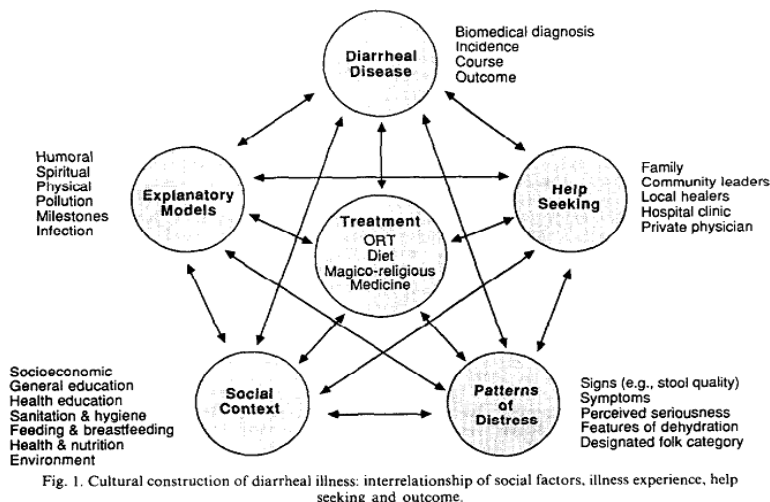
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<sup>1</sup> “Unimproved drinking-water sources: Unprotected dug well, unprotected spring, cart with small tank/drum, surface water (river, dam, lake, pond, stream, canal, irrigation channels), and bottled water” (WHO, 2010:13) (38).

only 10% had improved sanitation<sup>1</sup> facilities and 38% used open defecation<sup>2</sup> (1,38). The government has developed a national plan to improve nutrition and expand water and sanitation services but this programme must be implemented, financed and finalised (44).

### 2.2.7 Knowledge, attitudes and practices (KAP) studies

Qualitative aspects need to be explored thus KAP studies could respond to why and how is it like that. They show a reality of what people are knowing, their attitudes and practices (behaviours) in a certain context for a specific topic. It is a flexible model because of the high correlation between knowledge, attitudes and behaviour depending on each person e.g some people have a learning process for behaving and others have an emotional one (appendix 3) (45). They are commonly used to evaluate and implement educational programmes (45). According to Weiss, psychiatrist and anthropologist, “an appreciation of local cultural models and the diversity of cultural contexts enables health professionals to (I) recognize the significance of local perceptions of diarrhoeal illness with respect to pertinent outcomes and perceived needs, (II) develop ways to introduce recommendations that communities will accept and (III) make appropriate use of existing community resources representing local traditions (Weiss 1988:5) (5).” He used the KAP framework to provide basis for their “research on diarrheal illness-related beliefs and practices” (Weiss 1988:5) (5):



### 2.2.8 Madagascar to Moramanga , a mosaic country and district

#### 2.2.8.1 Madagascar, an island with many faces

In 2009, the estimated number of people in Madagascar amounted to 19,625,000 (30). The population was young with 45% being less than 15 years old and 18% less than 5 years old. The Infant Mortality

<sup>1</sup> “Improved sanitation facilities ensure hygienic separation of human excreta from human contact. There are use of the following facilities: 1) Flush with piped sewer system, septic tank, pit latrine; 2) Ventilated Improved Pit (VIP) latrine; 3) Pit latrine with slab; 4) Composting toilet.” (WHO, 2010:12) (38).

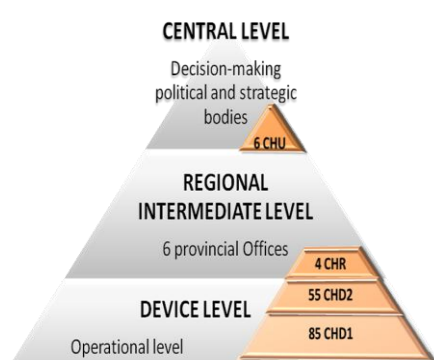
<sup>2</sup> “Open defecation: when human faeces are disposed of in fields, forests, bushes, open bodies of water, beaches or other open spaces or disposed of with solid waste.” (WHO, 2010:12) (38)



Rate<sup>1</sup> is 41/1000 and the Under 5 Mortality Rate<sup>2</sup> is 58/1000 (30). Attendance at primary schools reached 76%. In 2007, the average annual income was estimated at 348 United States Dollar (USD) per capita (1). This was a predominantly rural population with around 23% living in urban areas (1). It is traditionally considered that eighteen ethnic groups share Madagascar's lands which lead to a cultural diversity.

### 2.2.8.2 The organization and regulation of the Malagasy health system

The governance structure of the Malagasy health system is pyramidal on three levels (47): the central, the regional and the operational level. The central level includes the directorates and services with the university hospital, (CHU); the regional intermediate level refers to the provincial directorates like regional hospitals, (CHR) and the device level corresponds to the health district with district hospitals (CHD2 and CHD1) plus basic health centres (CSB2 and CSB1)(48).



**Figure 3: Administrative division of the Malagasy Health System from 2008 to 2013.**

CHU: University Hospital

CHR: Regional hospitals are referred for medical, surgical and specialist care in the chief towns of provinces.

CHD2: District Hospitals<sup>2</sup> provide care for emergency surgery and obstetrics located in the chief towns of districts.

CHD1: They ensure the implementation of primary health care in the Commons. They do not provide surgical service.

CSB2: The Basic Health Centres 2 are required by a doctor who ensures the implementation of primary health care at the community level and offers in addition to the package provided by CSB1, maternity care.

CSB1: They are held by a paramedic who provides immunization and basic health care (48).

Traditional attitudes regarding care are rooted in the rural Malagasy culture. This trend towards traditional care influences the health system. Only 55% of patients visit a medical center to be treated (49). Moreover, it appears that poverty, which affects about 70% of the Malagasy population, limits people's access to basic services more than geographical hindrances (50). Throughout the area, 58% of the population has access to a health facility located within 5 km from their house. In rural areas, the distance which separates 37% of the rural communities from the nearest medical center is over 10 km. Ravelomanana et al. showed that there is a higher severity of child disease in the emergency unit of the hospital in Madagascar when mothers have a low educational level. A multivariate analysis proved that severity was related to the time limits for appeals to the hospital. A majority of the children were referred by health professionals (51).

The Equity Fund<sup>3</sup> is supposed to be able to give care and free medicines to the poorest communities. Each head of fokontany<sup>1</sup>, administratively responsible of the neighbourhood, should make a list of poor

<sup>1</sup> The infant mortality rate is "the number of registered deaths among infants (below one year of age) per 1000 live births in a given year or period of time (WHO, 2009:545) (37)."

<sup>2</sup> The under 5 mortality rate is "the probability (expressed as a rate per 1000 live births) of a child born in a specified year dying before reaching the age of five if subject to current age-specific mortality rates (WHO, 2009:552) (46)."

<sup>3</sup> Welfare system: Fund which compensates the provider for care to poor people identified, ensuring universal access to health care (52).

people, which is then validated by the Mayor and the Performance Office of the Equity Funds. To provide this service, each CSB is equipped with its own equity funds. Then, the head of poor family receives a card called "star" which identifies the family as recipients of free care. However, the major problem of identifying the poor is the lack of established criteria, which can lead to the existency of false poor people. In addition, it can conduct to stigmatization because poor people are ashamed of their status, particularly if they are already socially discriminated.

### ***2.3 Rationale***

Because diarrhoea is such a big issue, Malagasy people have risk behaviour in terms of feeding, hygiene and treatment practices, there is a need to understand how people are behaving in terms of management of young child diarrhoea and why people do what they do. Currently, a cohort study conducted by the unit of epidemiology from the Pasteur Institute of Madagascar identifies factors causing diarrhoea by *Campylobacter* in Madagascar. The qualitative study increases the understanding of actual feeding hygiene and treatment practices addressing young child diarrhoea.

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<sup>1</sup>Article2: "TheFokontany is an administrative subdivision at the basic level of the Commune. Depending on the size of cities, the fokontany includes hamlets, villages or neighbourhoods" (53).

### 3. RESEARCH OBJECTIVES

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#### *3.1 Aim*

The overall objective of this qualitative study was to:

- Understand how diarrhoea in children under 2 years and half (30 months) is managed with regard to knowledge, attitudes, feeding, hygiene and treatment practices in the households of Moramanga (Madagascar).

#### *3.2 Main objectives*

The main objectives of this study were to:

- 1) Develop an understanding of the management of children diarrhoea in the Malagasy Community of Moramanga
- 2) Describe K-A-P among mothers, fathers and grandmothers of children under 30 months in case of diarrhoea
- 3) Describe K-A-P between family members of children under 30 months and health workers
- 4) Explore K-A-P with primiparous and multiparous (2 children and more) parents of children under 30 months

#### *3.3 Research questions*

##### 3.3.1 Knowledge

- How is the recognition and interpretation of clinical signs?
- What is the knowledge and beliefs about treatment?
- What is the knowledge about specific causes?
- What is the knowledge about consequences?

##### 3.3.2 Attitudes

- How is the impact on social life and the family finances?
- How is the trust in medicine?

##### 3.3.3 Practices

- How is the decision making within the family?
- How is the use of medical resources?
- How are the feeding practices?
- How are the hygiene practices?
- Which are the preventive measures?
- How different is the family response when the child has cough or fever?

## 4. METHODOLOGY

### 4.1 Study design

This study was a KAP study that aimed to compare and understand the differences between knowledge and practices in the management of diarrhoea. For this KAP study:

- Knowledge showed the understanding of diarrhoea.
- Attitudes correspond to the feelings regarding diarrhoea, and here particularly the socio-economical impact was given emphasis.
- Practices refer to how people act concerning feeding, hygiene and referral of the young child in cases of diarrhoea.

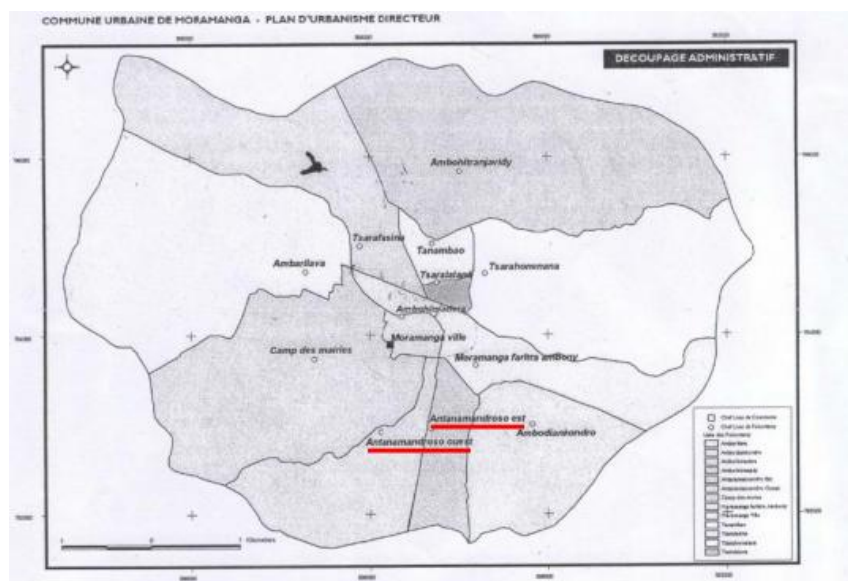
It is coherent within the KAP framework that elements will be repeated when described from different angles illustrated above. Thus, it allows us to view the same element, e.g. low socio-economic status, from a fixed set of perspectives and see how that would be related to knowledge, attitudes and practices. A KAP framework was found appropriate to use in response to assessment of diarrhoea in children under 30 months in this study including household members and health workers of Moramanga, Madagascar.

### 4.2 Study Site

#### 4.2.1 Moramanga



**Map 1:** Representation of the regional division of Madagascar (22 regions).



**Map 2:** Representation of the administrative division of the district of Moramanga. (Source: Malagasy Red Cross Society)

The study was implemented in the urban Commune of Moramanga, in the east part of Antananarivo, which had a population of 37000 inhabitants in 2006 (54). It is located in the region of Alaotra-Mangoro, in the province of Toamasina (cf. Map1) (55). The study area includes 13 fokontany and is divided into 21 municipalities including 29 CSB 2, 1 CHD 2 based in Moramanga city and 1 Maternal Child Health Center (CSMI). Five ethnic groups live here. The majority is formed by the Bezanozano and the Betsimisaraka. The Bezanozano are residents of a forest strip of land between the oriental part of the

country Merina in the northern part of central Madagascar. They are orbiting the Antananarivo region and the coastal region. The Betsimisaraka are occupying most of the eastern coast of the island, from the urban commune of Mananjary in the south central region of Vatovavy Fitovinany to the region of Antalaha-Sava in the north. Minor population groups are the Sihanaka in Alaotra Lake in the province of Tamatave, Merina and the Betsileo migrants, who occupy the southern central highlands of Madagascar. (Wikipedia). Indeed, Moramanga is a crossroad town that is subject to immigration flows (54). It is partly related to the need of labor for the extraction of cobalt and nickel in Ambatovy which is the biggest open pit in the world.

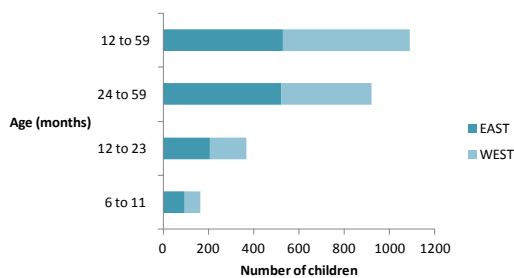
Access to water facilities is provided by the 43 public fountains located in Moramanga getting water from a lake where the sewage is discharged and people are bathing. The water is treated and piped to public fountains. Other facilities are from the 14 private fountains or directly from the lake where the access is not regulated. A treatment with bleach (Sûr Eau®) is used sometimes before drinking this water. Since 2007, in view of global warming and resource depletion, people pay 1.5 Malagasy Ariary (MGA) or 0.0007 United States Dollars (US\$) per liter for water from public fountains up to 2 MGA/ L (0.0010 US\$) for some private fountains (anonymous interviews). Moreover, the piping is over 15 years old and located below the housing which makes repairs difficult.

A multidisciplinary collaboration was done with the political and administrative representatives of Moramanga, doctors, nurses, community health workers, with the Malagasy Red Cross Society and other non-governmental organisations (NGOs).

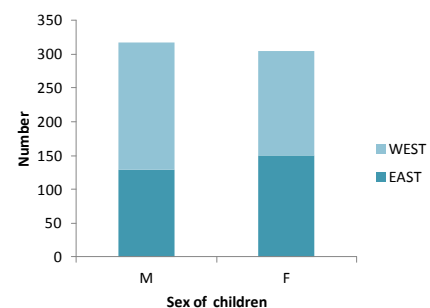
#### 4.2.2 Pasteur Institute of Madagascar (appendix 4)

The study was facilitated within the framework of the Pasteur Institute of Madagascar (IPM). IPM has four main missions: research, public health, training and service activities. This study was part of the epidemiology unit and more specifically in its research missions targeting diseases such as infant diarrhoea which is a public health problem. Several studies on diarrhoea like a cohort study among children below three years of age and a case-control study among children hospitalized are led in Moramanga by the epidemiology unit of IPM.

#### 4.3 Study Population



**Figure 4:** Distribution of children aged from 0 to 5 years old in West and East Antanamandroso, in 2011. (Source: CSMI)



**Figure 5:** Distribution of children under 5 years old by sex in West (2010) and East (2011) Antanamandroso. (Source: Fokontany)

The two fokontanys targeted by this study were West and East Antanamandroso (*pt. Map 2 in 4.2.1*). They are close to the CSMI and have good health care coverage with a fairly good access. The population density east for Antanamandroso was 2148.1 inhabitants per km<sup>2</sup> and 2642.1/km<sup>2</sup> west for Antanamandroso. Such density is usually associated with an urbanisation problem that requires a urban restructuring: improved facilities and infrastructure, etc. (54). The geographic situation of these fokontanys is close to the market which explains that most of the people living there are sellers of fruits and vegetables. When it is raining, people working in the market and living in these two fokontanys are exposed to a sanitation problem caused by the waste which is flowing down the streets (*observation and anonymous interviews*).

#### **4.4 Data collection method**

Five focus groups discussions (FGDs) were conducted with mothers, grandmothers and fathers in West and East Antanamandroso. Five semi-structured interviews (SSIs) were made with health professionals (doctors, midwife and community health workers) in Moramanga.

##### 4.4.1 Characteristics of interest for focus groups discussions

In each FGD, informants were recruited considering different criterias according to the handbook for excellence in focus group research from Debus (56). It was experienced that the people in Moramanga had difficulties to speak about their behaviors regarding child or infant behaviour. It was therefore believed that it would make it easier to speak within the respective FGDs if they shared central characteristics. These factors were considered:

- *Lifecycle*: Primiparous parents, with a first child under 30 months, were not in the same FGD as multiparous ones who had minimum two children (including deceased children) with at least one under 30 months and they were not mixed grand- mothers.
- *Sex*: Fathers were not mixed with mothers and grand-mothers.
- *Geographic distance*: People in each FGD were selected in the same target area.

##### 4.4.2 Study setting

A topic guide (*appendix 5*), was used for each group of family members: primiparous (1 child) mothers, primiparous fathers, multiparous (2 and more children) mothers, multiparous fathers, grandmothers and health workers (*appendix 6*). Courtesy visits were organized with politicians and local health workers with the help of the President of the Malagasy Red Cross to explain the study.

The main investigator of this study was a French white woman who is a paediatric nurse with a Master 1 in Public Health. She had previous experience in qualitative studies from SSIs and theoretic background for FGDs. She had never worked in the region of the Indian Ocean nor in Africa by the time she commenced this fieldwork. She was living in Moramanga during three months from June to August 2010 to do the field work for this thesis. She wrote a diary, observed and participated in the social life of Malagasy people living in Moramanga. She conducted the SSIs in French and observed all the FGDs. The two

researcher assistants were Malagasy. They conducted all the FGDs in Malagasy. One was a woman who was a social worker doing a Master in Social Sciences and she has been associated to the study since the beginning. She was involved in the instrument development and facilitated adaptation of the questions to the Malagasy culture. She also contributed to make the patient information sheet and the consents forms. She had further experiences in conducting FGDs with different NGOs. Decisions for the choices of the questions were made jointly. She led the FGDs and SSIs with women. The second investigator was a Malagasy man who was doing a bachelor in Sociology. He had no experience with FGDs. He was involved in the study after the topic guides were made. He led the FGDs and SSIs with men. Both research assistants lived in Moramanga during the fieldwork. In addition, the President of the Malagasy Cross was involved at the beginning of the study. He lived in Moramanga and had a bachelor degree in sociology. He was the facilitator of the study. We worked together to optimise the tools used and to define the areas of the study. The questions were readapted and criticised line by line in order to make them as relevant as possible for the population targeted. Three pre-tests FGDs with primiparous and multiparous mothers and two pre-tests SSIs were conducted in Moramanga to readjust the topic guide. Then, the investigators conducted five FGDs with family members listed below and five SSIs with health professionals. FGDs were originally planned for six to eleven people with a duration of two hours maximum. The SSIs with health professionals were scheduled to forty minutes maximum.

#### 4.4.3 Study Sample

The constitution of the study sample took into account the characteristics of interest above (pt.4.4.1) and was based on a convenience sample. A close collaboration was done with two community health workers, the head of the fokontany to inform and recruit study participants in the FGDs. A first visit to the head of the fokontany allowed to inform about the study and to have the authorization (appendix 7) signed presented to the participants during the recruitment. Convocations were given to individuals (appendix 8) as well as an informative letter about the study (appendix 9). This process was conducted door to door with the presence of the community health worker, the two assistant researchers and the main investigator.

#### 4.4.4 Data sources

The study participants included in this qualitative study were:

- *primiparous mothers (1 FGD) and fathers (1 FGD)* whose child was younger than 30 months and had at least one diarrhoeal episode during the 6 previous months before the study (to reduce recall bias) and who were living in West/East Antanamandroso, Moramanga between June to September 2011
- *multiparous mothers (1 FGD) and fathers (1 FGD)* with their last child below 30 months of age, who had at least one diarrhoeal episode during the 6 previous months before the study (to reduce recall bias) and who were living in West/East Antanamandroso, Moramanga between June to September 2011

- *grand mothers (1 FGD)* who had one grandson or granddaughter with the same criterias as above
- *health workers (5 SSIs)* of whom 2 were medical doctors, 1 was a midwife and 2 were community health workers practising in Moramanga between June to September 2011 and in contact with the family members cited previously

#### 4.5 Relevance of the data

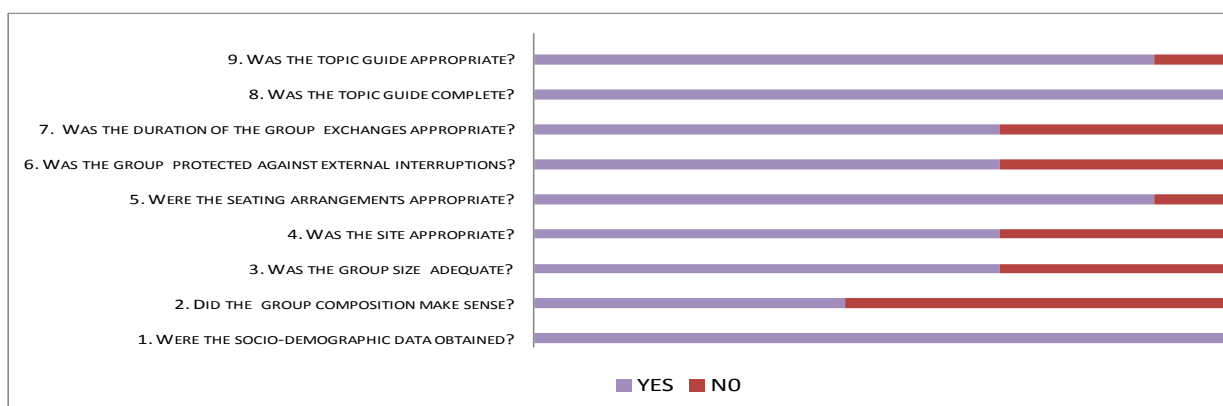
##### 4.5.1 Conditions of data collection for focus groups discussions

Generally the FGDs were held in a neutral site provided by the Malagasy Red Cross. It ensured the confidentiality of the focus group participants. In addition, a playing area for children was fitted during the participation. The time was defined previously with the interviewee in order to make them available (3/5). However, even if they knew about the time, sometimes 2 hours of FGD was too long for mothers. The group composition was a challenge for 3/5 FGDs as the level of education of people was higher than others within the same FGD so it could have prohibited the free speech of people who had lower education. We tried to overcome this by making the people confident around the table and ask them first to introduce themselves. Incentives like staples with a bottle of oil, soap, a kilo of sugar and ten candles were provided to each family at the end of the FGD.

##### 4.5.2 Observation and evaluation of the focus groups discussions

The main investigator asked two pharmacists of Moramanga about the stock of ORS, zinc and about the treatment price.

All the FGDs were observed by the main investigator and a plan of people disposal was made (*appendix 10*). On this sheme, different indentification numbers were given to interviewees who matched with the socioeconomical characteristics (*appendix 11*). Everything was written in a notebook. The observation was made to observe the body language of the participants and how the FGDs were conducted. Thus after each FGD, an evaluation was done with the research assistants who led the FGD and the observer. A summary of what had been said was translated from Malagasy to French. This facilitated a more rapid analysis of the FGD and helped the assistant researcher to improve himself/herself for the next FGD. In addition a methodological assessment of the group was conducted by using the FGDs evaluation form created by Debus (*appendix 12*) see example in figure 5.



**Figure 5:** Representation of the relevancy of data collection conditions of the five FGD led in Antanamandroso, Mosaique Study, Moramanga, 2011.



The FGDs and SSIs were tape recorded and transcribed into texts in Malagasy by computer and hand. Transcripts were made directly by the research assistants who had led the FGD in Malagasy. Both of them were trained by the main investigator to do the transcript similarly. They were using the notebook used by the observator to match the identification numbers with the records. Thus, in the transcription each identification number was written according to each person who was speaking. Concerning the SSIs in French, the transcript was done by the main investigator. In order to ensure quality of data, the FGDs and SSIs were recorded and listened to twice in order to make sure that no information was lost during the listening process.

#### 4.5.4 Translations

Two local translators were recruited for the study. Thus they knew well the Malagasy dialect used in Moramanga. One of them was a man who was a History and Geography teacher and the other one was a woman who was a French literature teacher. They were tested during the recruitment with an one hour translation and chosen among five candidates in total. They were trained by the main investigator on how to do the translation. They were translating the same transcript from Malagasy to French independently by hand.

#### 4.5.5 Selection and verification of translations

A local typist was recruited for the study and chosen among two candidates. She was a law teacher and she had skills in informatics. She was trained by the main investigator to type all the handwritten translations into the computer. She typed the 2 translations after the line in Malagasy and attributed a color code to each translator within the text (*appendix 10*). Then, she sent the content by mail to the main investigator and to two Malagasy doctors, who were outside the study working in the epidemiology unit of the Pasteur Institute of Antananarivo. They both had experience with qualitative studies. They were trained by the main investigator to check the translations and to select the most appropriate one, closer to the Malagasy transcript. If there was a difference between the two translations, they listened to the audio records to check the meaning of the sentence within the context. The chosen text was verified by discussing it in a workshop, a consensus was made to retain the most appropriate one. Thus, the two doctors read the transcripts and the two translations line by line and selected the most appropriate translation. Finally, they sent a document in French by mail to the main investigator which was used for the analysis.

### ***4.6 Data processing and analysis***

After all the FGD and SSIs were reread, the final documents in French were imported into QSR NVivo 9 and analyzed by the main investigator. Lines by line meaningful units were identified and the verbatim report was coded in French by expressing an intelligible thought (57). Convergent and divergent codes were identified during the analysis by coming back to check the context of the data source. Thus NVivo9

allows the analyst to have flexibility in recoding the meaningful units if an error was made. Then, categories were made in French inductively such as “cold” and others, like “use of ORT” were deduced from the literature review. Next, a content analysis was done guided by the KAP research questions used to make the topic guide (*appendix20*). Twelve themes emerged. These SSIs and FGDs analyzed longitudinally clear the substance of the story of each person treated as a special case with its own dynamics. In addition, information was triangulated between FGDs and SSIs which improved data quality and strengthens trustworthiness. The analysis was supported by a method of cutting and coding based on a semantic structure (words used by people in a context at some point) with QSR NVivo 9. It considers descriptive statistical analysis based on the calculation of indexes such as the frequency index of occurrence or the association between certain codes. Thus, it is a qualimetric<sup>1</sup> analysis. After coding, categorizing and indentifying themes in French, all the codes, categories and themes were translated and analyzed in English.

The socio-demographic characteristics (*appendix 13*) were entered in EpiInfo in order to store, retrieve and analyse information about the informants.

This approach allows collecting, processing and analyzing realistic data on knowledge, attitudes in nutritional, hygiene and infant treatment practices in case of diarrhoea with mothers, fathers, grandmothers and health professionals. Processing and data analysis followed the diagram below:



**Figure 4: Representation of the progression in data processing and analysis, Mosaique Study, Moramanga, 2011.**

#### ***4.7 Ethical considerations***

This study was designed according to the protocol and international recommendations in terms of clinical trials (Declaration of Helsinki, adopted by the World Assembly in 1964, recommendations of good clinical practice). The study protocol was approved by the Ethics Committee (*appendix14*) and the Ministry of Health of Madagascar. All the people included received oral and written information and were accurately informed about the study objectives, expected results, the practical interviews, the management of data privacy and their right to refuse to participate in the study. Consent forms (*appendix15*) were translated into Malagasy and French version and the consent was obtained in the language appropriate to the patient.

#### ***4.8 Budget (appendix 16)***

#### ***4.9 Time study***

##### ***4.9.1 Operational time study (appendix17)***

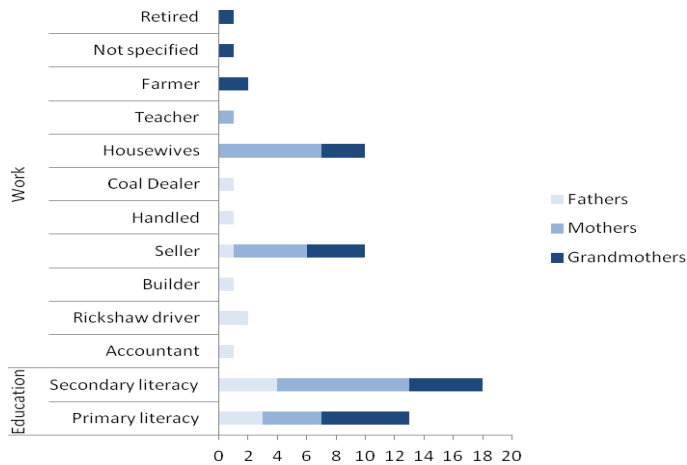
##### ***4.9.2 Schedule changes (appendix 18)***

<sup>1</sup> Innovative concept of quality measurement from the SYMATOP software that allows you to associate a quantitative study with a qualitative study on a small sample, and provides high reliability with at least 15 people. Symatop - Home [Internet]. [cited 2010 March 24] Available from: <http://www.symatop.com/>

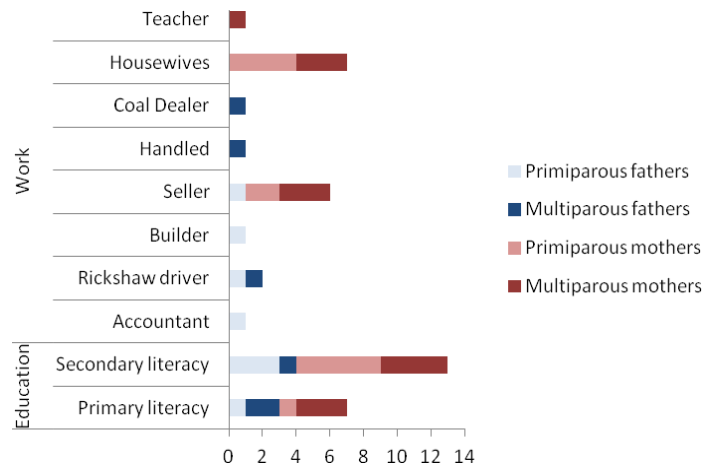
## 5. RESULTS

### 5.1 Sociodemographic characteristics of the participants in the focus groups discussions

All the family members interviewed in FGDs had children or grandchildren less than 30 months of age (*pt.appendix 19*). Based on the EpiInfo research participant's sociodemographic characteristics are represented with *figures 5,6*:



**Figure 5:** Representation of the socio-economic characteristics of fathers, mothers and grandmothers in the FGDs, Mosaïque Study, Moramanga, 2011.



**Figure 6:** Representation of the socio-economic characteristics of fathers and mothers classified by primiparous/multiparous status in the FGDs, Mosaïque Study, Moramanga, 2011.

The results are presented according to our research questions mentioned above (*pt. 3.3*) and differences in responses between family members, family members and medical staff or within the medical cadres are presented. A schematic overview is presented in the *appendix 20*.

### 5.2 Knowledge

#### 5.2.1 Recognition and interpretation of clinical signs

##### ■ General Signs

Family members and health workers generally knew how to recognize the *clinical signs* of diarrhoea in terms of more than 3 liquid stools per day. However, primiparous fathers had less knowledge about it. Family members used more descriptive language “*it is caused by worms and the stools look like those of sheep*” (Grandmother with 3 grandchildren, 44 years old, seller, FGD) than the health workers, who used more technical language “*you ask them: are the eyes sunken, is the oral mucosa dry and all that*” (Anonymous medical doctor, SSI) when they listed clinical signs. Health professionals in the hospital had greater knowledge of the differences between infectious diarrhoea, acute diarrhoea and persistent diarrhoea than the health workers.

##### Changes in behaviour

Parents spoke more about the child having disturbed sleep. Primiparous fathers pointed more to the fact that the child's behaviour changed because he did not play as usual. It was a sign for them to recognize

child diarrhoea as they did not know the clinical signs well. Agitation was also mentioned as a sign by health professionals.

#### Loss of strength

The concept of strength is important in the Malagasy culture thus all the family members pointed to the fact that the child was losing strength which meant that he was losing vitality. Only multiparous mothers and one community health worker observed loss of weight. Community health workers (CHW) among the health workers talked about the loss of strength which was substantial for family members: *“We also give him something that can make him stronger to give him power.”* (Anonymous Community Health Worker, SSI) In other words, these CHWs were closer to people’s perceptions than the midwives and the medical doctors.

#### Feeding disturbance

Multiparous fathers and grandmothers spoke about the child having a decreased appetite when he had diarrhoea and mothers noticed a decrease in food intake. In general, they did not force the child to eat more often. One doctor spoke about decreased appetite.

#### Stomach disturbance

Multiparous mothers and one community health worker spoke about children bloating due to cold and inappropriate clothes as a symptom of diarrhoea.

### 5.2.2 Knowledge and beliefs about treatment

#### ■ Pharmacies

##### Self medication

All family members first used self medication because they did not have enough money to pay the medical doctor. This view was confirmed by the health workers: *“Because for the drugs, you must pay for drugs. That's right, and if they do not have money they do not come to CSMI to pay for drugs.”* (Anonymous Midwife, SSI)

#### ■ Prescription

##### Use of medicine

When self medication did not work people used prescribed treatment by medical doctors or community health workers. One medical doctor from Moramanga (MD) and CHWs talked a lot about the use of different drugs to treat diarrhoea. She emphasized the fact that fathers and grandmothers mostly came to consultation to obtain medicines; this contrasted with mothers, who asked a lot of questions about their child's sickness. Furthermore, a lack of stock in medicine was considered in the hospital, in the CSMI and in pharmacies and explained by both family members and health professionals.

##### Need for information

Often the medical doctors would see children referred and no ORS had been prescribed up to that point in time. Indeed they preferred *“full of drugs Metronidazole® (antibiotic and antiparasitic), Actapulgate® (Intestinal adsorbent), Ercefuryl® (intestinal bacterial) all that without ORS”* (medical doctor, SSI) to ORS. This was referred to as unfortunate by the medical doctors as health workers should be trained on the prescription of ORT because it is the main treatment of diarrhoea to prevent severe dehydration.

## Zinc

Medical doctors and CHWs referred to the need to prescribe Zinc. Grandmothers mentioned it in the treatment of children's diarrhoea. It seems that zinc was not known and during one informal interview, a doctor told me that "they" (doctors) did not give zinc to children; they removed it from the boxes as it was sold in combination with ORS, because *"it is not working on diarrhoea."* Moreover, it appears that there was no zinc at the hospital and it was prescribed if parents could afford it. So according to two medical informants medical doctors would only give ORS. Cost was also an issue related to zinc. Another medical doctor believed erroneously it was affordable for the patients: *"It's affordable, in pharmacy ZINC costs 2000 Ariary (0.9538 US\$) and it is 14 Ariary (0.0067 US\$) tablets for pills. When we received donations it is for free."* (Anonymous medical doctor, SSI)

### ■ Oral Rehydration Therapy

#### Use of ORT

All informants knew about ORT, either how to make it or that it could be bought. However, ORS were well known among multiparous mothers who used it very often to rehydrate the child as *"iray sy valo"* which literally means one for eight and it was less known by the primiparous mothers. Rehydration solutions were used under the name *"ODIVA"* and made at home as *"Iray sy Valo"* (Primiparous father, 55 years old, accountant, FGD), which includes a teaspoon of salt and eight teaspoons of sugar. However, the dosages were not always appropriate as one of the fathers said he would prepare it the following way *"eight teaspoons of salt in a litre of water with a pinch of carbonate"* (Primiparous father, 24 years old, builder, FGD). Only grandmothers highlighted that children do not like the taste of ORS.

At the time of observation, ORS packets were out of stock in two local pharmacies, and if available sold with Zinc (Hydrazinc®) which costs 2500 MGA (1.1923 US\$) instead of 300 MGA (0.1431 US\$). An average daily salary for a worker in Moramanga was around 2000 MGA (0.9538 US\$) thus, Hydrazinc® was expensive for local people.

#### Use of liquids

Rehydration seemed essential for primiparous and multiparous fathers who give *"Eau Vive"* (Drinking water sold in bottles) (Primiparous father, 29 years old, seller, FGD), boiled water, carrot juice or soup to their children in case of diarrhoea. Multiparous mothers were more concerned about the need for rehydrating the child than primiparous mothers. Fathers were more likely to rehydrate their children with water than with ORS compared to mothers and grandmothers who used more ORT like *"iray sy valo"*. Fathers explained that there is a need to compensate water lost by the child. Health workers confirmed that parents used water and carrot juice first to rehydrate children and one medical doctor pointed to the fact: *"They do not necessarily give water, but if they think about it they give water or water from rice and concoctions if they had been advised that"* (Anonymous medical doctor, SSI).

## ■ Traditional treatment

### No belief in traditional medicine for children

Only primiparous fathers thought traditional medicine could be dangerous for young children and not useful: *"We are afraid to use it on a child. A child is still weak and we have fear of overdose."* (Primiparous Father, 29 years old, seller, FGD) One medical doctor tried to persuade parents that diarrhoea is not caused by spells. She denied traditional beliefs and does not want to hear parents talk about traditional healing: *"I'm trying right now to convince them even if they begin to talk about these things ... then I stop them right away and I explain it ... it's the microbes, it is dirt, that is causing diarrhoea..."* (Anonymous medical doctor, SSI).

### Belief in traditional medicine for children

Mostly multiparous parents referred to the use of traditional medicine and plants to cure the child: *"For me, I gave him a shower and forgot to oil his belly thus it made his stomach hurt; he had colic at night then my mother told me to oil his stomach and to give him a bandage with oil for hair for his stomach. I did it and he started to fart a lot. In the morning, he had liquid stools on that day only."* (Mother with 2 children, housewife, FGD). All the health workers apart from one medical doctor confirmed that family members first used traditional medicine to treat the child like *"tambavy"* (Anonymous medical doctor, IDI) which are traditional plants and one CHW said that they referred to the traditional healer. Also the CHWs believed in the efficiency of plants: *"When the child has diarrhoea, we give him guava leaves. We do not give that to a child with severe diarrhoea, but when diarrhoea starts, we give that as soon as possible"* (CHW, IDI). Grandmothers had ancestral beliefs about *"This child has been hit by a ghost, once we arrived at the house, we took care of him at once with different kinds of leaves"* (Grandmother, 60 years old, retired, FGD). There is a conflict between traditional medicine and Western medicine because ancestral beliefs are still important in the Malagasy culture. One medical doctor recognized it and complained: *"It drives me to despair because it makes me nervous when I hear about that actually. In addition, it is difficult to explain to parents that it's not because of that and they insist to explain to you that it was imperative to go to the masseur. It's tiring, you're there, you got the impression they do not listen to you but you do what you can ... even in Tana (which the capital city), not only here, even in large cities ..."* (Anonymous medical doctor, SSI).

## ■ Hospital

Grandmothers are not the obstacle to hospitalization when diarrhoea was severe because they emphasized hospital care more strongly than mothers. Both primiparous and multiparous mothers were concerned about the necessity of hospitalizing children when diarrhoea was severe. Fathers did not talk about hospitalization and tried to find ways not to hospitalize the child because it cost a lot of money. They were responsible for the financial management of the family. All the health professionals spoke about the need to hospitalize the child when she was severely ill, but it seemed hard for them to convince parents: *"We must convince them, even to threaten them that it's going to kill your child, that is why they will go there."* (Anonymous medical doctor, SSI) Sometimes parents refused to hospitalize their children even if he needed it because they did not have money: *"Sometimes, people refuse, they ask us to do what we can do here to treat their child, but we will try to talk gently to make her agree to take the child to the hospital."* (Anonymous medical doctor, SSI) The hospitalization was often short. It was between 24 to 48 hours in response to those emergencies. When the child arrived at the hospital, he was often severely dehydrated. When these children arrived at the hospital they were treated

with high priority. Mostly children who came to the hospital had been referred by a medical doctor. There was no partnership between CHW and the hospital (Anonymous medical doctor & midwife, SSI). The midwife and one medical doctor spoke about the need to follow the sickest children after having prescribed a treatment and asked them to come back.

### 5.2.3 Knowledge about specific causes

#### ■ Environmental causes

##### Cold

Primiparous mothers and grandmothers mentioned that exposure to cold could cause diarrhoea if the child did not have appropriate clothes and ate something cold: *“You need to know that fruits, either avocado or banana must be heated first, we do not eat something cold, and even for your own health it is not good”* (Grand-mother, 57 years old, housewife, FGD). This belief was strongly held in the Malagasy culture in all socio-economic strata. That seemed that CHWs have the same beliefs as the family members on the perception of coldness.

##### Seasonality

One CHW specified that there are more cases of diarrhoea during *“the rainy season because water is dirty”* (SSI).

#### ■ Human factors

##### Carelessness

Grandmothers believed mothers could cause diarrhoea through: 1) breast feeding depending on what she had eaten like something indigestible for the baby like avocados, potato leaves or melon leaves; and 2) a lack of supervision where the parents work and responsibility for caring for the child is delegated to older children.

##### Poisoning

The idea of poisoning was only raised by one multiparous father and the midwife interviewed: *“I do not know but there is a case, in Tana, the niece of my brother died. The baby is dead. He thinks it is a poison given by the witch, that's what he thinks.”* (Midwife, SSI)

##### Transmission by genes

One CHW told that people living in rural areas think: *“For example, if the parents had a stomach ache before, and the child has a stomach ache now it is thought that the disease is hereditary, saying that his father often had a stomach ache and that is what is passed on to his child.”*(SSI)

#### ■ Infection

The midwife and one MD specified the type of infection that causes diarrhoea linked to a lack of hygiene practices. *“There are infectious causes that can be caused by viruses, parasites or bacteria, but the most common cause for children is viral”,* like the *“rota virus”* (MD, SSI). One CHW added that it is caused by microbes. Grandmothers were aware that diarrhoea could spread as an epidemic with a virus, but this was rarely a concern of mothers and fathers. Transmission of microbes by hands was seen as a major cause of diarrhoea by health workers.

One CHW mentioned that food poisoning could also be a cause for diarrhoea.

#### 5.2.4 Knowledge about consequences

##### ■ Dehydration

Recognition of consequences overlapped with recognition of clinical signs. Primiparous fathers had difficulties recognizing the signs of dehydration. Nevertheless, multiparous fathers, mothers, grandmothers and health workers knew well the signs: *“His lips are dry when he has diarrhoea and he has a bad cough with germs”* (Grandmother, 44 years old, seller, FGD); *“When you pull the skin, it takes time to get back up”* (Primiparous mother, FGD); *“Often when he is dehydrated, his eyes widened. He is weakened, he has no vitality and he is weak. It is how I understand that my children have a lack of water”* (Father of 5 children, 35 years old, coal dealer, FGD). The midwife and a medical doctor explained that diarrhoea is categorized *“in three stages, A, B, C. A is without signs of dehydration, he goes home and B is moderate dehydration and C severe dehydration.”* (Medical doctor, SSI) Health workers insisted on the severity of dehydration which can lead to death if the child is not rehydrated. However, the midwife and multiparous mothers mentioned that the disease could progress fast. When the child was hospitalized and rehydrated the child's condition could likewise improve quickly.

##### ■ Extreme consequences

Parents identified dehydration as a major risk and they spoke at length on the need to rehydrate the child. They had fear about the severity of diarrhoea which was vividly expressed by fathers: *“we should not joke with diarrhoea which is a dangerous disease which makes children tired.”* (Father of 5 children, 35 years old, coal dealer, FGD) Moreover, there is a difference between multiparous and primiparous parents in the sense that multiparous parents expressed more strongly that diarrhoea could be severe. On the contrary, the grandmothers did not mention severity to any degree. All the health workers were aware that infant or child diarrhoea could be severe. Death was mentioned as a major consequence by primiparous mothers, CHW and the midwife interviewed. The midwife, one CHW and primiparous mothers spoke about undernutrition and stunted growth as consequences: *“He vomits and has diarrhoea, vomits and has diarrhoea, which is why he is very small. That's also why my child is so small. When he was five months, he was so tough ...but after vomiting and having diarrhoea, his waist has shrunk”* (Primiparous mother, FGD). Mothers spoke about a causal path between diarrhoea and undernutrition. They pointed to the fact that children are now more vulnerable to diseases than people before: *“It's like the child of today is subject to the disease. I do not know why”* (Mother with 4 children, 38 years old, seller, FGD). *“Undernourishment. You know that poverty ... when people live in poverty, can no longer give him a decent meal, even if the stomach can not digest, we always force him a little bit, it's like that”*(CHW, SSI). CHW were conscious that poverty leads people to difficulties and when there was not enough money it had a consequence on feeding thus it caused diseases (CHW, SSI).



### 5.3 Attitudes

#### ■ Social life

##### Emotional distress and consequences for homework

Mothers and grandmothers talked a lot about the disturbance of family life. Indeed they felt very concerned about the child sickness and worried a lot about the future: *“For me, nothing goes well. I am disturbed especially when my grandchild has diarrhoea. I drop everything to know what to do with the child, where are we going, what we will do, what caused it? Let's go to a doctor! It was at this point that the whole life is a mess. We leave everything and save the child first.”* (Grand-Mother with 3 grand-children, 57 years old, housewife, FGD). Only one medical doctor talked about mothers' distress. For health workers diarrhoea was mostly focused as a somatic problem and the psychological aspects were given less attention. Health workers were affected psychologically.

##### Expectation

Mothers and fathers usually waited when they saw their child sick with diarrhoea to see if it was going to stop by itself. Waiting was more common for primiparous parents: *“The first day ... my husband said “do not go immediately to the doctor, wait a bit ... maybe it will heal on its own because we will pray and see the change.”* (Primiparous mother, FGD) In contrast, grandmothers said they never waited. The parent's expectation was essentially explained by the fact that the disease was disrupting the whole of their day-to-day family life, so it took time for the parents to cope socially and financially with the new situation. One medical doctor felt nervous about the fact that there is a big delay in medical assistance before children arrived at the hospital which leads to severe dehydration (SSI). She insisted on the importance of mothers not waiting when they see that the child's stools are different than normal. She advised that *“the mother must react quickly and take him to the medical centre instead of leaving him in a state of dehydration”* (MD, SSI). However, one CHW counselled parents not to wait more than two days before seeing a doctor. In case parents did not recognize the earlier signs of dehydration this could lead to dramatic consequences.

#### ■ Financial impact on the family

##### Working problems

Fathers talked about absenteeism and difficulties of working because they were worried about their children and they needed to help their wives. For most of the fathers their wives stayed at home as housewives. It was mostly the primiparous fathers who mentioned absenteeism: *“We must stop working”* (Primiparous father, 24 years old, builder, FGD). It has a huge consequence on the economy of the Malagasy family which is based on the father's salary. The working problems were not mentioned by health workers. In Moramanga, no social workers were assessing these issues.

##### Varying views about cost

As expressed earlier the issue of cost was central. Everybody recognised treatments were expensive and family members often couldn't afford treatment for the sick child: *“It is a bit hard; drugs are expensive and as Ms said earlier, when we must find today what to eat today ... it is a bit difficult.”* (Mother with 3 children, 32 years old, seller, FGD) Multiparous parents spoke about their need for money and finding solutions.

When finding a solution to the need for money, creative suggestions came up: *“We are forced to sell our property because life is more important than property, money is earned and spent so I sell this first; I will sell these earrings to save my child, then I'll look again, there will always be a solution later. That's pretty much like that in our society”* (CHW, SSI). Asking others for money was often mentioned. Fathers would ask the grandparents and all the family members to help financially in order to cure the child. Moreover, few of them had savings to pay children's treatment or hospitalization.

Few of the health workers spoke about the costs of treatment and they thought treatment for diarrhoea was affordable. However, they were generally unaware of treatment prices. The midwife made a comparison between families who have low incomes and those with high income in terms of severity of dehydration when they arrived at the hospital. She observed that: *“It depends on their social life because the very poor families arrive only..., the last time he was in shock. That is very serious and when they arrive... They, you know they make teas, all these things”* compared to *“the family who has more income, they arrive when it is not yet very severe. Yes it is like that. It depends on their social life”* (Midwife, SSI).

### Social deprivation

*“Mm (...) yes, there is an impact (and she laughs) there is an impact on society because the person has nothing and the society something. There is someone who provides advice and assistance. The person also is lazy ... sometimes the father is lazy; he does not work but he does that (she brings her thumb up to her mouth) and when he's drunk, his family is neglected and has nothing. Sometimes the family is asleep without eating and their neighbours are in charge of them. It is the alcohol- related harm”* (CHW, SSI). The CHW wanted to show that poverty is the cause of many illnesses like diarrhoea but also alcoholism and starvation.

### Equity Fund<sup>1</sup> (pt.2.2.8.2)

This topic was only treated by one medical doctor. The major difficulties are 1) some poor people are not written in the list so can not have access to treatment for free; 2) there are no specific criteria to assess if these poor people should be on the list and 3) people refused to be stigmatized as poor people.

#### ■ **Lack of Trust in Medicine**

Mothers and grandmothers did not trust the drugs which were given by the doctor to their children. Primiparous mothers expressed stronger suspicious about drugs given to their children than multiparous mothers. They often needed to come back to see the doctor in order to ask for other drugs to cure their children.

Primiparous mothers and grandmothers criticised the fact that MD did not do any consultation before prescribing treatment: *“And they never consult the patient. (Chorus) They do not consult”* (Primiparous mothers, FGD) and were dissatisfied about it. Among the doctors a fear of parents not telling the doctors the truth on what other things they had given to the child previously was also raised.

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<sup>1</sup>Welfare system: Fund which compensates the provider for care to poor people identified, ensuring universal access to health care (52).

## 5.4 Practices

### 5.4.1 Decision making

Multiparous parents agreed that it was the mother who first had to make a decision about when the child had diarrhoea. However, grand-mothers argued that mothers should bring the child to them in order to make a “pre-diagnosis”. Primiparous mothers referred to grandparents to take decisions: *“Seniors living at home advised us”* (Primiparous mother, FGD). Primiparous fathers partially shared responsibility with their wives when they couldn’t manage alone: *“I am helping my wife only on unfinished tasks.”* (Primiparous father, 29 years old, seller, FGD), *“Only at night when there are problems, I take my responsibility.”* (Primiparous father, 20 years old, rickshaw driver, FGD) Health workers thought that it is mostly the mothers who take the child for care when he has diarrhoea, thereafter, the grandparents and often the grandmothers. It could also be the father when the mother worked or the nanny when both parents were working. For one medical doctor the reference person would be the grandparents: *“... it depends on the category, the standard of living of the population for people who do not ... who have not had much education they will go to their grandparents. It is common”* (SSI).

### 5.4.2 Use of Medical Resources

#### ■ Medical Resources

The family members all referred to the medical doctor when they could not cure the child who had diarrhoea. However, multiparous parents mentioned that more explicitly contrary to primiparous parents: *“So I told my wife that this child is not doing well because usually it is not like that, it is better if we took him to the doctor soon.”* (Father with 3 children, 29 years old, trader, FGD) Going to a health centre called the “Red Cross Malagasy<sup>1</sup>” was preferred. That is the Maternal and Child Health Centre where they would not need to pay the doctors who were remunerated by the government. The CHW guided people to the Maternal and Child Health Centre. In CSMI doctors aimed at the highest standard of care: *“Doing it well - to do the consultation well, to give and prescribe medications, and primarily because we have protocols to follow, we prescribe zinc and ORS”* (MD, SSI). The midwife explained that there is a difference of choice between rich people who can afford to go directly to the hospital and poor ones who go to the CSMI. Thus, a socio-economic factor conditioned people’s choice. Parent’s level of education was also perceived as important: *“But there are other people who have a university education for example, who will immediately go to the doctor”* (MD, SSI). CHW argued that all the people go to see a doctor when their child is sick which is in contrast to the latter two arguments. They also said that mothers referred to CHW when their child is sick. One CHW explained that they work under bad conditions because they are volunteers and work in their own houses, or when they go to people’s house they have no transportation. All health workers agreed that it is important to see a doctor when the child has diarrhoea.

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<sup>1</sup>People call the Maternal Child Health Center “Red Cross Malagasy” because previously the premises were owned by the Red Cross Malagasy.

## ■ Access to Care

Grandmothers and mothers found that access to care was difficult in terms of opening hours because even the “Red Cross Malagasy” that is close to their house was opening too late at “9 am”, closing at “4pm” and during the weekends: *“Regardless of the severity of the child illness, when it's closing time, they no longer receive.”*(Mother of 5 children, 30 years old, seller, FGD) Multiparous parents were more dissatisfied than primiparous ones because they had more experience. Opening hours was a concern, but most fathers and mothers found the geographical closeness advantageous in terms of choice. In fact, in Moramanga there are private practitioners, two health centres, one CHD 2 and several pharmacies. Even if there was a fairly good access, multiparous mothers had difficulties to pay a private practitioner. Health workers from the hospital observed that people who are rich go to a private practitioner and people who are poor go to the CSMI in first intention. Second, people who have high income are able to come to the hospital when the child has a moderate dehydration compare to people who have low income who come to the hospital when the child has a severe dehydration.

### 5.4.3 Feeding Practices

## ■ Breastfeeding

### Exclusive Breastfeeding

Almost everybody knew that in theory, exclusive breastfeeding was recommended until the child is 6 months, but in reality it was not practiced because grandmothers advised the parents to give to their children dry rice at 3 months of age. One father explained this advice: *“Since my mother educated me, we do not wait until the six months of age to feed the child, but about four months. In his fourth month, he is accustomed to drink the “juice of rice” (water in which rice is cooked, and we can drink it when the rice is almost cooked), carrots and mashed potatoes with very little water to make it consistent, it was always like that for us, because breast milk is not enough for the child.”*(Primiparous father, 24 years old, builder, FGD). In general, all the health workers seemed to give appropriate advices regarding excluding breastfeeding. One CHW added that a mother should eat food which contains vitamins *“for the vitamin to get into breast milk”* (SSI).

### Complementary Breastfeeding

The parents were not providing adequate complementary feeding as the frequency of the meals could be as low as two meals a day and as the diversity is poor, at 11 months of age a breast feed was believed to replace a full meal During episodes of diarrhoea, mothers said that the child takes less food and they would respond to that: *“If you breastfeed eight times a day .... we will give him only six (during episodes of diarrhoea).”* (Primiparous mother, FGD) Further, tea or coffee was given to replace breast milk. Food was believed to be digestible or indigestible and the latter was perceived to cause diarrhoea. A need to give “tender food” when the child has diarrhoea was thus expressed. Everybody knew nutrition diversity from 6 months of age was gradually recommended. However, only a few parents could afford to give an age adapted meal to the child. Thus, most of the time they gave the same food as adults and there was hardly any transition between exclusive breastfeeding via complementary feeding. It was mostly multiparous fathers who

referred more to appropriate complementary feeding practices. A CHW said that poor families can not afford to give a decent meal to children so parents only give to the child what adults eat: *“For example when you do not have rice, you give manioc. It's not even a soup of manioc but it is dry manioc. His stomach does not support it”* (CHW, SSI). In general, all the health workers seemed to recognize the importance of good complementary breastfeeding.

#### ■ Food given to children

All of the family members referred to a particular diet when the child had diarrhoea such as tender food, something hot or what the child prefers. Specific foods were mentioned such as chocolate and banana, orange juice and carrots juice, vegetable soups, water rice, porridge from corn powder or mashed potatoes. It appears in the quotes that CHWs advised similar food as people used and one CHW stressed the need to give food with vitamins to the child to give him strength. Fibre, oranges and dairy products except yoghurts were discouraged by hospital workers. Some health workers stressed that the child should just eat his ordinary food.

#### 5.4.4 Hygiene Practices

#### ■ Hygiene

Hand washing was acknowledged as important in preventing diarrhoea. However, soap was not used by all and most of the time they would think that water was enough to wash the hands properly. Primiparous mothers were most concerned about washing the hands of the children and themselves *“before preparing food, I wash my hands and after returning from the toilet.”* (Primiparous mother, FGD) All the health workers stressed on the importance of hand washing which is a source of contamination if child's hands or mother's hands are dirty. One CHW said: *“It is not with your hands that took the coal that you will give the potato, it is not”* (SSI).

Most of the time, grandmothers and primiparous fathers talked about digging a hole to put the child stools: *“We bury in a hole the child stools, because if it is dysentery or something like that, it is transmitted through the air. The toilet is for the use of all sorts, it is better to dig a hole which we cover with ground in order not to spread the disease”* (Grandmother, 60 years old, retired, FGD). In fact, one medical doctor noticed that some people living in Moramanga do not have latrines because there is insufficient space. Mothers throw the child stools more often in the toilets or in the river when they washed the clothes. The concept *“bad community habit”* of not washing themselves even if they have access to a well was linked to poverty (Midwife, SSI).

Everybody acknowledged that hygiene in the living environment and personal hygiene is important in preventing diarrhoea in children. However it is difficult to apply when people live in smaller wooden houses with few facilities. There was also a need to delegate the responsibility of younger children care to older children, 6 to 8 years old.

### ■ Access to water

Water is considered “*vital for life*” (Primiparous father, 55 years old, accountant, FGD); “*this is the source of life for the human body*” (Grandmother, 56 years old, farmer, FGD); “*water is a subsistence means for human*” (Primiparous mother, FGD).

Fathers and mothers talked a lot about the need to treat and prepare the water they consume by boiling it or putting Sûr Eau® which contains bleach because they are not confident with the treatment of the water they use even if it is from public drinking fountains. Mothers think that water is unsafe because well water contains “*insects*” and “*green algae, there are molluscs, worms, bugs. These fall into the well even if it is covered.*” (Primiparous mother, FGD) They are more in contact with the source of water in order to cook than fathers. The majority use water from the well, fewer use water from public drinking fountains and some use tap water. Only some fathers felt confident in the water they consumed coming from public water fountains. Health workers advised people to boil water because water is unsafe and could cause amoebic diarrhoea.

#### 5.4.5 Practices about prevention

In general health workers stressed different issues in terms of primary health care, both preventive means and treatment. They used different techniques to explain. Drawings on the prescriptions to be understood by illiterate people about drug’s dosages, e.g. for ORS, was used by some health workers. Others would health educate by accurate oral explanation of the treatment. Not to wait “*all the night without giving something*” was strongly held. The importance of telling people to wash their hands with soap before preparing meals, after being in contact with child’s stools and to change their clothes was also stressed. The need of making more latrines was tried, but it did not work because of the lack of space. This was emphasized by a more desperate complaint “*one person out of ten follows your advice... which is despairing*” (MD, SSI). The complaint that Malagasy people are “*difficult to reorganize*” because “*they listen to you but they do not practice it*” was heard by health workers (Midwife, SSI). Contrasting this pessimistic view it was also held that informing people on the severity of diarrhoea by giving real cases was viewed positively by mothers. Both medical doctors in the hospital and the ones who worked in the centres highlighted the importance of taking the parent’s level of education into account. When they prescribed treatment they wanted to make sure that she was able to understand the medical prescription: “*It is not the child we watch, but the mother. If she is well educated and if she has a lot of knowledge, we will teach her what to do, but if they are illiterate, we always say, you come back here after three days.*” (Anonymous medical doctor working in Moramanga, SSI).

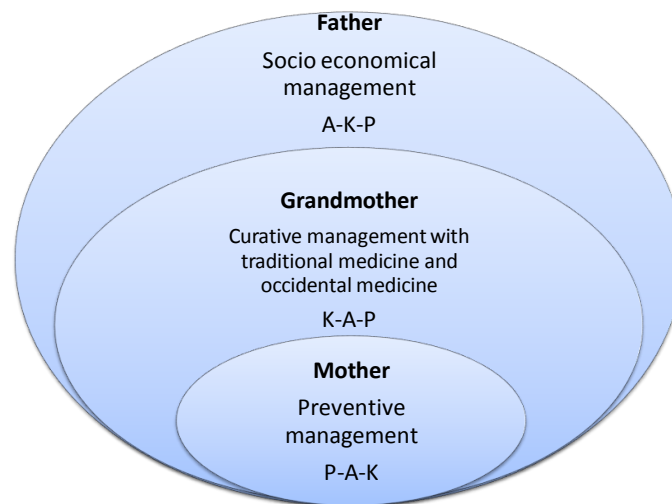
#### 5.4.6 Treatment practices about fever and cough

### ■ Fever and cough

Multiparous parents talked a lot about fever which is a common symptom for their children treated by self medication first with paracetamol or aspirin. Sometimes they used massages to treat fever. After two days if it did not stop they went to see a doctor. Multiparous parents knew more about how to treat fever than primiparous. Fever followed the same process as the treatment of diarrhoea. Parents use both self

medication and traditional medicine and if that did not work they went to the doctor. Mothers treated the child's cough first by giving Cotrim® which is an antibiotic, honey and lemon to make a syrup often including vinegar and sugar. Traditional medicine plays a major role in the treatment of child diseases like fever, cough and diarrhoea which are the main symptoms of the child known by parents and grandmothers. Health workers confirmed the importance of traditional medicine.

### 5.5 Synthesis of the results



**Figure 7:** Representation of the decision making process within the family addressing management of child diarrhoea with the K-A-P model, FGDs, Mosaique Study, Moramanga, 2011. (appendix 3)

## 6. DISCUSSION

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Below we discussed the socio-economical factors of child diarrhoea, occidental medicine and traditional medicine, care and practices, inadequate rehydration and different knowledge, attitudes and practices addressing young child diarrhoea between primiparous and multiparous parents.

### *6.1 Discussion of findings*

#### 6.1.1 Socio-economical factors of child diarrhoea

First, inequity between poor families and rich families was illustrated through several examples. Poor people cannot afford to go to the hospital while rich people can go when the child is not severely dehydrated. This challenge is not overcome through the Equity Fund, as it is not working as it should and does not offer medical coverage for poor people. It is partly due to the list which is not updated, criteria that are not well identified in order to define poor people and, a concern of stigma. These financial challenges were also confirmed by Poncin and Le Mentec in a 2009 study evaluating the Equity Fund coverage (52). In addition, there is a need for more transparency of the operation process of the Equity Fund. Furthermore, the findings illustrated the path between poverty, undernutrition and diarrhoea. This relationship has also been discussed in the Indian context relating low standard of living and reduced anthropometric status (58). The selected conceptual framework allowed a description of child undernutrition as immediately linked to poverty and diarrhoea seen as a short-term consequence (4). Moreover, having a sick child makes the family poorer because both money and time are needed to care for the child. This leads to increased expenditure and less time for work, which in turn can decrease income. Thus, there is a vicious circle of poverty which leads to diarrhoea and when child diarrhoea occurs it makes the family even more vulnerable. The father stops working to help the mother and the family is selling their property to “*save the child*”. Results show that fathers are more in charge to bring the money to the family and involved in the financial management of child diarrhoea in the decision making process. They recognized the child sickness by his behaviour change.

Second, a strong pattern about cost of treatment emerged in the findings. They show divergent perceptions. Health workers did not perceive diarrhoeal treatment as being expensive, while family members did. Since families had to find money on a daily basis to buy food and feed the family, treatment was a luxury they could not afford unless they made sacrifices. However, it seemed like family members coped with the situation by managing to find money within the Malagasy communities that showed high community solidarity. This quote cited in Blanchard et al.: “*Health is the balance between a person, his environment, and the community in which he lives. Illness upsets this balance*” (Anonymous, interview, Antananarivo) illustrates well the Malagasy belief and the strong impact of illness on the socio-economic environment (59). It is viewed as a systemic approach where the Malagasy community plays the major role.



### 6.1.2 Occidental medicine and traditional medicine

Traditional medicine was a response to cope with diarrhoea when parents had a low income. If the mother does not give cold food, or if the mother does not give food that gives strength to the child, then she will be seen as careless by grandmothers. Even if mothers acknowledge clinical signs and consequences of diarrhoea, they expect that the child will recover on his own. In addition, the use of “iray sy valo” (one teaspoon of salt and eight teaspoons of sugar for one liter of safe water) was well known in the population. Nevertheless, mothers were recommended to give it to the child, but often knowledge about exact preparation was missing.

The mother was seen as responsible to take care of the child when he had diarrhoea, but she also had the cultural duty to follow the grandmother’s advice. The grandmother had the will to ask for medical assistance. In this case grandmother’s “help seeking” was a first answer when the child had diarrhoea and not an obstacle to occidental medicine. They appeared to have this knowledge to respond to child sickness and did not favour traditional medicine anymore. Weiss also emphasized the cultural construction of diarrheal illness (5).

Moreover, self-medication appears to be another answer to sickness. If traditional medicine and self-administered drugs did not work, then the child was brought to a medical doctor. However, a lack of trust in occidental medicine was generally expressed by women in terms of inefficiency of drugs given to children and low quality of consultations. This was a concern even if there was a reasonable coverage of doctors in Moramanga and medical infrastructure was accessible. They discussed unsuitable opening hours, low stock of medicine and fear of being judged by doctors. Thus a gap appears between people who believed more in traditional medicine and health workers who prescribed occidental treatments which have no meaning to local people. A denial of traditional practices was identified in the SSIs made with health professionals. However, the results show a better understanding from the CHWs who are closer to the family members and who facilitate the link between traditional medicine and occidental one by detecting the cases of child diarrhoea in the community and refer them to medical centres.

Furthermore, it appears that emotional distress and consequences for work are common concerns to family members. This is the attitude which mainly drives mothers to bring the child to see a doctor. If the child was too dehydrated and doctors can not cure him, then hospital tends to be the last possibility to avoid death. Grandmothers were not an obstacle to hospitalization.

### 6.1.3 Care and practices

On one hand, health workers interviewed seem to have an appropriate knowledge about drugs prescription in cases of diarrhoea. They knew about the need to rehydrate the child: ORS were cited as a standard treatment and zinc as a supplementary treatment to cure it.

On the other hand, the findings show that this was not in exact line with the WHO recommendations (8) and that it was a misunderstanding about the efficiency of zinc in child diarrhoea treatment. The two limitations given were the lack of stock in the hospital and the inefficiency of Zinc which was removed from the Hydrazinc® boxes. In addition, the cost of Hydrazinc® sold 2500 Ariary (1.1923 US\$) in

privates pharmacies, which is more than an average daily salary of Malagasy people, was a limitation for family members. Moreover it appears that the ORS's prescription was not a generalized prescription among all the health workers and a multitude of drugs such as antibiotics and antiparasitics, intestinal adsorbents, intestinal bacterials were preferred to ORS. According to WHO recommendations, zinc is strongly recommended and the zinc prescription is 20 mg of zinc per day during 14 days for all children over 6 months and 10 mg per day for infants under six months who have diarrhoea (8).

Health professionals prescribe first-line anti-diarrheal drugs that are prohibited by WHO and the American Academy of Pediatrics which recommends not using them with young children (60). It remains a need to investigate further the perceptions of prescribing among health workers, and we hypothesise that there are more focus on relative causes of diarrhoea without any viral or bacterial evidence rather than on the symptoms and consequences like dehydration.

The symptomatic treatment or prevention of dehydration is not rapidly effective against diarrhoea; the prescriptions are sometimes inadequate and there is a lack of consultation because of a lack of training and supervision of health workers. Solutions like improving training and supervision should fight against this suboptimal medical practice.

An inadequate complementary feeding was identified in the findings because inappropriate liquids like tea were given to the child to replace breastmilk. Even if the WHO infant feeding recommendations (10) were well known about all the informants, in practice they were not adhered to. Because of work, mothers explained that they confide their children under responsibility of older children who gave inappropriate food to the child regardless of his age. An inappropriate exclusive breastfeeding was also described because diversification was started earlier at 4 months of age according to grandmother's advices.

Regarding health education, health professionals had the will to treat well their patients and to spread good messages about hygiene, feeding and treatment practices. However, the education level of parents, community habits and strong beliefs about traditional medicine appeared to be barriers for a good communication and a better understanding between health workers and family members. It appeared that lack of space was a major limitation for building latrines which confirm the results found in Mandritasara in the north of Madagascar (61). Hygiene appeared to be a major challenge.

Access to safe water was viewed as a major concern by family members. This was mentioned by health professionals. As a majority of people are using well water and water coming from public fountains, family members questioned the safety of water which is essential and vital for Malagasy people. Barriers to access to safe water emerged like a failure in the policy process to prioritise it (anonymous informal interview) and it was confirmed by the Tearfund report (61). Besides the more traditional beliefs about causes of diarrhoea e.g cold, rain and poisoning, they were aware about causes like access to water and hygiene. Thus, in practice they aimed at boiling water or treat it and they insisted on the hand washing. However, households' observations would be needed to confirm this.

#### 6.1.4 Inadequate rehydration

Concerning rehydration which was seen as a common concern, findings showed an inappropriate rehydration. Indeed, pure water was often given to the child as predominant liquid to respond to dehydration also if severely dehydrated followed by herbal teas, carrot juice or orange juice seen as dangerous by WHO (8). However, it is not enough in terms of electrolyte intake (lack of sodium in water from a well or a public fountain). Pure water could cause hyponatremia and sometimes severe cerebral edema (coma, status epilepticus and intracranial hypertension) unless it is accompanied by a diet providing sodium (60). Carrot juice should be abandoned because they provide little electrolyte diarrhoea and hide their absorbency (*Dr P. Berterottière. Pediatric Nutrition Service. Hôpital Trousseau Paris*)(60). Rehydration was made with household preparations such as “iray sy valo” which were not controlled. “Tambaves”, teas were also used and could be very dangerous for young children when the dosages of the plants are random which could lead to an increase of child dehydration. ORS were not prioritised neither by family members nor by health workers. In fact they were rarely known by families, rarely prescribed and not affordable in pharmacies. This study suggests this as a major challenge. A successful training was done in Mozambique where people were trained to do local ORT added to a complementary feeding when the child was more than 6 months of age (62). In this approach, people, CHWs and policy makers were involved to increase sustainability. A homemade solution should contain 6 teaspoons of sugar, 1 teaspoon of salt and 1 teaspoon of lemon juice in one liter of safe boiled water (60). In Madagascar, the study suggests to call it “ray sy enam” (one and six).

#### 6.1.5 Different knowledge, attitudes and practices addressing young child diarrhoea between primiparous and multiparous parents

Primiparous parents seem to have less knowledge about ORT. Often neither ORS nor “iray sy valo” were known by primiparous parents. Consequently, they waited more before using traditional medicine or bringing the child to a doctor in case of diarrhoea. Clinical signs of dehydration were not well known by primiparous fathers compared to multiparous. However, similarities were shown concerning hygiene and feeding practices. It appeared that primiparous fathers wanted more to share responsibility with their wife to make decisions about the child care.

Multiparous raised other symptoms their children encountered like fever and cough which could be developed in another study to understand the K-A-P.

It seems that primiparous and multiparous parents differed in regards to knowledge but they had nearly the same attitudes and practices which could have been influenced by grandmothers.

### **6.2 Discussion on methodology**

The methodological limitations and strengths will be guided by the “RATS guidelines” by Clark (63) and “standards, challenges and guidelines” written by Malterud (64). Specific terms used in the frame of discussion are listed in *appendix 21* (64).

### 6.2.1 Relevance

One requirement is that the aims, the main objectives and the research questions should be explicitly stated. The research aims were justified by existing research within the IPM framework and our objectives were based on theories proposed by Weiss on the cultural construction of diarrhoeal illness (5). Moreover, updated WHO reports on feeding practices (35), treatment of diarrhoea (8) access to water (38) and child growth standards (65) were reviewed plus recent data on Madagascar (1). In addition, the sampling was guided by “A handbook for excellence in focus group research” from Debus (56).

### 6.2.2 Appropriateness

Triangulation was done between FGDs, SSIs and observations of the way of living of people through a diary and informal interviews with administrative representatives and NGO’s members. So, it gave a more accurate description and a better understanding of the reality of living conditions of people. No cross-checks for rivaling explanations were done during the data analysis. However, a strong will to reflect the truth was established by a continuous back and forth to the original data, to the FGD evaluations in the notebook to recontextualise the verbatim and a permanent checking of the socioeconomical characteristics of the informants entered in EpiINFO during the analysis. Moreover, some misunderstandings, e.g on the conception of cold, were discussed with the two Malagasy investigators in Madagascar and the president of the Malagasy Red Cross by e-mail and telephone conversations. To assess reflexivity, preconceptions about how the study would be investigated were discussed and shared with all the investigators, supervisors and colleagues with different backgrounds. In addition, personal and professional experiences were shared and compared within the Franco-Malagasy team during the fieldwork. Metapositions were established such as the decision not to lead the FGD in French and neither to translate it during the FGD. Thus, the study design was made by a multidisciplinary team.

However, a main limitation was the language because the main investigator was not speaking the local language. FGDs and some of the SSIs were done in Malagasy. The investigators who led the FGDs were seen as collaborators in the study and trained together with the main investigator. Thus no language distance was created between the interviewer and the interviewee. The translation of the transcripts from Malagasy to French lead to a loss of meaning but it has been minimized by the fact that there was a double translation and a translation checking was done by a third person outside of the study, in addition a final version was based on consensus. The study was time consuming in translations: translation of the study protocol from English to French; translation of the interviews and focus groups from Malagasy to French; translation of the analysis and writing from French to English. Thus it required a continuous adaptation in terms of understanding words meanings in a specific context.

### 6.2.3 Transparency of procedures

The *sampling* was a purposive sampling with criterias of selection explained. A diversity of opinions was given to achieve a realistic interpretation of people’s perceptions about infant or child diarrhoea.

The investigators encountered several difficulties to *recruit* people with CHW. 1) Mothers from 1 FGD were motivated by incentives and did not match with the criterias required. Thus this FGD was not taken as part of the data source and it was done a second time with other mothers recruited door to door by the three investigators and the CHW. 2) Fathers were difficult to recruit even if the FGD was planed on a rest day and these were recruited door to door with written and oral information given in Malagasy. It was necessary to reorganize two FGDs with others fathers according to their availability.

With regard to the *saturation point* in information provided to stop the data collection which was not reached, a complete transferability can not be totally ensured. To be realistic and achieve a qualitative work within three months FGDs and SSIs were restricted. It was a rapid approach. Nevertheless, data triangulation combining SSIs with health workers and FGDs with family members increased validity and enhanced transferability.

According to the *role of researchers*, mostly the research questions were discussed with the two supervisors and established by the main researcher. Some questions were added in the field e.g *Which are the preventive measures?* One objective with regard to multiparous and primiparous parents was added with collaborators from the Pasteur Institute. The main researcher occupied both roles as a clinician and a researcher which could lead to a difficulty of taking distance from the data source and lift up the analysis with theoretical findings. However, it has been experienced as an advantage to be closer to the data and to have a more contextualized analysis. The main investigator was also present all the time during the FGD's which could have led to a reduction of the spontaneity of people's talk. Therefore it seems that people gave long answers in all the FGD instead of short stereotyped answers. Regarding IDI, it would have been preferable to do them in Malagasy instead of French. In fact, the transcripts were sometimes difficult to follow because of the accent and inappropriate grammatical sentences. Furthermore, the informants would have used a more emotional language by speaking in their native language. The two investigators used sometimes closed questions and suggestions in the way they asked the interviewee which could lead to less spontaneous answers e.g for fathers or rethoric answers. The interpretation of data was done with the assistance of the Norwegian supervisor.

*Ethics* approval was cited; the informed consent process was explicitly and clearly detailed; confidentiality and anonymity were discussed.

#### 6.2.4 Soundness of interpretive approach

The "editing (data-based) analysis style" has been used during this project because the main investigator made the choice to identify meaningful units to develop categories and organize them within themes (66). Some of the themes were inductive, e.g lack of trust in medicine according to this theory and others were mostly deductive like ORT, hygiene and feeding practices which match with a complementary "template (theory-based) analysis style" (64) (Malterud 2001:486). The K-A-P framework was followed with flexibility as Valente, Paredes and Poppe described in termes of possible behaviour changes which depend on each person (45). Indeed some people are more emotional which leads to a A-P-K process and others more rational which corresponds to a K-A-P process. That is the reason why it was sometimes

difficult to categorize the response of the informants which defers for each person in one FGD. For example, to respond to the question *How do you feed your child?* one mother answered *"In one day, a baby should eat at least five times ... maximum"* which corresponds to the knowledge part; one answered *"We buy what he likes so we gave him tea and "mofo gasy"<sup>1</sup>"* illustrating an attitude and another one replied *"the morning he does not eat rice, but bread and tea"* linked to the practice part (Primiparous mothers, same FGD). Thus, the KAP model was used as a systemic and dynamic model hence in the results part, practices were found sometimes to explain knowledge because some people need to illustrate it through concrete facts. The analytic approach was clearly described and justified. The patterns of verbatim were examined to extricate positive, negative or deviant cases. Relevant quotes were chosen to illustrate categories. A quantification of references was done by using NVivo9 and a content matrix (*appendix 20*). The mediator NVivo9 was helpful to store, order and retrieve information. Empirical observations were used to illuminate context e.g living conditions. Concerning trustworthiness, the data was double translated and checked by two people outside of the study. The main researcher analysed the data by coding, categorizing and interpreting. The collaboration with the Malagasy researchers was maintained during the whole analysis process so misunderstandings were discussed and clarified.

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<sup>1</sup> The "mofo gasy" is the classic accompaniment of tea or coffee as Malagasy people take breakfast. It is made with rice flour. This flour is obtained by pounding rice.

## 7. CONCLUSION and RECOMMENDATIONS

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This study shows that diarrhoea should also be seen as a economic scourge for families because their opportunity to pay for the health care is limited and the financial charge in relation with the illness leads them to a bigger poverty. Furthermore, major challenges exist in the distribution of the Equity Fund which could provide more equitable access to care. It is suggested that a social worker shall be recruited to help the fokontany representants to identify poor people in their fokontany.

Further, appropriate use of ORT addressing dehydration is not found satisfying. In response to the financial difficulties in the management of diarrhoea, our study team suggests to improve training of families in preparing oral rehydration solution at home. To respond to sub-optimal care and practices CHWs and health professionals must be trained and supervised in the prescription of ORS and zinc.

This study also finds a discrepancy between Malagasy traditional beliefs and more modern medicine. In addition, a conflict is observed between opening hours and people's need thus more dialogue would be recommended to address this. This study suggests a nurse to do a pre-diagnosis to identify the severe cases among children waiting in the queue before they see medical doctors.

Above all, prevention of dehydration and undernutrition is imperative. Hence, there is a need to adapt the messages to the socio-economical status, the level of education and the primiparous or multiparous status of parents. CHWs seem to have a better perception of people's reality and are closer to the population. This study suggests to improve the communication between hospitals, health centres, CHWs and traditional medicine. There is a need to educate traditional healers to make them refer serious cases of diarrhoea to health facilities and to disseminate knowledge of ORS.

Finally, several challenges remain:

- Financial supporting and a better recognition of the health professionals should be made to help them.
- Communities' attitudes towards child feeding practices need to be understood in relation to the socio-economical environment and there is a need for training.
- Improving water and sanitation is a major priority.

Health workers must now implement a preventive programme involving people targeting the financial constraint of the population. This program will be differentiated for each group in the population and will not only implement a global programme. Understanding the priorities of the population can assist in improving the diarrhoea programme in this region.

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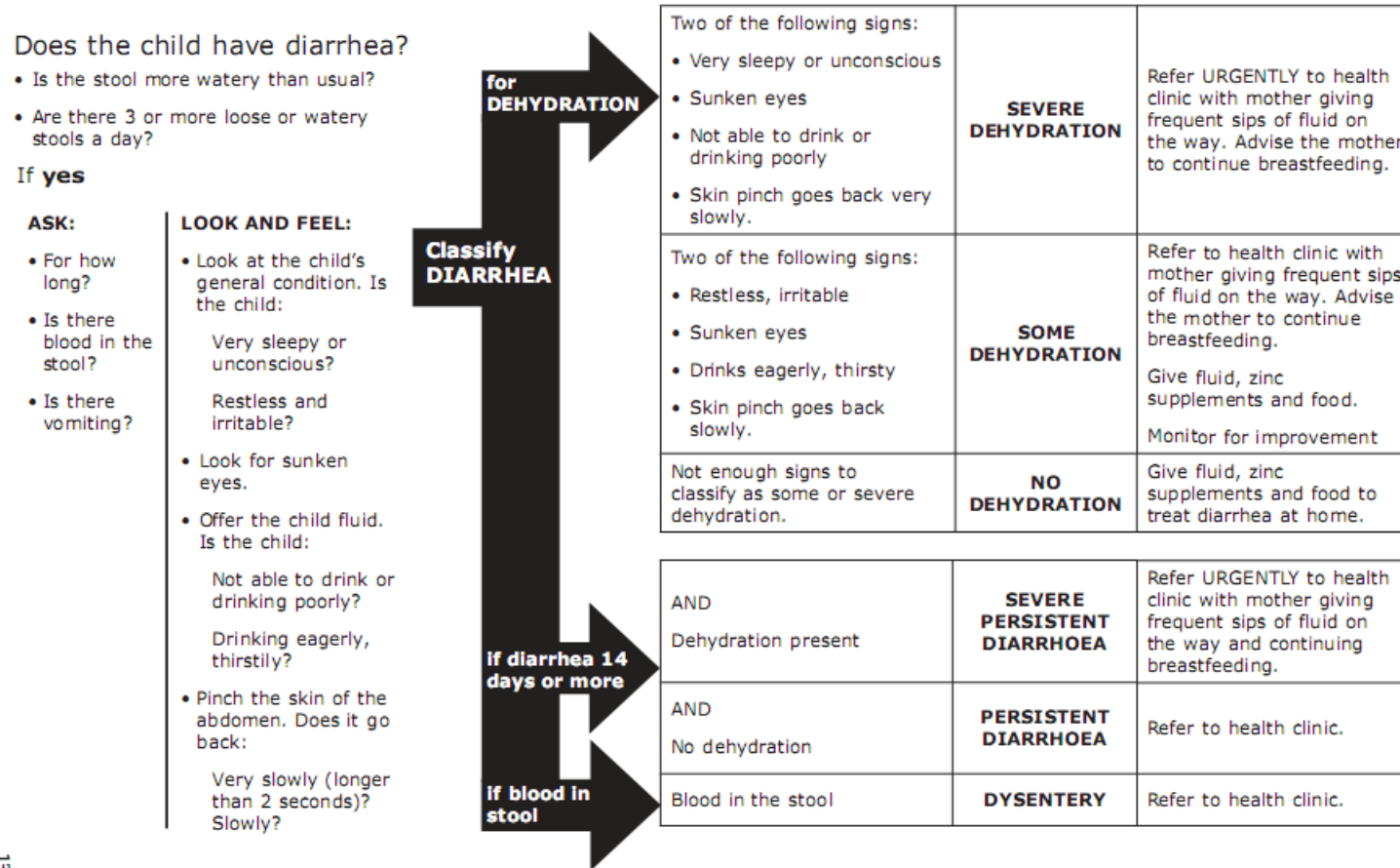
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## 8. APPENDICES

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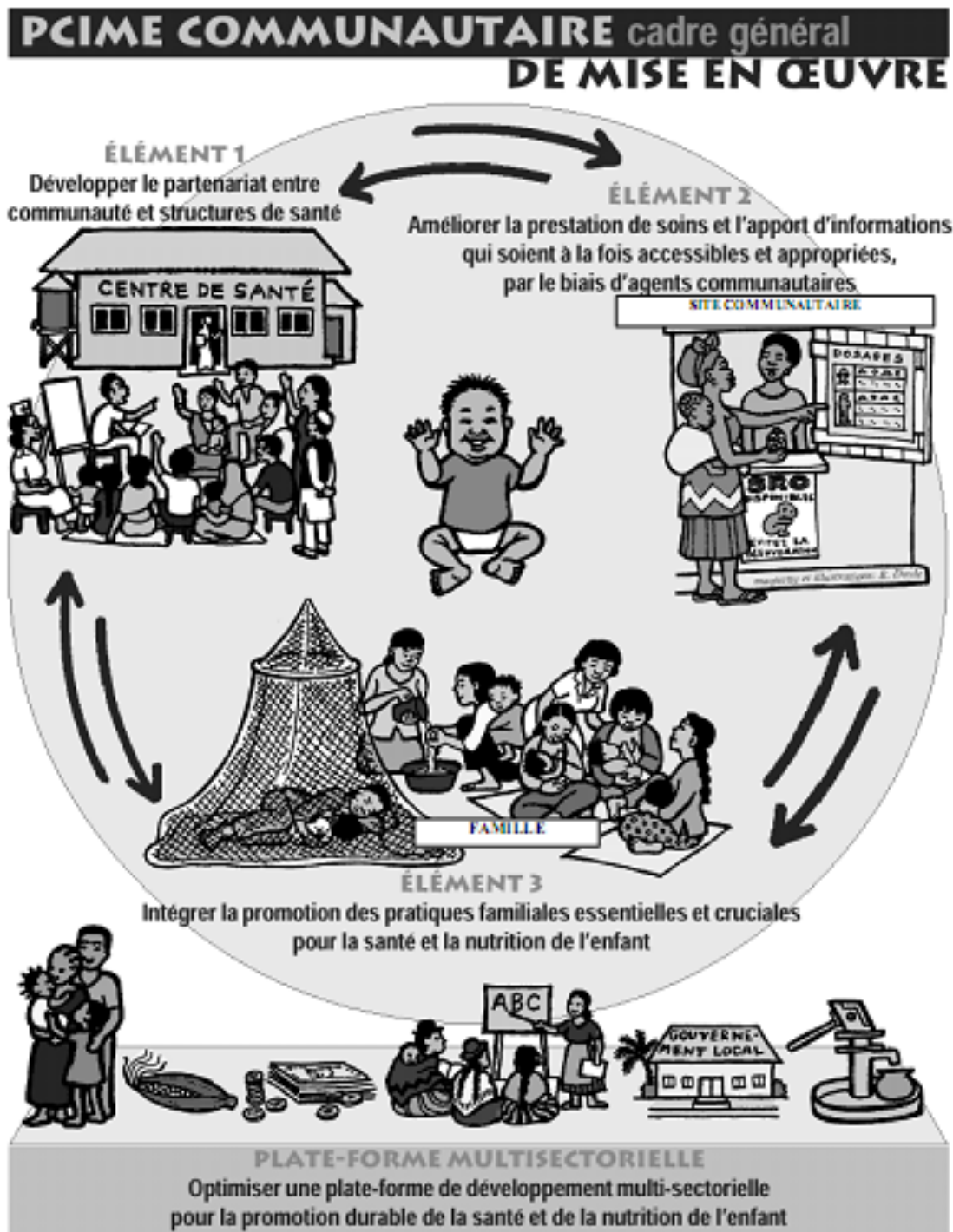
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## APPENDIX 1: Classification of diarrhoea



APPENDIX 2: Prise en Charge Intégrée des maladies de l'enfant au niveau communautaire (PCIMEC) or Integrated Management of Childhood Illness at Community level

2. Cadre général de mise en œuvre de la PCIMEC



Ministère de la Santé et du Planning Familial. Prise en charge de la Fièvre de l'enfant de moins de 5 ans au niveau de la communauté. Guide de formation de l'agent communautaire. No date.

## APPENDIX 3: FLEXIBILITY of the KAP model

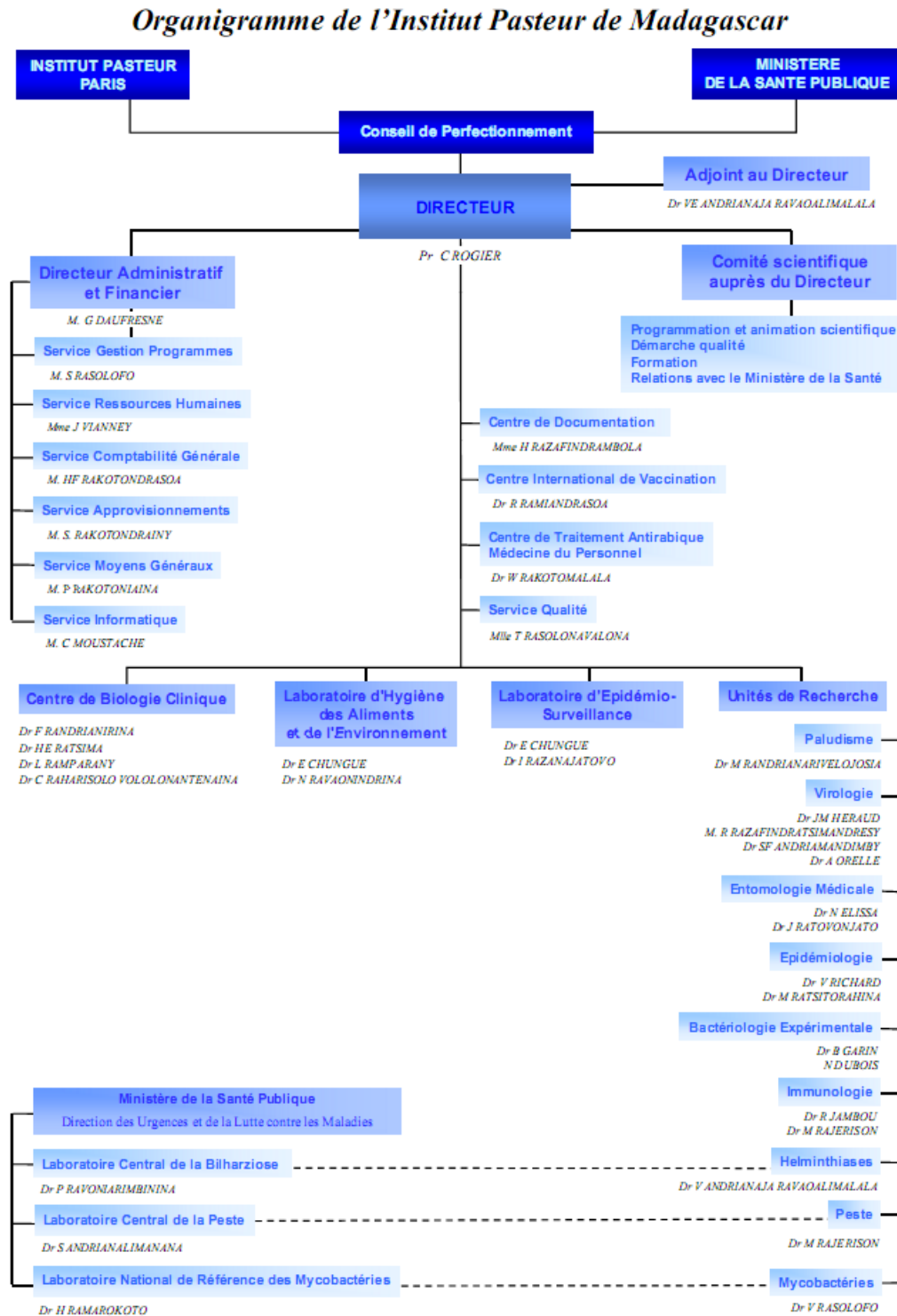
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**TABLE 1**  
**Six Possible Behavior Change Sequences**

<i>Label</i>	<i>Model</i>	<i>Description</i>
1. Learning	K-A-P	Cognitive progression through the stages
2. Affinity	A-K-P	Liking leads to knowledge gain and then initiation of practice
3. Rational	K-P-A	Knowledge of benefits leads to action regardless of attitude
4. Grudging acceptance	P-K-A	Practice is initiated, and learning comes via experience, and attitudes shift later
5. Dissonance	P-A-K	Practice leads to positive attitude with knowledge gained through experience
6. Emotional	A-P-K	Liking the behavior leads to adoption with knowledge as secondary consideration

NOTE: K = knowledge; A = attitude; P = practice.

## APPENDIX 4: Flowchart of the Pasteur Institute of MADAGASCAR



Institut Pasteur de Madagascar [Internet]. [cited 2011 august 18]; Available on: <http://www.pasteur.mg>

## APPENDIX 5: Topic guide with family members

### PRIMIPAROUS MOTHERS

#### TOPIC I: AWARENESS/ FAHALALANA (35 min)

#### I. DECISION MAKING / LOHARANOM-PAHALALANA SY TOROHEVITRA OMENA

1. Who is the primary carer for the child when he/she is ill?

**Iza no mikarakara voalohany ny zaza rehefa marary izy?**

2. Where/from whom do you obtain advice on caring for your child? **Aiza na any amin'iza ianareo no mahazo torohevitra momba ny fitsaboana sy fiarakarana ny zaza rehefa marary izy ?**

Who do you see first? Where? **Iza no atoninareo voalohany**

Who do you see second? Where? **Iza no atoninareo faharoa**

Who do you see? Where? **Iza no atoninareo fahatelo**

*(Medical advice, healers, family, neighbours, acquaintances, pharmacist) (Manatona dokotera, mpitsabonentim-paharazana, fianakaviana/ manodidina, olom-pantatra, olona ao @fivarotam-panafody)*

3. Do you have a healthcare unit in this village/district (if so please indicate which)? **Misy toeram-pitsaboana ve aty aminareo ? Raha misy, inona no anaran'ilay toeram-pitsaboana, aiza ho aiza no misy azy ?**

Is the unit accessible and available? **Manao ahoana ny lalana mandeha any, misokatra foana ve/ afaka mandray foana ve?**

At what point during an episode of diarrhoea do you bring your child to hospital? **Rehefa amin'ny fotoana ohatra ny ahoana no handefasanareo ilay zaza tratry ny aretim-pivalanana any amin'ny hopitaly?**

How long does it take to receive medical attention ? (Healer, doctor...) **Miandry fotoana ohatra ny ahoana no hanatonanareo olona mitsabo ? (dokotera, mpitsabonentim-paharazana...)**

#### II. DIARRHOEA IN CHILDREN/ ARETIM-PIVALALANAN'NY ZAZA

1. How do you recognise that your child has diarrhoea? **Ahoana no hahafantaranao fa voan'ny aretim-pivalanana ny zanakao ?**

2. What form does it take? **Ohatra ny ahoana ny fitrangan'izany aretim-pivalanana ?**

3. How can people get diarrhoea? **Ahoana no fomba mety hahazoana azy?**

What causes diarrhoea in children? **Inona no mety mahatonga ny aretim-pivalanana eo amin'ny zaza?**

What are the Malagasy's beliefs around diarrhoea? **Inona no finoana Malagasy momba ny aretim-pivalanana?**

4. What are the consequences of diarrhoea in children? **Inona avy ireo vokatry ateraky ny aretim-pivalanana eo amin'ny zaza?**

#### III. DEHYDRATION/ TSY FAHAMPIAN-DRANOMALIA

1. When do you think your child is dehydrated? **Rehefa amin'ny fotoana ohatra ny ahoana no atao hoe tsy ampy rano ny zanakao?**

Please could you describe this? **Ahoana no fisehony/fitrangany?**

2. What liquids are most commonly given to children suffering from diarrhoea? **Inona avy ireo ranon-javatra fanome matetika ny zaza, rehefa tratry ny aretim-pivalanana?**

3. Why? **Inona no antony?**



#### IV. ORAL REHYDRATION SALTS (ORS) and SALTY LIQUIDS/ ORS / ODIVA/ IRAY SY VALO

1. Do the liquids given to your child contain salts? **Misy sira ve ny rano omena ny zanakareo rehefa tratry ny areti-pivalanana izy?**
2. Do you use oral rehydration salts? **Mampiasa SRO/odiva/iray sy valo ve ianareo ?**  
Have you heard of these? **Efa nandre momba izany ve ianareo ?**
3. How do you prepare them? **Ahoana no fomba fikarakarana azy?**
4. How effective are ORS? **Inona no vokatry tsara ateraky ny SRO ?**
5. If you do not use these, what do you use instead (medicines, other liquids) ? **Raha tsy mampiasa SRO ianao, inona no ampiasainao (fanafody, ranon-javatra hafa).**

#### TOPIC II: PRACTICES / FANATANTERAHANA (35 min)

##### I. FEEDING PRACTICES/ FOMBA AMAM-PANAO ARA-TSAKAFO

1. How often do you feed your child on a day-to-day basis? **Impiry ianareo no manome sakafo ny zanakareo rehefa amin'ny fotoana andavan'andro ?**  
What do you use to feed him/her? (breast /bottle/cup) **Inona no ampiasainareo rehefa manome sakafo ny zanakareo ?**  
Which food/liquid do you give most often ? **Inona avy ny sakafo / ranon-javatra omenareo azy matetika ?**
2. Please could you describe the last episode of diarrhoea your child had ? **Afaka tantarainareo ve inona avy ny zavatra nitranga tamin'ny zanakareo voan'ny aretim-pivalanana farany ?**  
Could you tell us how you fed your child during his/her last episode of diarrhoea ? (increase/reduction) **Afaka teneninareo ve, ohatra ny ahoana no fomba nanomezanareo sakafo ny zanakareo tamin'izy voan'ny aretim-pivalanana farany? (Nitombo, nihena)**
3. Is there any change in the child's feeding? **Niova ve ny sakafony?**  
What change do you make in your child's feeding, if any? **Raha eny, inona no niova ?**  
How? (Increase/reduction, introducing blended foods.) **Amin'ny fomba ahoana ? (nitombo/ nihena, ny fanomezana azy sakafo vatoto)**
4. Is the child's appetite reduced? **Malain-komana ve izy sa mazoto mihoatra ny mahazatra ?**
5. Does the child sleep more than usual? **Mihena sa mitombo ny torimasony ?**

*(Depending on the responses received)*  
*(Arakaraky ny valinteny)*

##### A. EXCLUSIVE BREASTFEEDING/ FAMPINONOAN-DRENY IRERY IHANY

1. Do you only give breastmilk to your child ? **Nono ihany ve no omena ny zanakao ?**
2. Do you give anything else after the breast ? **Manome zavatra hafa ve ianao rehefa avy mampinono ?**
3. How often do you breastfeed? **Impiry ianao no manome nono ?**
4. Is there a change in the child's feeding during an episode of diarrhoea? **Miova ve ny sakafony mandritry ny aretim-pivalanana ?**  
Is there a change in the frequency of feeding during episodes of diarrhoea? **Miova ve ny habetsan'ny fanomezana nono rehefa tratry ny aretim-pivalanana ny zaza?**  
If so, in what way? (more/less frequent feeding) **Raha eny, afaka hazavainao ve hoe inona no niova ? (Impiry no hanomezana nono azy, nihena sa nitombo)**

## B. BREASTFEEDING AS PRIMARY SOURCE OF FOOD/ FAMPINONOAN-DRENY MATETIKA

1. If you do not breastfeed exclusively, can you explain what liquids you give to your child under six months? **Raha tsy nono fotsiny no omenareo, inona avy ireo ranon-javatra omenareo ny zanakareo raha latsaky ny 6nim-bolana?**
2. When do you give these liquids to your child ? **Amin'ny fotoana ohatra ny ahoana no hanomezanareo izany?**

## C. OTHER FOOD SOURCES/ FANAMPIN-TSAKAFO

1. Do you ordinarily give other foods to your child ? **Manome fanampin-tsakafo ny zanakareo ve ianareo rehefa amin'ny andavan'andro ?**
2. What type of food do you give to your child when he/she has diarrhoea ? **Inona avy ny karazan-tsakafo omenareo ny zanakareo rehefa tratry ny aretim-pivalanana ?**
3. Why do Malagasy mothers introduce solids when their child has diarrhoea? How can this help? **Fa maninona ny reny malagasy no manome vaingan-tsakafo ny zaza tratry ny aretim-pivalanana? What are the Malagasy's beliefs on introducing solid foods? Inona ny finoana malagasy manodidina ny fanomezana vaingan-tsakafo ?**

## II. FOOD HYGEINE PRACTICES WHERE A CHILD HAS DIARRHOEA/ FANANTANTERAHANA NY FAHADIOVANA ARA-TSAKAFO RAHA SENDRA TRATRY NY ARETIM-PIVALANANA NY ZAZA.

*Drinking water is most commonly defined as « any running water from taps inside or outside the building, from a public fountain, from a reservoir with a pump or from an open or covered well » (5) (26) (27).*

*Ny rano fisotro madio: « rano avy amin'ny: « robinet » anaty na ivelan'ny trano, “pompy publika”, na lava-drano misy pompy, na ihany koa fatsakana misarona sy voaro.*

1. What does water mean to you?  
What does it represent for you?  
**Midika inona ny rano**
2. Do you have access to drinking water? **Mahazo rano fisotro madio ve ianareo ?**  
If so, what sources do you use to obtain water? **Raha eny aiza no fakanareo rano?**  
If not, what do you do instead? **Raha tsia, ahoana no ataonareo amin'izany?**
3. In Malagasy culture, how do you use water when a child has diarrhoea? **Ahoana no fomba ampiasanareo ny rano anatin'ny fomba malagasy manoloana ny zaza tratry ny aretim-pivalanana?**
4. When your child has diarrhoea, where do you put his/her stools? **Aiza no ametrahanareo ny fivalalan-janakareo rehefa mivalana izy?**
5. When during the day do you wash your hands? **Rehefa isaky ny inona no afaka manasa tanana ianareo ?**  
When do children wash their hands? **Amin'ny fotoana ohatra ny ahoana ny ankizy no manasa tanana ?**  
How do you wash your hands? **(Inona avy no ataonareo rehefa manasa tanana?)**

### III. MANAGING DIARRHOEA AT HOME (USE OF TREATMENTS, RITUALS, PREPARED LIQUIDS AND FOODS)/FANDRINDRANA NY AO AN-TRANO (FAMPIASANA FANAFODY, FOMBA GASY, RANO KARAKARAINA, SAKAFO)

1. A mother has a child with diarrhoea, how does she care for her child at home? **Misy reny anankiray manan-janaka voan'ny aretim-pivalanana, ahoana no fomba fikarakarany an-janany?**

2. What does she use as home remedies? **Inona no fanafody ampiasainy rehefa any an-trano?**

What are the common practices (use of treatments, rituals, prepared liquids and foods.) **Inona no fomba fanao mahazatra (fihinanana fanafody, fomba gasy, ranon-javatra karakaraina sy sakafo)**

How can mothers help their children to get better? **(Ahoana no fomba hanampiany ny zaza mba hahazo aina)**

What is the significance of these practices? (What are the Malagasy's beliefs around these practices?) **Inona no dikan'izany fomba fanao izany? (Inona ny finoana malagasy momba ireo : fihinanana fanafody, fomba gasy, rano karakaraina, sakafo)**

### IV. EXAMPLES

A child under 2 years coughs in a Malagasy home. How does the mother react? **Misy zaza latsaky ny 2 taona mikohaka. Ahoana no ataon'ilay reny manoloana izany?**

A child under 2 years has a fever in a Malagasy home. How does the mother react? **Misy zaza latsaky ny 2 taona voan'ny tazo ao amin'ny tokan-trano iray. Ahoana ny fihetsiky ny reniny?**

## TOPIC 3: ATTITUDES/FIHETSIKA (10 min)

### I. SOCIO-ECONOMIC IMPACT/ FIATRAIKANY AMIN'NYLAFIN'NY ARA-BOLA

1. When your child has diarrhoea, how does this affect your daily life?

**Inona no fiatraikany eo amin'ny fiainanareo andavan'andro rehefa voan'ny aretim-pivalanana ny zanakareo ?**

2. What changes do you make in the organisation of your family?

**Inona no zavatra niova amin'ny lamina ao an-trano**

How is your family organised on a day-to-day basis? **Inona no lamina fanaonareo ao an-trano rehefa andavan'andro**

3. What is the economic impact? (Absence from work.)

**Inona no mety vokatra ateraky ny eo amin'ny lafiny ara-pitadiavam-bola (Tsy afaka mandeha miasa)**

How do you manage financially when your child has diarrhoea? (cost of treatment/hospitalisation).

**Ahoana no fomba hiatrehanareo eo amin'ny lafin'ny ara-bola, rehefa tratry ny aretim-pivalanana ny zanakareo? (Vidin'ny fitsaboana, fampidirana any amin'ny hopitaly).**

## CONCLUSION/OPENING SESSION (15 min)

TOPIC I: AWARENESS/ FAHALALANA (35 min)

**I. DECISION MAKING / LOHARANOM-PAHALALANA SY TOROHEVITRA OMENA**

1. Who is the primary carer for the child when he/she is ill ?

**Iza no mikarakara voalohany ny zaza rehefa marary izy ?**

2. Where/from whom do you obtain advice on caring for your child? **Aiza na any amin'iza ianareo no mahazo torohevitra momba ny fitsaboana sy fiarakarana ny zaza rehefa marary izy ?**

Who do you see first? Where ? **Iza no atoninareo voalohany**

Who do you see second? Where ? **Iza no atoninareo faharoa**

Who do you see third? Where ? **Iza no atoninareo fahatelo**

*(Medical advice, healers, family, neighbours, acquaintances, pharmacist) (Manatona dokotera, mpitsabonentim-paharazana, fianakaviana/ manodidina, olom-pantatra, olona ao @fivarotam-panafody)*

3. Do you have a healthcare unit in this village/district (if so please indicate which)? **Misy toeram-pitsaboana ve aty aminareo ? Raha misy, inona no anaran'ilay toeram-pitsaboana, aiza ho aiza no misy azy ?**

Is the unit accessible and available? **Manao ahoana ny lalana mandeha any, misokatra foana ve/ afaka mandray foana ve?**

At what point during an episode of diarrhoea do you bring your child to hospital ? **Rehefa amin'ny fotoana ohatra ny ahoana no handefasanareo ilay zaza tratry ny aretim-pivalanana any amin'ny hopitaly?**

How long does it take to receive medical attention? (Healer, doctor...) **Miandry fotoana ohatra ny ahoana no hanatonanareo olona mitsabo? (dokotera, mpitsabonentim-paharazana...)**

**II. DIARRHOEA IN CHILDREN / ARETIM-PIVALALANAN'NY ZAZA**

1. How do you recognise that your child has diarrhoea? **Ahoana no hahafantaranao fa voan'ny aretim-pivalanana ny zanakao ?**

2. What form does it take? **Ohatra ny ahoana ny fitrangan'izany aretim-pivalanana ?**

3. How can people get diarrhoea? **Ahoana no fomba mety hahazoana azy?**

What causes diarrhoea in children? **Inona no mety mahatonga ny aretim-pivalanana eo amin'ny zaza?**

What are the Malagasy's beliefs around diarrhoea? **Inona no finoana Malagasy momba ny aretim-pivalanana?**

4. What are the consequences of diarrhoea in children? **Inona avy ireo vokatra ateraky ny aretim-pivalanana eo amin'ny zaza?**

### III. DEHYDRATION/ TSY FAHAMPIAN-DRANOMALIA

1. When do you think your child is dehydrated? **Rehefa amin'ny fotoana ohatra ny ahoana no atao hoe tsy ampy rano ny zanakao?**  
Please could you describe this? **Ahoana no fisehony/fitrangany?**
2. What liquids are most commonly given to children suffering from diarrhoea? **Inona avy ireo ranon-javatra fanome matetika ny zaza, rehefa tratry ny aretim-pivalanana?**
3. Why? **Inona no antony?**

### IV. ORAL REHYDRATION SALTS (ORS) and SALTY LIQUIDS/ ORS / ODIVA/ IRAY SY VALO

1. Do the liquids given to your child contain salts? **Misy sira ve ny rano omena ny zanakareo rehefa tratry ny areti-pivalanana izy?**
2. Do you use oral rehydration salts? **Mampiasa SRO/odiva/iray sy valo ve ianareo ?**  
Have you heard of these? **Efa nandre momba izany ve ianareo ?**
3. How do you prepare them? **Ahoana no fomba fikarakarana azy?**
4. How effective are ORS? **Inona no vokatra tsara ateraky ny SRO ?**
5. If you do not use these, what do you use instead (medicines, other liquids)? **Raha tsy mampiasa SRO ianao, inona no ampiasainao (fanafody, ranon-javatra hafa).**

## TOPIC II: PRACTICES/ FANATANTERAHANA (35 min)

### I. FEEDING PRACTICES/FOMBA AMAM-PANAO ARA-TSAKAF

1. How often do you feed your child on a day-to-day basis? **Impiry ianareo no manome sakafo ny zanakareo rehefa amin'ny fotoana andavan'andro ?**  
What do you use to feed him/her? (breast /bottle/cup) **Inona no ampiasainareo rehefa manome sakafo ny zanakareo ?**  
Which food/liquid do you give most often ? **Inona avy ny sakafo / ranon-javatra omenareo azy matetika ?**
2. Please could you describe the last episode of diarrhoea your child had ? **Afaka tantarainareo ve inona avy ny zavatra nitranga tamin'ny zanakareo voan'ny aretim-pivalanana farany ?**  
Could you tell us how you fed your child during his/her last episode of diarrhoea ? (increase/reduction) **Afaka teneninareo ve, ohatra ny ahoana no fomba nanomezanareo sakafo ny zanakareo tamin'izy voan'ny aretim-pivalanana farany? (Nitombo, nihena)**
3. Is there any change in the child's feeding? **Niova ve ny sakafony?**  
What change do you make in your child's feeding, if any? **Raha eny, inona no niova ?**  
How? (Increase/reduction, introducing blended foods.) **Amin'ny fomba ahoana ? (nitombo/ nihena, ny fanomezana azy sakafo vatoto)**
4. Is the child's appetite reduced? **Malain-komana ve izy sa mazoto mihoatra ny mahazatra ?**
5. Does the child sleep more than usual? **Mihena sa mitombo ny torimasony ?**

*(Depending on the responses received/ Arakaraky ny valinteny)*

### A. EXCLUSIVE BREASTFEEDING/ FAMPINONOAN-DRENY IRERY IHANY

1. Do you only give breastmilk to your child ? **Nono ihany ve no omena ny zanakao ?**
2. Do you give anything else after the breast ? **Manome zavatra hafa ve ianao rehefa avy mampinono ?**
3. How often do you breastfeed? **Impiry ianao no manome nono ?**
4. Is there a change in the child's feeding during an episode of diarrhoea? **Miova ve ny sakafony mandritry ny aretim-pivalanana ?**  
Is there a change in the frequency of feeding during episodes of diarrhoea? **Miova ve ny habetsan'ny fanomezana nono rehefa tratry ny aretim-pivalanana ny zaza?**

If so, in what way? (more/less frequent feeding) **Raha eny, afaka hazavainao ve hoe inona no niova ? (Impiry no hanomezana nono azy, nihena sa nitombo)**

### **B. BREASTFEEDING AS PRIMARY SOURCE OF FOOD/ FAMPINONOAN-DRENY MATETIKA**

1. If you do not breastfeed exclusively, can you explain what liquids you give to your child under six months? **Raha tsy nono fotsiny no omenareo, inona avy ireo ranon-javatra omenareo ny zanakareo raha latsaky ny 6nim-bolana?**
2. When do you give these liquids to your child ? **Amin'ny fotoana ohatra ny ahoana no hanomezanareo izany?**

### **C. OTHER FOOD SOURCES/FANAMPIN-TSAKAFO**

1. Do you ordinarily give other foods to your child ? **Manome fanampin-tsakafo ny zanakareo ve ianareo rehefa amin'ny andavan'andro ?**
2. What type of food do you give to your child when he/she has diarrhoea ? **Inona avy ny karazan-tsakafo omenareo ny zanakareo rehefa tratry ny aretim-pivalanana ?**
3. Why do Malagasy mothers introduce solids when their child has diarrhoea? How can this help? **Fa maninona ny reny malagasy no manome vaingan-tsakafo ny zaza tratry ny aretim-pivalanana? What are the Malagasy's beliefs on introducing solid foods? Inona ny finoana malagasy manodidina ny fanomezana vaingan-tsakafo ?**

## **II. FOOD HYGIENE PRACTICES WHEN A CHILD HAS DIARRHOEA/ FANANTANTERAHANA NY FAHADIOVANA ARA-TSAKAFO RAHA SENDRA TRATRY NY ARETIM-PIVALANANA NY ZAZA.**

*Drinking water is most commonly defined as « any running water from taps inside or outside the building, from a public fountain, from a reservoir with a pump or from an open or covered well » (5) (26) (27).*

*Ny rano fisotro madio: « rano avy amin'ny: « robinet » anaty na ivelan'ny trano, “pompy publika”, na lava-drano misy pompy, na ihany koa fatsakana misarona sy voaro.*

1. What does water mean to you?  
What does it represent for you?  
**Midika inona ny rano**
2. Do you have access to drinking water? **Mahazo rano fisotro madio ve ianareo ?**  
If so, what sources do you use to obtain water? **Raha eny aiza no fakanareo rano?**  
If not, what do you do instead? **Raha tsia, ahoana no ataonareo amin'izany?**
3. In Malagasy culture, how do you use water when a child has diarrhoea? **Ahoana no fomba ampiasanareo ny rano anatin'ny fomba malagasy manoloana ny zaza tratry ny aretim-pivalanana?**
4. When your child has diarrhoea, where do you put his/her stools? **Aiza no ametrahanareo ny fivalalan-janakareo rehefa mivalana izy ?**
5. When during the day do you wash your hands ? **Rehefa isaky ny inona no afaka manasa tanana ianareo ?**  
When do children wash their hands ? **Amin'ny fotoana ohatra ny ahoana ny ankizy no manasa tanana ?**  
How do you wash your hands? **(Inona avy no ataonareo rehefa manasa tanana?)**

### III. MANAGING DIARRHOEA AT HOME (USE OF TREATMENTS, RITUALS, PREPARED LIQUIDS AND FOODS)/ FANDRINDRANA NY AO AN-TRANO (FAMPIASANA FANAFODY, FOMBA GASY, RANO KARAKARAINA, SAKAFO)

1. A mother has a child with diarrhoea, how does she care for her child at home ? **Misy reny anankiray manan-janaka voan'ny aretim-pivalanana, ahoana no fomba fikarakarany an-janany?**

2. What does she use as home remedies ? **Inona no fanafody ampiasainy rehefa any an-trano?**

What are the common practices (use of treatments, rituals, prepared liquids and foods.) **Inona no fomba fanao mahazatra ( fihinanana fanafody, fomba gasy, ranon-javatra karakaraina sy sakafo)**

How can mothers help their children to get better? **(Ahoana no fomba hanampiany ny zaza mba hahazo aina)**

What is the significance of these practices? (What are the Malagasy's beliefs around these practices ?)

**Inona no dikan'izany fomba fanao izany ? (Inona ny finoana malagasy momba ireo : fihinanana fanafody, fomba gasy, rano karakaraina, sakafo)**

3. Have you acted differently when your children have had diarrhoea? **Mitovy ve ny fomba nataonareo tamin'ireo zanakareo ?**

### IV.EXAMPLES

A child under 2 years coughs in a Malagasy home. How does the mother react? **Misy zaza latsaky ny 2 taona mikohaka. Ahoana no ataon'ilay reny manoloana izany?**

A child under 2 years has a fever in a Malagasy home. How does the mother react? **Misy zaza latsaky ny 2 taona voan'ny tazo ao amin'ny tokan-trano iray. Ahoana ny fihetsiky ny reniny?**

### TOPIC 3: ATTITUDES/FIHETSIKA (10 min)

#### I. SOCIO-ECONOMIC IMPACT / FIATRAIKANY AMIN'NYLAFIN'NY ARA-BOLA

1. When your child has diarrhoea, how does this affect your daily life?

**Inona no fiatraikany eo amin'ny fiainanareo andavan'andro rehefa voan'ny aretim-pivalanana ny zanakareo ?**

2. What changes do you make in the organisation of your family?

**Inona no zavatra niova amin'ny lamina ao an-trano**

How is your family organised on a day-to-day basis? **Inona no lamina fanaonareo ao an-trano rehefa andavan'andro**

3. What is the economic impact? (Absence from work.)

**Inona no mety vokatry ateraky ny eo amin'ny lafiny ara-pitadiavam-bola (Tsy afaka mandeha miasa)**

How do you manage financially when your child has diarrhoea? (cost of treatment/hospitalisation). **Ahoana no fomba hiatrehanareo eo amin'ny lafin'ny ara-bola, rehefa tratry ny aretim-pivalanana ny zanakareo? (Vidin'ny fitsaboana, fampidirana any amin'ny hopitaly).**

### CONCLUSION/OPENING SESSION (15 min)

*Adapted Topic Guides for Primiparous/Multiparous Fathers and Grandmothers*

## APPENDIX 6: Topic guide with health professionals/Mpiasan'ny fahasalamana

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Date: \_\_ / \_\_ / \_\_\_\_

Zone:

Target population: community health workers /nurses /medical doctors

Number of people:

Start time:

End time:

Date: \_\_ / \_\_ / \_\_\_\_

Faritra:

Olona anontaniana: agents communautaires/infirmiers/médecins

Isan'ny olona:

Ora hanombohana

Ora hahaitàna:

<p style="text-align: center;"><b>PRESENTATION INFORMATION AND RESEARCH (15 MINUTES)</b> <b>FANOLORAN-TENA SY FAMPAHAFANTARANA NY TETIK'ASA FIKAROHANA</b></p>
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### A. Introduction/ Fanoloran-tena

Our names are (each person introduces themselves) \_\_\_\_\_. We are from the Institut Pasteur. We are conducting a study on feeding practices for babies and small children during episodes of diarrhoea. / **Samy miteny ny anarany\_\_\_\_\_.** Izahay dia avy ao amin'ny Institut Pasteur, manao fanadihadiana mikasika ny fomba amam-panao ara-tsakafon'ny zaza latsaky ny roa taona mandritry ny aretim-pivalanana.

1. Thank you for coming. / **Mankasitraka be dia be amin'ny fahatongavana**
2. Your participation is important. / **Zava-dehibe izao fahatngavanareo izao**
3. We are going to talk for around 30 minutes. / **Hiaraka hiresadresaka isika mandritry ny 30 mn eo ho eo.**

### B. Aims/ Tanjona

We will talk about feeding practices for children under two years who are suffering from diarrhoea. We wish to understand better your experiences as healthcare workers faced with a family with a child suffering from diarrhoea. / **Hiaraka hiresadresaka momba ny fomba amam-panao ara-tsakafon'ny zaza latsaky ny 2 taona tratra ny areti-pivalanana isika, irianay ny mba hahafantatra ireo zava-misy iainanareo manoloana fianakaviana iray manan-janaka tratra ny aretim-pivalanana.**



### C. Procedures/ Fomba fiasa

1. We are interested in all your ideas, comments and suggestions. / **Mahaliana anay avokoa ny hevitrao rehetra, ny sosokevitra.**
2. There are no right or wrong answers. / **Tsy misy valin-teny marina na diso.**
3. Any comments, both positive and negative, are welcome. / **Raisinay an-tanan-droa avokoa na hevitra rehetra.**
4. We are going to use a dictaphone to record the discussion, as no doubt we will not be able to record all the ideas presented. The content of the discussions is confidential and is only used for research purposes. Only the Institut Pasteur will keep the recordings. / **Hisy fampiasana "dictaphone" (fandraisam-peo) hahafahana mitahiry ny resaka satria tsy ho voaray daholo ny hevitra raha raisina an-tsoratra. Izay zavatra voalaza ato dia ampiasaina manokana ho amin'ny fikarohana sy mijanona ho an'ny Institut Pasteur irery ihany.**
5. We have a lot of topics to cover, so we may need to change topic to move the discussion along. Please stop us if there is something you wish to add. **Mbola betsaka ny zavatra horesahantsika, fa andeha resaka zavatra hafa indray mba hahafahana miroso. Raha sitrakareo, aza misalasala ny manapaka raha misy zavatra tianareo ampiana.**
6. Please read the consent form and have this signed (if the person agrees to respond). / **Vakiana ny taratasy fanekena, avy eo asaina soniavina (raha manaiky hamaly ilay olona).**

### D. Introductions of the participants / Fanoloran-tenan'ireo anontaniana

Please could you introduce yourself? / **Afaka milazalaza ny momba anao ve ianao?**

<b>TOPIC 1: AWARENESS/ FAHALALANA</b> (35 min)
---

### I. SOURCES OF INFORMATION AND ADVICE GIVEN/LOHARANOM-PAHALALANA SY TOROHEVITRA OMENA

1. Who is the primary carer for the child when he/she is ill? / **Iza no mikarakara voalohany ny zaza rehefa marary?**
2. Where/from whom do families obtain advice on caring for their child? / **Aiza na any amin'iza ny fianakaviana no mahazo torohevitra momba ny fanasitranana sy fikarakarana ilay zaza?**  
Who do they see first? Where? / **Iza no jereny voalohany? Aiza?**  
Who do they see second? Where? / **Iza no jereny faharoa? Aiza?**  
Who do they see third? Where? / **Iza no jereny fahatelo? Aiza?**  
(*Consultation médicale, Guérisseurs, Famille/voisinage, Connaissance, Pharmacien*) / (*Fizahan'ny mpitsabo, mpitsabo nentim-paharazana, fianakaviana/ manodidina, olom-pantatra, mpivarom-panafody ao amin'ny "pharmacie"*)
3. How do you follow up on sick children when they live far from the medical centre? / **Ahoana no hahafahanao manaraka ireo zaza marary izay mipetraka lavitry ny toeram-pitsaboana?**

As regards accessibility and availability? **Manao ahoana ny lalana mankany , mandray foana ve?**

At what point do you decide that the baby/small child should be admitted to hospital? **Amin'ny fotoana ohatry ny ahoana no hanapahanareo hevitra ny tokony hampidirana ny zaza any amin'ny hopitaly?**

## **II. CHILDHOOD DIARRHOEA / ARETIM-PIVALANAN'NY ZAZA**

1. What is diarrhoea in children for you? / **Ho anareo, inona no atao hoe aretim-pivalanana?**
2. What is the cause of diarrhoea in children? / **Inona no mahatonga ny aretim-pivalanana eo ami'ny zaza?**
3. What are the physical consequences for a child with severe diarrhoea? / **Inona no vokatra ara-batana ateraky ny aretim-pivalanana eo amin'ny zaza?**

## **III. DEHYDRATION/ TSY FAHAMPIAN-DRANOMALIA**

1. When do you believe that a baby/small child has infectious diarrhoea? **Amin'ny fotoana ohatry ny ahoana ny zaza no atao hoe voan'ny aretim-pivalanana ateraky ny otrik'aretina?**  
When do you believe that a baby/small child may have acute diarrhoea? **Amin'ny fotoana ohatry ny ahoana ny zaza no atao hoe voan'ny aretim-pivalanana mahery vaika?**  
When do you believe that a baby/small child may have persistent diarrhoea? **Amin'ny fotoana ohary ny ahoana ny zaza no atao hoe voan'ny aretim-pivalanana mitarazoka?**
2. When do you see that a baby/small child is dehydrated? **Amin'ny fotoana ohatry ny ahoana no hahitanao fa tsy ampy rano ny zaza?**  
Could you describe the signs of dehydration? **Afaka teneninao ve ny fisehon'ny tsy fahampian-drano?**
3. Quels sont les liquides souvent donnés aux enfants souffrant de diarrhée ? **Inona no ranon-javatra fanome matetika ny zaza mivalana?**

## **IV. ORAL REHYDRATION SALTS (ORS) and LIQUIDS / SRO, ODIVA, IRAY SY VALO NA RANO MISY SIRA.**

1. Do you use Oral Rehydration Salts? **Mampiasa SRO ve ianao?**
2. How do you explain to the families how to prepare these? **Ahoana nofomba hanazavanao ny fikarakarana izany amin'ny fianakaviana?**
3. How effective are ORSs? **Inona no vokatra tsara ateraky ny SRO?**
4. If they are not used, what else do you advise (medicines /liquids)? **Raha tsy mampiasa, inona no zavatra atorona ny olona?**
5. Do these liquids contain salts? **Misy sira ve ao anatin' ireo ranon-javatra ireo?**

## **V. MALAGASY BELIEFS / FINOANA MALAGASY**

1. What are the Malagasy's beliefs around diarrhoea? / **Misy finoana Malagasy ve mikasika ny aretim-pivalanana?**
2. What do you believe is the rôle of traditional Malagasy medicine for the treatment of children suffering from diarrhoea? **Ahoana no fahitanao ny toeran'ny fitsaboana nentim-paharazana eo ami lafin'ny fanasitranana ny zaza?**

## TOPIC 2: PRACTICES/ FANATANTERAHANA

(35 min)

### I. TREATMENT PRACTICES FOR CHILDREN BY HEALTHCARE PROFESSIONALS/ FANATANTERAHANA NY FANASITRANANA NY ZAZA ATAON'NY MPIASAN'NY FAHASALAMANA

1. A family arrives in the emergency department with a 9-month-old baby with rings under its eyes, who has had six bowel movements in the day and who is very lethargic. / **Fianakaviana iray mila vonjy maika, tonga miaraka amin'ny zazakely 9 volana efa bongo maso, sady efa nivalan-drano in-6 tao anatin'ny iray andro sy tena be torimaso.**

How does the worker who receives the child react in the first instance? / **Ahoana no ataon'ny mpiasan'ny fahasalamana rehefa mandray ilay zaza anatin'ny fotoana voalohany?**

What do they do next ? / **Ary rehefa avy eo?**

What information is given to the families when the child arrives ? / **Inona no hampahafantarana ny fianakaviana rehefa tonga eo amin'ny toeram-pitsaboana ny zaza?**

And after the emergency has been managed ? **Ary rehefa vita ny vonjy maika?**

2. What difficulties do you find in educating the families? / **Inona no meto ho olana atrehana manoloana ny fanabeazana ny fianakaviana?**

What factors make it easier to educate these families? / **Inona no mety mahatafita ny fanabeazana ny fianakaviana?**

### II. FEEDING/ SAKAFO

1. What nutritional advice do you give the families when the child has diarrhoea ? / **Inona no torohevitra ara-tsakafo omenao ny fianakaviana?**

When the child is younger than six months old ? / **Raha enim-bolana ny zaza?**

When the child is between six months and two years old ? **Raha feno enim-bolana ka hatramin'ny roa taona ny zaza?**

2. Are there changes in the child's feeding when they have episodes of diarrhoea compared to their normal feeding? / **Hafa noho ny san'andro ve ny sakafo omena ny zaza raha tratry ny aretim-pivalanana izy?**

What are these changes? (Increase/reduction in daily food intake, blended foods.) / **Inona avy (Fitomboana na fihenana ny sakafo anatin'ny iray andro, fanomezana sakafo voatoto).**

When the child is younger than six months old ? **Raha ho an'ny zaza enim-bolana?**

When the child is between six months and two years old ? **Raha ho an'ny zaza feno enim-bolana ka hatramin'ny roa taona?**

### III. HYGIENE PRACTICES/ FANATANTERAHANA ARA-PAHADIOVANA

1. What advice do you give to families regarding hygiene when a child under two years has an episode of diarrhoea? / **Inona no torohevitra omenao ny fianakaviana mikasika ny fahadiovana raha misy zaza roa taona tratry ny aretim-pivalanana.**

In terms of food hygiene (washing fruits/vegetables)? / **Raha amin'ny lafin'ny fahadiovana ara-tsakafo? (fanasana ny "légumes", voankazo)**

In terms of personal hygiene (hands, changing the baby) ? / **Raha amin'ny lafin'ny fahadiovana ara-batana**

#### **IV. MANAGING DIARRHOEA AT HOME (USE OF TREATMENTS, RITUALS, PREPARED LIQUIDS AND FOODS) / FITANTANANA AO AN-TOKANTRANO (FAMPIASANA NY FANAFODY, FOMBA GASY, RANON-JAVATRA KARAKARAINA SY NY SAKAFO)**

1. What are the common practices for managing diarrhoea at home (use of treatments, rituals, prepared liquids and foods) ? / **Inona avy ny fomba fanao mahazatra any an-trano?** / ( Fihinanana fanafody, fomba gasy, ranon-javatra karakaraina sy sakafo)

What is the significance of these practices? **Inona no dikan'ireo fomba fanao ireo?**

2. What do you think of them? / **Inona no hevitrao manoloana izany?**

3. What advice do you give to families in terms of treatments ? / **Inona no hevitra atorona ny fianakaviana eo amin'ny lafin'ny fanarahana ny torohevitra fanasitranana?**

When do you advise that the child should be hospitalised ? **Rehefa amin'ny fotoana ohatry ny ahoana ianao no manome torohevitra ny tokony handefasana any amin'ny hopitaly?**

#### **V. EXAMPLES for COMMUNITY WORKERS**

A child under two years coughs in a Malagasy home. What advice is typically given? / **Misy zaza roa taona mikohaka anatin'ny tokantrano malagasy. Inona no torohevitra omena?**

A child under two years coughs in a Malagasy home. What advice is typically given ? **Misy zaza latsaky ny 2 taona voan'ny tazo ao amin'ny tokan-trano iray. Ahoana ny fihetsiky ny reniny?**

#### **VI. PREVENTION/ FISOROHANA**

1. What advice do you give in terms of prevention ? / **Inona no torohevitra omena eo amin'ny lafin'ny fisorohana ny aretina?**

2. What are your organised preventive actions ? / **Inona avy ireo ambaratongan'asa ataonao?**

### **TOPIC 3: ATTITUDES /FIHETSIKA (10 min)**

#### **I. SOCIO-ECONOMIC IMPACT / FIATRAIKANY ARA-BOLA**

1. What is the economic impact on families because of childhood diarrhoea? (Absenteeism from work, treatment costs, hospitalization.) / **Inona no fiatraikany ara-pitadiavam-bola eo amin'ny fianakaviana manan-janaka tratry ny aretim-pivalanana? (Tsy fahafahana mandeha any am-piasana, vidin'ny fitsaboana, fampidirana any amin'ny hopitaly)**

2. How do you act based on their financial position? (Cost of treatment, hospitalization). / **Ahoana no**

3. What is the social impact on the family? / **Inona no fiatraikany ara-tsosialy eo amin'ny fianakaviana? On the community? / Eo amin'ny fiaraha-monina?**

### **CONCLUSION/OPENING SESSION (15 min)**

## APPENDIX 7: Written authorization signed by the head of the fokontany

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Antananarivo, faha.....  
Ho an'.....  
.....  
.....

Tompoko,

Voninahitra ho anay avy ao amin'ny Institut Pasteur ny manao izao taratasy izao mba hampahafantatra anao fa hisy fanadihadiana izay kasainay atao mikasika ny : « fahalalana sy ny fomba amam-panao ara-tsakafy manoloana ny zaza latsaky ny roa taona tratry ny aretim-pivalanana » eo anivon'ny reny, ray, renibe ary ny mpiasan'ny fahasalamana eto amin'ny fokontany misy anao, hahalalana ny zava-misy sy ny fomba amam-panao any an-tokantrano hahafahana mijery izay zavatra tokony hatao amin'ny ho avy, mba hampihena ny salan'isan'ny zaza maty vokatra ny aretim-pivalanana ; satria 30 % amin'ireo zaza tratran'izany aretina izany ihany no mankany amin'ny hopitaly.

Ny fotoana hanaovana ny fanadihadiana dia mandritra ny : ...../...../.....ka hatramin'ny...../...../.....Hisy fiarahamiasa miaraka amin'ireo « agents communautaires na COSAN » amin'ny fanentanana ireo vondron'olona voalaza etsy ambony (ray, reny, renibe) mba hamaly ny fanadihadiana izay atao. Marihina fa an-tsitrapo ny fandraisana anjaran'ny olona fa tsy terena.

Eto am-piandrasana ny valinteny mahafapo avy aminao , raiso Tompoko, ny haja ambony indrindra atolotray anao.

**NB:**

**Ireto avy ny anaran'ny olona hanao fanadihadiana:**

- 1).....
- 2).....
- 3).....
- 4).....

**Anaran'ny “agent(s) communautaire (s)”:**

- 1).....
- 2).....

## APPENDIX 8: Convocation

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Code :

### FANDRAISANA ANJARA AMIN'NY FANADIHADIANA :

**FAHALALANA SY NY FOMBA AMAM-PANAO ARA-TSAKAFON'NY ZAZA LATSAKY NY 2 TAONA TRATRY NY ARETIM-PIVALANANA.**

Daty nanaovan'ny mpanadihady fanentanana:...../...../.....

Fokontany : .....

Anaran'ilay mpandray anjara:.....

**Daty hanaovana ny fanadihadiana:** ...../...../.....

**Ora hanaovana ny fanadihadiana :** ...../.....

**Toerana hanaovana ny fanadihadiana :** .....

Manantena ny fahatongavanao izahay avy ao amin'ny Institut Pasteur.

Code:

### PARTICIPATION A L'ENQUÊTE

**CONNAISSANCE ET PRATIQUE NUTRITIONNELLE DE L'ENFANT DE MOINS DE DEUX ANS ATTEINT DE LA DIARRHÉE.**

Date de la sensibilisation: ...../...../.....

Quartier: .....

Nom du participant: .....

**Date de l'enquête:** ...../...../.....

**Heure de l'enquête:** ...../...../.....

**Lieu de l'enquête:** ...../...../.....

L'IPM souhaite votre présence.

Code:

### PARTICIPATION in RESEARCH STUDY

**KNOWLEDGE and NUTRITIONAL PRACTICES for CHILDREN UNDER TWO YEARS SUFFERING from  
DIARRHOEA**

Date of invitation:...../...../.....

District:.....

Name of participant:.....

**Date of study:** ...../...../.....

**Time of study:** ...../...../.....

**Place of study:** ...../...../.....

The IPM requests your presence.

## APPENDIX 9: Informative letter

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*The interviewer provides the contract..*

**Topic of the project:** “Enquête MOSAÏQUE” (Mosaic study) on nutritional awareness, attitudes and practices for children suffering from diarrhoea in Moramanga, Madagascar.

**Names of the researcher and interviewers:** Miss Karine RENAUDIE, Mrs Hanta Emma RAHARIJAONA, Mr Nomenjanahary Herald Lorria RATASIARIBE.

**Name of doctor responsible for the project:** Docteur Vincent Richard et Pr Ingunn Marie S Engebretsen

**Name of doctor responsible for the administration of the programme:** Docteur Rindra Vatosoa RANDREMANANA

**Name of responsible body:** Institut Pasteur de Madagascar

*The participation of the families and healthcare workers in Moramanga is essential for the successful completion of the project.*

**Aim:** *To conduct research on nutritional awareness and practices in cases of diarrhoea among children.*

**Approach:**

- 1) *The study will be conducted through group discussions.*
- 2) *The study will include research among healthcare professionals to understand their attitudes towards a family with a child suffering from diarrhoea.*
- 3) *The study will also include direct research on the actual experience of people in their homes, with the support of community workers. This project has received the approval of the Comité national de la protection des droits des participants (National Committee for the protection of participants' rights) of the Ministère de la santé (Ministry of Health) in Madagascar.*

**Risks to participants:** *Participating in the study brings no dangers or risks to the individuals concerned.*

**Benefits and compensation:** *Participants are included in the study on a voluntary basis, so no compensation is envisaged.*

**Confidentiality:** *All participants in the project must maintain confidentiality concerning the study.*

**Right of refusal:** *Participation in the study is optional. Refusal to participate will have no impact on the care of your child.*

**Further information:** *For any further information, please contact:*

*Dr Vincent Richard ou Dr Rindra Vatosoa RANDREMANANA*

*Institut Pasteur de Madagascar, BP 1274, Antananarivo,*

*Tél: 22 412 74, Fax: 22 415 34 22*

## APPENDIX 10: Exemple of translated data to computer

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### FOCUS GROUPE avec LES MERES PRIMIPARES D'AMBODIAKATRA

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E=Emma et MP=Mère Primipare

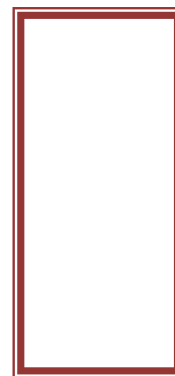
Date: 07-07-2011.

Emma

Zone: 2, Ambodiakatra.

Durée: 15h – 16h 25.

MP 9  
3



MP 9  
1

MP 9  
2

Karine

**E:** Amin'ity tapany voalohany ity tsika, dia momba ny resaka amin'ny ankapobeny fotsiny manodidina ny aretim-pivalanana aloha. Euh...fanontaniana voalohany zany hoe, iza no mikarakara voalohany ny zaza zany rehefa marary ao an-tokantrano?

*E: Dans cette première partie, nous allons parler de la généralité sur la diarrhée. Euh... La première question, qui s'occupe en premier de l'enfant quand il est malade à la maison?*

*E: Dans la première partie on va d'abord parler de la diarrhée en général. Euh... qu'i s'occupe en premier de l'enfant à la maison quand il est malade?*

**Blue:** The first translator

**Orange:** The second translator



## APPENDIX 11: Reference sheet

Code zone :

Name of the Fokontany :

	Primiparous Mothers (MP)	Multiparous Mothers (MM)	Primiparous Fathers (PP)	Multiparous Fathers (PM)	Grandmothers (GM)
<b>Date of recruitment:</b>					
<b>Date of FGD:</b>					
<b>Time to return to the FGD:</b>					
<b>Site :</b>					
<b>Margin Recruitment: 10 (people)</b>	A: <input type="checkbox"/> B: <input type="checkbox"/> C: <input type="checkbox"/> D: <input type="checkbox"/> E: <input type="checkbox"/> F: <input type="checkbox"/> G: <input type="checkbox"/> H: <input type="checkbox"/> I: <input type="checkbox"/> j: <input type="checkbox"/>	A: <input type="checkbox"/> B: <input type="checkbox"/> C: <input type="checkbox"/> D: <input type="checkbox"/> E: <input type="checkbox"/> F: <input type="checkbox"/> G: <input type="checkbox"/> H: <input type="checkbox"/> I: <input type="checkbox"/> j: <input type="checkbox"/>	A: <input type="checkbox"/> /MP.... B: <input type="checkbox"/> / MP .... C: <input type="checkbox"/> / MP .... D: <input type="checkbox"/> / MP .... E: <input type="checkbox"/> / MP .... F: <input type="checkbox"/> / MP .... G: <input type="checkbox"/> / MP .... H: <input type="checkbox"/> / MP .... I: <input type="checkbox"/> / MP .... j: <input type="checkbox"/> / MP ....	A: <input type="checkbox"/> / MM.... B: <input type="checkbox"/> / MM .... C: <input type="checkbox"/> / MM .... D: <input type="checkbox"/> / MM .... E: <input type="checkbox"/> / MM .... F: <input type="checkbox"/> / MM .... G: <input type="checkbox"/> / MM .... H: <input type="checkbox"/> / MM .... I: <input type="checkbox"/> / MM .... j: <input type="checkbox"/> / MM ....	A: <input type="checkbox"/> / .... B: <input type="checkbox"/> / .... C: <input type="checkbox"/> / .... D: <input type="checkbox"/> / .... E: <input type="checkbox"/> / .... F: <input type="checkbox"/> / .... G: <input type="checkbox"/> / .... H: <input type="checkbox"/> / .... I: <input type="checkbox"/> / .... j: <input type="checkbox"/> / ....
<b>Remarks or other details</b>					

## EXHIBIT 7-1 FOCUS GROUP EVALUATION FORM

### I. Evaluation of the Focus Group

	YES	NO
<b>Setup</b>		
<ul style="list-style-type: none"><li>● <b>Were respondents qualified?</b> Did they meet the age, sex, family size, socioeconomic status, product usage or other requirements necessary to the research objectives?</li><li>● <b>Did the group composition make sense?</b> Were respondents similar enough in terms of characteristics that matter for an effective group discussion to take place and for group findings to be unclouded by major respondent variables?</li><li>● <b>Was the size of the group right?</b> Were all respondents able to participate and to talk for long enough to cover most of what they know on the subject?</li><li>● <b>Was the setting of the group appropriate?</b> Was it natural and comfortable for group members— not so casual as to preclude control and not so formal as to inhibit spontaneity and an open expression of feelings?</li><li>● <b>Did the seating arrangement of the group work?</b> Did it seem natural to respondents and did it facilitate group interaction?</li><li>● <b>Was the group free from outside interference such as observers, interruptions?</b></li><li>● <b>Was the length of the group appropriate?</b> Was it long enough to obtain specific, actionable information and not so long that group members got bored or fatigued or began to over-intellectualize?</li><li>● <b>Was the content of the topic guide complete?</b> Were all information needs and objectives met?</li><li>● <b>Was the content of the topic guide appropriate?</b> Were the topic areas covered all relevant in terms of focusing the discussion on the study objectives, or did some questions throw the discussion off course? Were they questions that group members could answer?</li></ul>	( )	

## II. Moderator Evaluation

Assign the moderator a rating for each item mentioned below (5 = excellent; 4 = very good; 3 = good; 2 = fair; 1 = poor.)

### A. Moderator's preparation

- Understands the background and subject matter of the project
- Understands the research objectives
- Has collected all the sponsor's ideas
- Helped develop the topic guide
- Has the topic guide memorized
- Was ready before the group assembled

Rating

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TOTAL

### B. Moderator's manner

- Is relaxed and friendly
- Stimulates group interaction
- Generates enthusiasm and involvement
- Listens constructively
- Displays warmth and empathy
- Is nonjudgmental
- Probes without leading
- Conveys "incomplete understanding" effectively
- Is sensitive to the level of group disclosure
- Blends in, but controls
- Improvises when necessary
- Is flexible when pursuing new ideas
- Discusses, but does not question
- Displays neutral body language and facial expressions

Rating

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TOTAL

### C. Moderator's handling of group influences

- Discourages simultaneous talking
- Retains group spontaneity
- Discourages irrelevant conversation
- Discourages intellectualizing by respondents
- Permits individual differences of opinion
- Brings shy or unresponsive group members into the discussion
- Controls dominant or disruptive group members

Rating

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TOTAL

### III. Structure of the Group Discussion

#### *Introduction: Moderator's Opening*

	<b>YES</b>	<b>NO</b>
Put the respondents at ease	( )	( )
Explained the general purpose of the group	( )	
Encouraged conflicting opinions	( )	
Established moderator neutrality		
Established openness: no right or wrong answers		
Gave group "rules"		
Began developing a rapport with the respondents		
Provided a smooth transition to the next phase		(

#### *Phase I: Warm-up*

Established a good rapport with the respondents		)
Obtained necessary background information		
Began stimulating group interaction	( )	( )
Give all respondents an opportunity to speak	( )	( )
Successfully diminished speech anxiety	( )	( )
Established the group as a "safe place"		
Enabled group members to know each other		
Stayed within the time limits		( )
Provided a smooth transition to the next phase	(	( )

#### *Phase II: Body of the Group Discussion*

Moved from the general to the specific	( )	)
Did not disclose key issues prematurely	( )	)
Obtained a depth of response to key issues		
Obtained members' true feelings about topics		
Linked information into a cohesive whole		
Exhibited appropriate facilitating behavior		
Exhibited appropriate controlling behavior		(
Provided a smooth transition to the next phase	(	

#### *Phase III: Closure*

Identified key themes		)
Summarized key ideas		
Revealed the strength of attitudes		
Consolidated group feelings about issues		
Identified individual differences of opinion		
Gathered all respondent comments	(	

#### IV. Post-Group Evaluation Issues

- |  | YES | NO  |
|--|-----|-----|
| • Is a substantial amount of post-group analysis necessary to separate true respondent feelings from those expressed due to moderator demands?   | ( ) | ( ) |
| • Was this group conducted so that it can be evaluated across a series of groups, or will differences cloud the evaluation?                      | ( ) | ( ) |
| • Was the group outline sensitive to differences in group composition so that <i>differences</i> between groups in a series will be highlighted? | ( ) | ( ) |

#### V. Follow-Up Action

- Were all management information needs met? If not, how can these information gaps be filled?
- Were hypotheses developed that require follow-up? If so, how will these be pursued?
- Are more groups needed? If so, what are the purpose and objectives of these groups?
- Does the topic guide need revising? If so, in what way?
- Do certain findings need verification by quantitative research? If yes, what needs to be quantified?

Debus M. Methodological review. A handbook for excellence in focus group research. Academy for Educational Development. 1990;

**APPENDIX 13: Example of a socio-demographic information sheet for multiparous parents**

<b>For multiparous parents</b>	
Area:	
Date:	
<i>Circle the correct answer and complete the boxes please</i>	
<b>SOCIO-DEMOGRAPHICS DATA</b>	
1. IDI number <i>written by researcher</i>	_____
2. Lady/Man	Lady Man
3. Age (years)	___ans
4. Education level	Unschool Primary/Literacy Secondary and above
5. Occupation	
6. Spouse occupation	
7. Marital status	*Married legitimately * Married Traditionally *In Couple *Single *Divorced *Remaried

<b>Number of children</b>	1	2	3	4	5	6	7	8	9	10
<b>Age (in years)</b>										

## APPENDIX 14: Ethics committee approval

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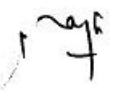
N° 057 - MSANP/CE

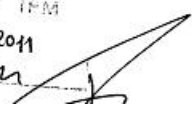
### AUTORISATION

Après consultation et avis favorable du Comité d’Ethique auprès du Ministère de la Santé Publique, l’Institut Pasteur de Madagascar, est autorisé à effectuer la recherche intitulée :  
« **Connaissances, attitudes et pratiques nutritionnelles du nourrisson et du jeune enfant au cours des épisodes diarrhéiques, à Moramanga Madagascar** ».

Antananarivo, le 30 JUN 2011

Le Ministre de la Santé Publique

  
Ministre Santé de Madagascar  
RANJONARISON Pascal Jacques

ARRIVÉE  
DIRECTION IPM  
DATE 01/07/2011  
N° 212 

## APPENDIX 15: Example of consent form for mothers

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<p style="text-align: center;"><b>TARATASY FIRAKETANA NY FANEKENA HANDRAY ANJARA AN-TSITRAPO</b> <b>AMIN'NY FANADIHADIANA</b> <b>(RENY)</b></p>
---

Ny mpanao fanadihadiana no manolotra ny taratasy firaketana ny fanekena handray anjara an-tsitrapo

**Taratasy firaketana ny fanekena narahim-panazavana**

*Izaho izay manao sonia: Rtoa/Atoa.....*

*Dia nasaina handray anjara amin'ny fikarohana mitondra ny lohateny «Fanadihadiana "MOSAÏQUE" mikasika ny fahalalana sy ny fomba amam-panao momba ny fanjarian-tsakafo ny zaza latsaky ny roa taona tratry ny aretim-pivalanana any Moramanga, Madagasikara». Ny fandraisana anjara dia tsy terena. Tsy voatery handray anjara ianao raha tsy sitraponao izany, afaka tsy mamaly ny fanontaniana sasany ihany koa ianao raha tsy tianao izany. Manana zo ny hivoaka amin'ny fotoana izay tianao ianao na dia mbola mitohy aza ny fanadihadiana. Toa izao ny fanazavana misimisy momba izay zavatra atao amin'izany fikarohana izany.*

*Irianay ny hahafantatra ny fomba fanomezan'ny reny sakafo ny zanany mandritra ny aretim-pivalanana aty ambanivohitra. Hisy fanontaniana izay hapetrakay momba ny fomba fanaonao eo amin'ny lafin'ny fanomezana sakafo ny zaza tratry ny aretim-pivalanana. Ny resadresaka eo anivon'ny vondrona dia mety haharitra eo amin'ny adiny roa farafahabetsany. Ny valintena dia mijanona ho tsiambaratelo na dia misy fakana feo aza. Izahay dia mitandro mandrakariva ny tsiambaratelo rehefa hampiasa ny valin'izao fikarohana izao. Ny fakana feo rehetra dia voaaro sy tehirizina eo anivon'ny Institut Pasteur.*

*Mazava amiko tao aorian'ny dinika niaraka tamin'ny .....*

*Nampahafantarina ahy ny votoatin'ny fikarohana voalaza io*

*Milaza aho fa nahazo valiteny mahafapo tamin'ireo fanampi-panazavana izay nangatahiko momba ny tanjona, ny fizotrany ary ny fombafomba fananterahana ny fanadihadiana.*

*Rehefa nampahafantarina izany aho dia manaiky ankalalahana handray anjara amin'ny fanadihadiana. Manaiky koa aho ny hamoahana an-dahatsoratra siantifika ity fanadihadiana ity raha toa ka voahaja ny tsy fanononana anarana sy ny zon'ny tsiambaratelo.*

*Natao dika telo mitovy teto ....., androany.....*

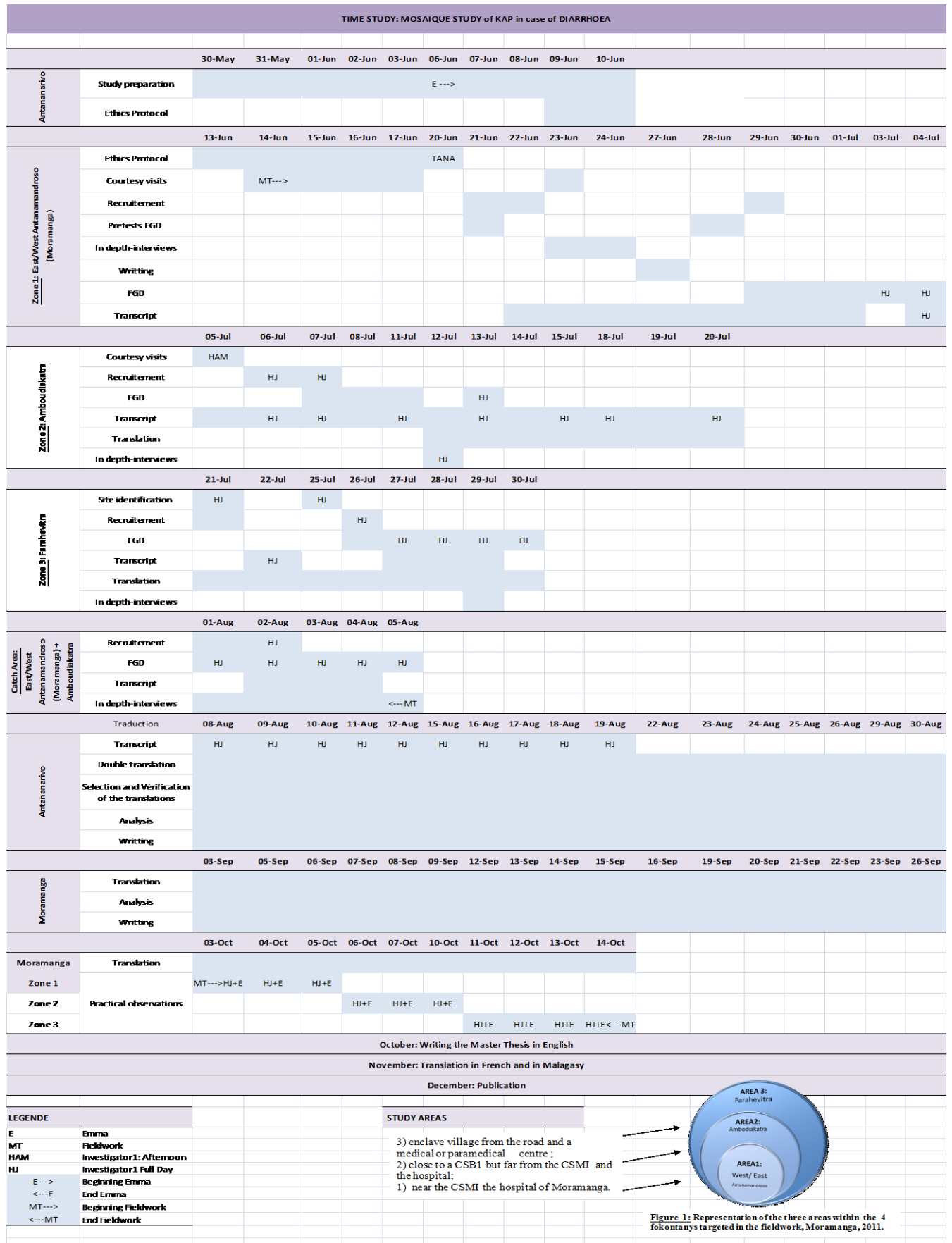
*Sonia ny voakasika*



## APPENDIX 16: Budget

EXPENDITURE			TOTAL (Ariary )	TOTAL (Euros)	TOTAL (NOK)
<b>Wages</b>					
	<i>Number per months</i>	<i>Unit Price</i>			
1st Translator	3	350,000.00	1050000.00	375.00	2958
2nd Translator	3	350,000.00	1050000.00	375.00	2958
1 Typist	3	322,000.00	966000.00	345.00	2721
	<i>Number per months</i>	<i>Unit Price</i>			
A collaborator Perdiem Land	40	15,000.00	600000.00	214.29	1690
A collaborator Perdiem Land	71	20,000.00	1420000.00	507.14	4000
1 guide from West Antanamandroso	3	5,000.00	15000.00	5.36	42
1 guide from East Antanamandroso	3	5,000.00	15000.00	5.36	42
1 guide from Ambodiakatra	5	5,000.00	25000.00	8.93	70
1 guide from Farahevitra	2	5,000.00	10000.00	3.57	28
1 night guide + porting guide	1	10,000.00	10000.00	3.57	28
1 carrier Farahevitra	1	5,000.00	5000.00	1.79	14
1 carrier Farahevitra	1	5,000.00	5000.00	1.79	14
1 guide from Farahevitra	1	5,000.00	5000.00	1.79	14
A housekeeper Moramanga	2	7,000.00	14000.00	5.00	39
<b>TOTAL WAGES</b>			<b>5190000.00</b>	<b>1853.57</b>	<b>14621</b>
<b>Purchases and external expenses</b>					
	<i>Quantity</i>	<i>Unit Price</i>			
<b>TELEPHONY</b>					
Telma phone refills	8	5,000.00	40000.00	14.29	113
Airtel phone refills	5	2,000.00	10000.00	3.57	28
Zaim phone refills	2	5,000.00	10,000.00	3.57	28
Zaim phone refills	1	5,000.00	5,000.00	1.79	14
<b>TRAVEL</b>					
Go Taxi-brousse Karine	13	5,000.00	65000.00	23.21	183
Go Taxi-brousse Emma	19	5,000.00	95000.00	33.93	268
Go Taxi-brousse Herald	11	5,000.00	55000.00	19.64	155
Rickshaw Moramanga	15	800.00	12000.00	4.29	34
Rickshaw Moramanga	1	1,800.00	1800.00	0.64	5
Rickshaw Moramanga	8	1,000.00	8000.00	2.86	23
Rickshaw Moramanga	1	900.00	900.00	0.32	3
Taxi Bus Station B-Institut Pasteur	1	300.00	300.00	0.11	1
<b>ACCOMMODATION</b>					
Accommodation		89,000.00	89,000.00	31.79	251
8 Living Water Bottles		10,400.00	10,400.00	3.71	29
Toilet paper		1,600.00	1,600.00	0.57	5
<b>OFFICE TOOLS</b>					
2A batteries	8	1,600.00	12800.00	4.57	36
2AA batteries	4	1,600.00	6400.00	2.29	18
Glue	1	800.00	800.00	0.29	2
Leaves Bristol	10	500.00	5,000.00	1.79	14
Scotch	1	1,000.00	1,000.00	0.36	3
Scissors	1	800.00	800.00	0.29	2
Plastic Sleeves	20	200.00	4,000.00	1.43	11
Ream of A4 paper	1	9,000.00	9,000.00	3.21	25
Ream of A4 paper	1	10,000.00	10,000.00	3.57	28
Computer mouse	1	12,000.00	12,000.00	4.29	34
Computer mouse	1	9,000.00	9,000.00	3.21	25
Photocopying	206	50.00	10300.00	3.68	29
Black impressions	65	200.00	13000.00	4.64	37
Binder	1	5,000.00	5,000.00	1.79	14
Pencils	2	400.00	800.00	0.29	2
Mines	1	400.00	400.00	0.14	1
SONY headphone	1	18,000.00	18,000.00	6.43	51
Headphone	1	12,000.00	12,000.00	4.29	34
Webcam	1	70,000.00	70,000.00	25.00	197
Student package	1	1,400.00	1,400.00	0.50	4
<b>DONATIONS CONSUMER STAPLES</b>					
Sugar (1kg bags)	42	3,990.00	167580.00	59.85	472
Sugar (1kg bags)	12	3,900.00	46800.00	16.71	132
Cooking oil (1L bottle)	42	5,180.00	217560.00	77.70	613
NOSY Soap (250 g)	42	600.00	25200.00	9.00	71
NOSY Soap (250 g)	12	900.00	10800.00	3.86	30
Candles (1 pack of 10)	42	3,500.00	147000.00	52.50	414
Candles (1 pack of 10)	2	3,400.00	6,800.00	2.43	19
Candles (1 pack of 10)	10	3,000.00	30,000.00	10.71	85
<b>OTHER SUPPLIES</b>					
Toys	8	1,250.00	10000.00	3.57	28
Toys	6	1,000.00	6000.00	2.14	17
Anti-mosquito lotion Polyarome	1	8,000.00	8,000.00	2.86	23
Hydrazinc ®	1	2,500.00	2,500.00	0.89	7
Sûr Eau ®	1	300.00	300.00	0.11	1
Plastic bags	8	50.00	400.00	0.14	1
<b>TOTAL BUYOUT</b>			<b>1284640.00</b>	<b>463.16</b>	<b>3653.38</b>
<b>TOTAL EXPENDITURE</b>			<b>6474640.00</b>	<b>2316.73</b>	<b>18274</b>
<b>TOTAL RECIPES</b>				<b>4000.00</b>	<b>31552</b>
<b>TOTAL BALANCE</b>				<b>1683.27</b>	<b>13278</b>

# APPENDIX 17: Operational time study



## APPENDIX 18: Schedule changes

Zone	Number	Code	Start date	End Date	Summary of achievements	Number of pages	Translation	Translated Data to computer	Synthesis	Analysis
Zone I: Antanamandroso	1	MP4	x	x		39	x	x	x	x
	2	MM 16	17/08/2011	25/08/2011		79	x	x	x	x
	3	GM6	x	08/08/2011		95	x	x	x	x
	4	PP 7	x	17/08/2011		32	x	x	x	x
	5	PM 17	x	x		56	x	x	x	x
	6	PS6 01-08-2011	x	18/08/2011		15	x	x	x	x
	7	PS7 02-08-2011	16/08/2011	17/08/2001		41	x	x	x	x
	8	PS1 15-06-2011	x	01/08/2011		17			x	x
	9	PS2 23-06-2011	x	08/08/2011		15			x	x
	10	PS3 29-06-2011	x	x				x		
Zone II: Ambodiakatra	11	MP9 07-07-2011	x	05/09/2011		65	x	x	x	
	12	MM								
	13	FG GM10	x			61	x	x	x	
	14	PM 15	x	x		51	x	x	x	
	15	PS7 02-08-2001	x	x		58	x	x		
		PS8 03-08-2011	x	x		38	x	x		
	16	PP 13-07-2011	x	06/08/2011		38	x	x	x	
	17	PP 15-07-2011	x	23/08/2011		30	x	x	x	
18	PS4 12-07-2011	x	01/08/2011		8	x	x	x		
Zone III: Farahevitra	19	MP								
	20	MM								
	21	GDM								
	22	EI PM13 1	x	x		25	x	x	x	
	23	EI PM13 2	x	x		34	x	x	x	
	24	EI PS5 26	x	x		41	x	x	x	
25	PS									
26	PP									
<b>Legend</b>										
	FGD									
	In Depth Interviews									
	Emma									
	Herald									
	Karine									

**APPENDIX 19: Distribution of the number of children and children's age within the FGDs, Mosaique Study, Moramanga, 2011.**

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	Number of children	Age of children (months)			
	Mean	Mean	Median	Minimum	Maximum
Primiparous Fathers	1	16.0	15.0	11.0	22.0
Multiparous Fathers <sup>1</sup>	3	16.0	19.0	2.0	24.0
Primiparous Mothers	1	14.0	15.5	4.0	19.0
Multiparous Mothers <sup>1</sup>	3	15.0	12.0	2.0	25.0
Grandmothers <sup>2</sup>	6				

<sup>1</sup>The age distribution of children for multiparous parents is based on children below 30 months of age.

<sup>2</sup>For grandmothers, the number of children concern the number of grandchildren they have.

**APPENDIX 20: Content matrix for family members & health workers from the 30 major codes deduced from SSIs & FGDs**

KAP	Themes	Sub-themes	Categories	Codes	Number of references used																
					PF	MF	F	PM	MM	M	GM	CHW	CHW	TCHW	MW	MD	MD	TMD			
KNOWLEDGE	CLINICAL SIGNS		GENERAL SIGNS	Clinical Signs	3	17	20	21	19	40	12	3	4	7	11	5	3	8			
			CHANGES in BEHAVIOUR	Disturbed Sleep	3	5	8	4	5	9											
				Behaviour change	3		3			0									1	1	
			LOSS of STRENGHT	Loss of strenght		10	10	8	6	14	10	3			3						
				Loss of weight					4	4					1	1					
			FEEDING DISTURBANCE	Decreased appetite		6	6			0	7									1	1
	Decrease food intake					5		5													
	STOMACH DISTURBANCE	Bloating					5	5					2	2							
	TREATMENT	PHARMACIES		SELF MEDICATION	Home medecine	3	7	10	13		13	15	6		6	2	7		7		
				USE of MEDICINE	Prescribed treatment				7		7								10	4	14
		PRESCRIPTION			PCIMEC									4	4	8				0	
					Drugs										4	4				4	4
					Pragmastism of fathers and grandmothers																3
		NEED for INFORMATION			Need of formation														3	3	
					No prescription of ORS															3	3
		ZINC			Zinc										3	3			4	4	
		ORT			Use of ORT	ORT	9	5	14	8	29	37	27	6	13	19	7	18	7	25	
					Intolerance					0	7										
		Use of LIQUIDS			Rehydration		17	14	31		8	8	12	2	1	3	9	7	3	10	
	NO BELIEF in TRADITIONAL MEDICINE for CHILDREN				No traditional healing	3		3													
					MALAGASY TRADITIONAL HEALING BELIEF in TRADITIONAL MEDICINE for CHILDREN	Traditional Medecine					7	7		3	7	10	5	6		6	
						Ancestral Belief								7				6		6	
						Healer										1	1				
	Herbal teas		7	7							5	5	2	3		3					
	HOSPITALIZATION				LEVEL of EDUCATION	Level of education												8	8		
					FOLLOW-UP	Follow up													2		
					NEED to HOSPITALIZE	Hospital				6	5	11	19	2	2	4	3	6	3	9	
EMERGENCY					Emergency													5	5		
COORDINATION				No partnership												2	2				
				Orientation												2	2				
ENVIRONMENTAL CAUSES				COLD	No spell												3	3			
				Cold				5	5	6		1	1								
				SEASONALITY	Rain								2		2						
				CARELESSNESS	Carelessness								8								
				POISONING	Poisoning														3		
				TRANSMISSION by GENES	Hereditary										1	1					
INFECTION				INFECTION	Infection											5	5				
				SPREAD	Propagation								9				2				
				No comunity impact												2					
DEHYDRATION				Difficulty to recognize dehydration	4		4														
				Signs of dehydration		8	8	10		10	12	4	1	5	10	9	2	11			
				Death				4		4		3		3	3						
				Severity		12	12		5	5		6	1	7	5	8		8			
EXTREME CONSEQUENCES				Undernutrition													2				

KAP	Themes	Sub-themes	Cutting Process		Number of references used																		
			Categories	Codes	PF	M F	F	PM	MM	M	GM	CHW	CHW	TCHW	MW	MD	MD	TMD					
ATTITUDES	SOCIO-ECONOMICAL IMPACT	SOCIAL LIFE	EMOTIONAL DISTRESS and CONSEQUENCES for HOMEWORK	Family perturbation					9	6	15	21											
				Mother distress														3	3				
		FINANCIAL IMPACT on the FAMILY	EXPECTATION	WORKING PROBLEMS	Disruption of Domestic Work	4			4														
					EXPERIENCE	Waiting	3			3	5		5		4		4		3		3		
			VARYING VUES about COST	SOCIAL DEPRIVATION EQUITY FUND	Difficulty to work	8	10		18														
					Absenteeisme	6			6														
					Expensive care	6	6		12	10	8	18	7										
					Low income									4	2	6	5	2	1	3			
					High income												2						
					Free treatment														2	2			
NO TRUST in DRUGS	NO TRUST in DRUGS	NO TRUST in DRUGS	Father's alcoholism	3	6		6		10	10													
			Need of money																				
PRACTICES	DECISION MAKING	DECISIONS within the FAMILY	NO TRUST in DRUGS	Inadequate Equity Fund	3			3						1	1								
				2nd Shared Parental Responsibility	4			4			11		11	8									
				1st Grandmother															1	1			
				Grandparents															6	6			
				1st Mother	3	6		9	4	8	12	6	3	2	5	5		2	2				
				USE of MEDICAL RESOURCES	MEDICAL RESOURCES	Red Malagasy Cross	3	6		9	4	18	22	6	3		3	2					
						Maternal and Child Health Center																	
						Medical Doctor	3	11		14		35	35	26	2	2		4		4	1	5	
						2nd Health Center	3			3										2		2	
						1st Pharmacy				5	5												
1st Comunity Health Worker														1	1								
2nd Comunity Health Worker													3	3									
Voluntary												2	2	2									
ACCESS to CARE	ACCESS to CARE	ACCESS to CARE	1st Health Center						10	10		7	4	1	5	2	1	1	2				
			Difficult access to care																3	3			
FEEDING PRACTICES	BREASTFEEDING	EXCLUSIVE BREASTFEEDING	EXCLUSIVE BREASTFEEDING	Ease of access to care	4	4		8		15	11	26	6				4	1	1				
				Appropriate exclusive breastfeeding	4			4												1	1		
				Breastfeeding transmission											9								
				Inappropriate exclusive breastfeeding																			
				COMPLEMENTARY BREASTFEEDING	COMPLEMENTARY BREASTFEEDING	COMPLEMENTARY BREASTFEEDING	Inadequate complementary feeding	8	8		16	5	7	12			1	1			2	2	
							Indigestible Food				6	6		9	9		4		4			2	2
							Appropriate complementary feeding				4	4					2		2	2		1	1
				MALAGASY DIET if DIARRHOEA	MALAGASY DIET if DIARRHOEA	MALAGASY DIET if DIARRHOEA	Diet Diarrhoea	5	14		19	20	7	27	23	5		5	4	4		4	
							Vitamines											1	1				
							NO DIET												1	1	2		
Same Food																							
HYGIENE PRACTICES	HYGIENE	CHILD CHOICE	CHILD CHOICE	To please the child/Best food				6	6		5	5											
				Hand Washing	6	10		16	18	6	24	14	2		2	4		1	1				
				Evacuation of stools	4			5	9	6	9	15	10										
				No latrines															2	2			
				Community Habit														3					
				Hygiene of environment	9	11		20	21	12	33	23	5	4	9	11	3	1	4				
				ACCESS to WATER	ACCESS to WATER	ACCESS to WATER	ACCESS to WATER	Water Symbolism	6	5		11	4	4	8	15							
								Water Preparation	5	7		12	5	5		3		3					
								Well Water	3			3	5		5	12							
								Unsafe water						16	5	21	8	3		3			
Tap water	3							3															
PRACTICES about PREVENTION	PRIMARY HEALTH CARE	PRIMARY HEALTH CARE	PRIMARY HEALTH CARE	Prevention									6	2	8								
				Health Education												2	7	7					
				Sensitization														3	3				
				Information with concrete cases														2					
TREATMENT practices about FEVER & COUGH	FEVER	FEVER	FEVER	Fever				5	5		5	8	13		3	3	6	1	1				
				COUGH																			

<b>LEGEND</b>	
<b>PF</b>	Primiparous Fathers
<b>MF</b>	Multiparous Fathers
<b>F</b>	Fathers
<b>PM</b>	Primiparous Mothers
<b>MM</b>	Multiparous Mothers
<b>M</b>	Mothers
<b>GM</b>	Grandmothers
<b>CHW</b>	Community Health Worker
<b>TCHW</b>	Total CHW
<b>MW</b>	Midwife
<b>MD</b>	Medical Doctor
<b>TMD</b>	Total MD

## APPENDIX 21: Qualitative terms defined by Kirsti MALTERUD (43)

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### Panel 1: Terms used in qualitative research

Term	Metaphor	Description
Reflexivity	The knower's mirror	An attitude of attending systematically to the context of knowledge construction, especially to the effect of the researcher, at every step of the research process
Preconceptions	The researcher's backpack	Previous personal and professional experiences, prestudy beliefs about how things are and what is to be investigated, motivation and qualifications for exploration of the field, and perspectives and theoretical foundations related to education and interests
Theoretical frame of reference	The analyst's reading glasses	Theories, models, and notions applied for interpretation of the material and for understanding a specific situation
Metapositions	The participating observer's sidetrack	Strategies for creating adequate distance from a study setting that you are personally involved in
Transferability	External validity	The range and limitations for application of the study findings, beyond the context in which the study was done