



## RESEARCH ARTICLE

## Knowledge, Attitudes and Practices of Mothers on Neonatal Danger Signs

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### Summary

**Introduction:** Neonatal mortality is still a public health problem. The objective of our study was to evaluate the knowledge, attitude and practices of mothers in the Fianarantsoa Level 2 Basic Health-care Centers, face to neonatal danger signs.

**Methods:** This was a prospective cross-sectional study of pregnant women of the second gestational age and above (parity  $\geq 1$ ), who came for prenatal consultation in public health centers, on their knowledge, attitudes, and practices in front of neonatal danger signs. The survey lasted 1 month, from September 1, 2020 to October 31, 2020.

**Results:** During the survey period, of the 510 parturients seen in consultation, 224 were included. The average age of the mothers was 29.1 years. The majority of mothers (95.6%) lived with a partner (married or cohabiting). Most of the mothers (82.6%) lived within 1 km of the health-care center. More than a third of the mothers (34.8%) had a high school level and (60.3%) had a low socioeconomic status. The most common danger signs cited by the mothers were hyperthermia (81.7%). Very few of the mothers (31.2%) had good knowledge of neonatal danger signs. The level of education of the mothers was correlated with their knowledge ( $p = 0.01$ ). Seventy-seven (34.4%) of the mothers had experience with neonatal pathologies. The most common signs presented by the newborn were hyperthermia (51.9%). When faced with signs of danger, 63 mothers (81.8%) consulted a health-care center. Seizure was the sign that motivated mothers to seek care ( $p = 0.03$ ). Lack of awareness of the severity of the signs was the main reason (50%) that mothers did not consult a health-care center.

**Conclusion:** Parturients' knowledge of neonatal danger signs was inadequate and their attitudes and practices were inappropriate.

### Keywords

Attitude, Knowledge, Mothers, Practices, Neonatal danger signs

### Introduction

Neonatal mortality is still a public health problem. Out of the 130 million newborn babies, more than 4 million worldwide die each year before reaching the age of one month according to the WHO [1,2]. In Madagascar, according to the National Survey on the Socio-demographic Situation of Households (MICS), the neonatal mortality rate was 21 per 1000 births in 2018 [3]. This rate, although decreased, is still very high compared to industrialized countries. Early detection of neonatal diseases by identifying neonatal danger signs is very important to improve the survival rate of newborns. Danger signs indicate serious or life-threatening problems and emergency medical care [2,4,5]. Thus, the main objective of our study is to evaluate the knowledge, attitude and practices of mothers in the Fianarantsoa Level 2 Basic Health-care Centers, face to neonatal danger signs. And as a secondary objective to investigate the factors that influence the poor knowledge, attitudes and practices of mothers regarding these neonatal danger signs.

## Methods

This was a cross-sectional survey during 1 month, from September 1, 2020, to October 31, 2020. The survey was focused on pregnant women second gesture and more (parity  $\geq 1$ ), who came for prenatal consultation. Inclusion of women was done after obtaining their informed, verbal consent. Women who refused to participate in the survey were not included.

The variables investigated were:

Mothers' knowledge of neonatal danger signs (WHO): Hyperthermia, hypothermia, not able to feed, or stopped feeding well, rapid breathing, jaundice, vomiting, movement only when stimulated, or no movement even on stimulation, umbilicus redness or draining of pus, skin boils, or eyes draining pus, unexplained crying, and other signs (cough, diarrhea).

The level of knowledge of the mothers was classified according to the number of correct answers: mentioned at least three WHO neonatal danger signs were considered as having good knowledge, and those who mentioned less than three were considered as having poor knowledge.

Mothers' attitudes and practices toward neonatal danger signs were assessed by the following variables: danger signs presented by the newborn, the attitude to seek a care facility was marked as right; the time taken to visit a health center under 6 hours and the reasons given by these mothers for not seeking health care.

Data were entered into Excel and then analysed using Epi-info 7 software. The test used was simple logistic regression, the significance was set at  $p < 0.05$ .

## Results

During the survey period, 224 were included, the rest were primiparous and or refused to participate in the survey.

The most common danger signs cited by mothers were hyperthermia (81.7%), followed by not being able to feed, or stopped feeding well (37.5%) (Figure 1). Of the 224 mothers, 70 (31.2%) had good knowledge of neonatal danger signs. Mothers' education level significantly influenced their knowledge ( $p = 0.01$ ) (Table 1).

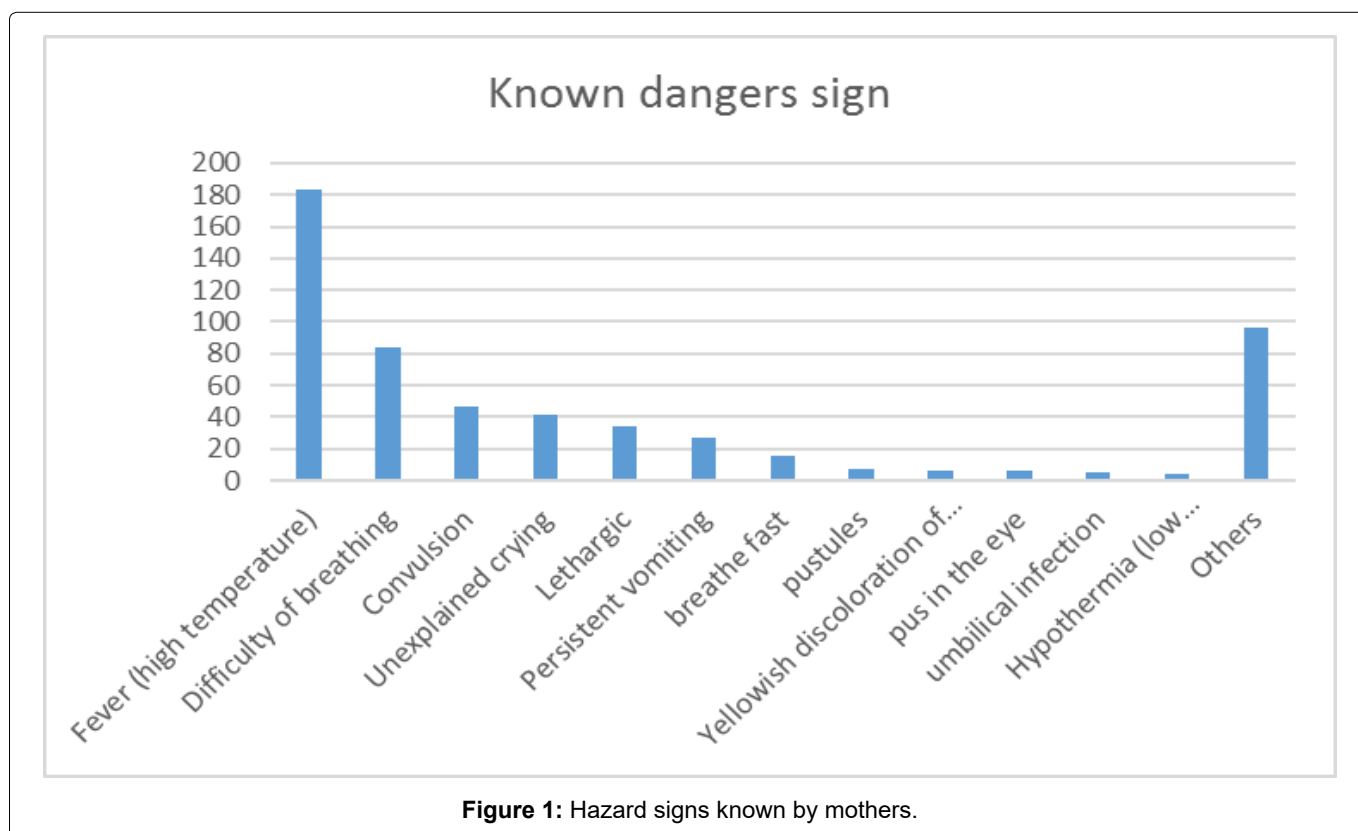
Mothers who experienced neonatal pathology were at the number of 77 (34.4%). The most common signs presented by the babies were hyperthermia (51.9%), followed by refusal to suckle (35.1%) (Figure 2).

When faced with danger signs, 63 mothers (81.8%) went to a health-care center. The delay of consultation was more than 48 hours for 15.9% of cases (Table 2). Mothers who had a baby with a seizure sought more care, with  $p$  value = 0.03 and RR = 1.09 [1.02-1.16] (Table 3).

For the 14 mothers who did not seek care, the most cited reason (50%) was lack of awareness of the severity of the signs (Table 4).

## Discussion

Regarding knowledge of neonatal danger signs, the majority of mothers cited hyperthermia first (81.7%), followed by refusal to suckle (37.5%). This result is comparable to a study conducted in Lucknow [6] (in India) where hyperthermia was the most cited sign by



**Table 1:** Factors influencing mothers' knowledge.

Factors influencing knowledge	Poor knowledge n (%)	Good knowledge n (%)	Relative Risk (IC* 95%)	p
Age (years old)				
[16-30]	98 (73.1)	36 (26.9)	0.71 [0.48-1.04]	0.04
[30-45]	56 (62.2)	34 (37.8)		
Marital status				
In couple	145 (67.8)	69 (32.2)	3.22 [0.50-20.91]	0.07
Single	9 (90)	1 (10)		
<b>Education level</b>				
Low	54 (79.4)	14 (20.6)	0.57 [0.34-0.96]	0.01
High	100 (64.1)	56 (35.9)		
<b>Socio-economic level</b>				
Low	127 (71.4)	51 (28.6)	0.69 [0.46-1.05]	0.05
High	27 (58.7)	19 (41.3)		
<b>Parity</b>				
Primi/pauciparous	121 (67.2)	59 (32.8)	1.31 [0.75-2.28]	0.16
Multiparous	33 (75)	11 (25)		
<b>Existence of danger signs</b>				
Knows	137 (66.5)	69 (33.5)	6.03 [0.89-40.90]	0.005
Don't Knows	17 (94.4)	1 (5.6)		

**Table 2:** Time to consultation for neonatal danger signs (n = 63).

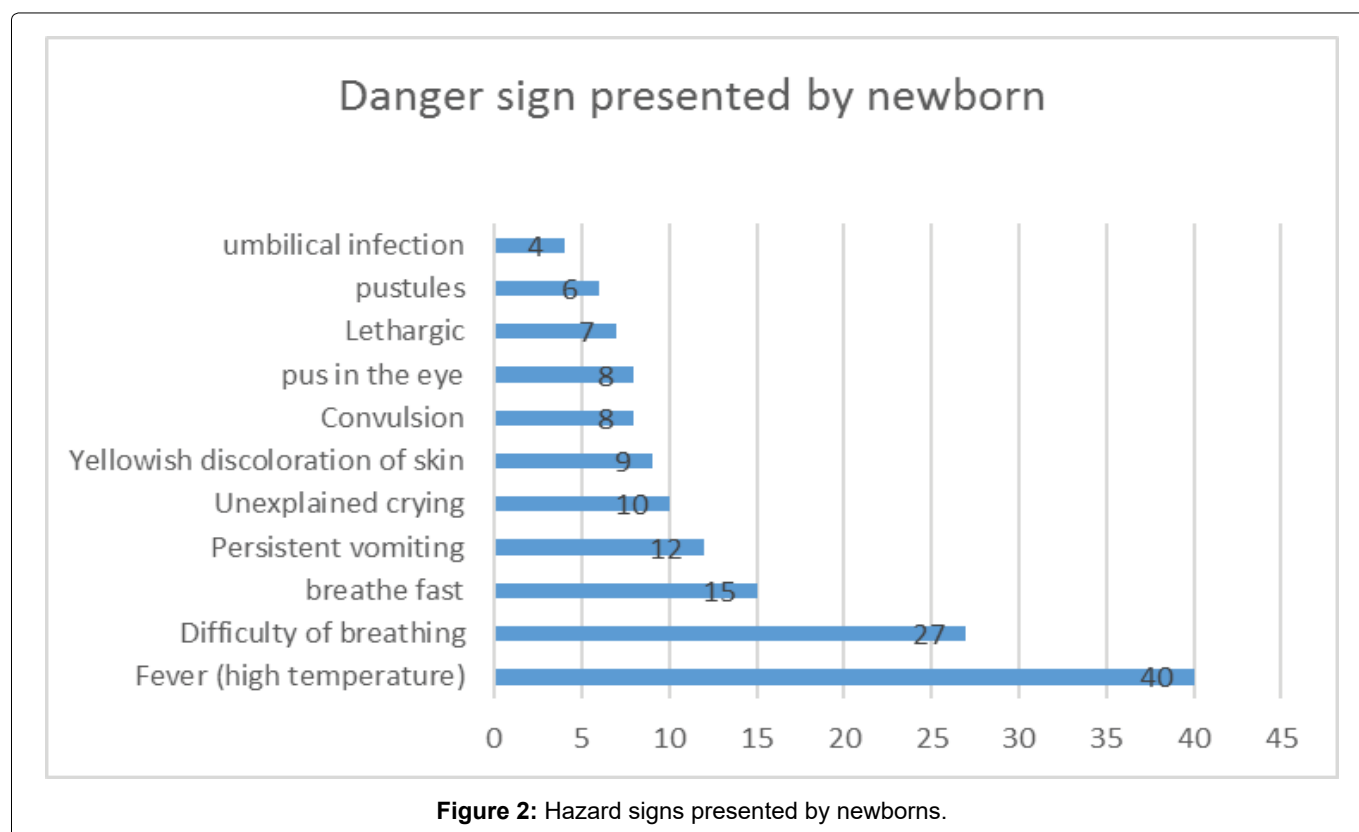
Consultation time (H)	Number	Frequency (%)
[1-6]	27	42.8
[6-12]	3	4.8
[12-24]	13	20.6
[24-48]	10	15.9
[48-72]	7	11.1
> 72	3	4.8
Total	63	100.0

**Table 3:** Relationship between neonatal danger signs and mothers' attitudes (n = 224).

Danger signs	Présence	No care seeking n (%)	Care seeking n (%)	Relative Risk (IC* 95%)	p
Seizure	Yes	1 (2.1)	46 (97.9)	1.09 [1.02-1.16]	0.03
	No	18 (10.2)	159 (89.8)		
Hyperthermia	Yes	18 (9.8)	165 (90.2)	0.92 [0.86-0.99]	0.06
	No	1 (2.4)	40 (97.6)		
Refusal to suckle	Yes	6 (7.1)	78 (92.9)	1.02 [0.95-1.11]	0.30
	No	13 (9.3)	127 (90.7)		
Rapid breathing	Yes	1 (6.3)	15 (93.7)	1.03 [0.90-1.17]	0.41
	No	18 (8.6)	190 (91.4)		
Vomitting	Yes	3 (11.1)	24 (88.9)	0.97 [0.84-1.11]	0.29
	No	16 (8.1)	181 (91.9)		
Unexplained crying	Yes	2 (4.9)	39 (95.1)	1.05 [0.96-1.14]	0.19
	No	17 (9.3)	166 (90.7)		
Jaundice	Yes	0 (0)	6 (100)	1.09 [1.05-1.14]	0.29
	No	19 (8.7)	199 (91.3)		

**Table 4:** Reasons why mothers do not seek help for neonatal danger signs.

	Number	Frequency (%)
Lack of awareness of the severity of signs	7	50.0
Family counseling	4	28.6
Trusting the matron	4	28.6
Financial issue	3	21.4
Rapid deterioration	2	14.3
Quick improvement	1	7.1
Others*	3	21.4



98% of the mothers. Similarly in Gedeo zone (in the South of Ethiopia) [7] where 76.6% of the mothers mentioned that same sign, then in Kenya [35] by 74.9% of the mothers. And in Fiche Town (in Oromia Ethiopia), [8] there were 63.3% of the mothers citing hyperthermia. Note that in Madagascar, neonatal mortality is still a concern with a rate of 26 ‰ in 2013 and 21‰ in 2018, and of which infection (17%) is among the leading causes of neonatal deaths [3,9]. This is why hyperthermia and poor feeding are at the top of the list.

According to this study, mothers' education level significantly influenced their knowledge ( $p = 0.01$  and  $RR = 0.57$  [0.34-0.96]). However, other factors such as age ( $p = 0.04$  and  $RR = 0.71$  [0.48-1.04]), marital status ( $p = 0.07$ ), socioeconomic level ( $p = 0.05$ ), were not factors influencing mothers' knowledge of neonatal danger signs. This result is similar to a study conducted by Nigatu [10] in the northwestern region of Ethiopia, which reported that women with a high level of education (secondary school and above) were 3 times more likely to experience neonatal danger signs than

women with a primary level of education ( $OR = 3.05$  [1.43-6.50]).

Among the 224 mothers in the study, 77 mothers (34.4%) had an experience in neonatal pathology, of which hyperthermia was found in 51.9% of the newborns. In a study conducted in Baghdad [11], 68% of mothers had an experience in neonatal pathology in which hyperthermia was found first (23.5%), followed by jaundice (19.7%). In Saudi Arabia [7], this neonatal experience was familiar to 68.8% of the mothers with jaundice (27.1%) followed by refusal to suckle (24.7%), being the most common signs presented by these newborns. The neonatal danger signs differ from country to another, which could be explained by the seasonal diversity as well as the geographical and socio-cultural diversity.

Among the 77 mothers who experienced neonatal pathology, the majority (81.8%) sought care in less than 12 hours for 47.6% and 42.8% of mothers consulted doctors in less than 6 hours. In the study carried out in Tiro Afeta (Ethiopia) [12], it was noted that 92.8% of

the mothers sought care immediately, this was also the case in Arabia (UAE) [13] where 91.2% of the mothers took the decision to take their sick baby to a health-care center, this attitude was adopted by 87.4% of the mothers in the case of Wardha (India) [14]. The good attitude of the mothers in seeking care in front of the signs of neonatal danger could be explained by their awareness during pregnancy and after delivery by the health personnel, even if this still seems insufficient given the somewhat late delay in seeking care.

In this study, it was found that mothers sought care immediately when faced with a newborn seizure ( $p = 0.03$ ,  $RR = 1.09$  [1.02-1.16]). This result is comparable to a study conducted in the south-eastern region of Nigeria [15], in India Wardha [14] where the immediate search for care in a health service in front of the seizure of the newborn were respectively the conduct of 72.2% and 36.1% of mothers in those countries. This is due to the fact that it is a very alarming sign and of rapid aggravation.

For the 14 mothers who did not consult in front of the signs of danger in the newborn, half (50%) were not aware of the seriousness of the signs, others (28.6%) did not go by family advice, or by trusting the matron than the health personnel (28.6%), some women did not consult because of financial problems (21.4%). In the study by Bekele F, et al. [8], financial problems were the most cited reason for not consulting (48.8%), followed by ignorance of the seriousness of the signs (13.1%). These different reasons lead us to believe that mothers lack information on the signs of neonatal danger in our country, perhaps because of the different gaps in our health system.

## Conclusion

At the end of this survey on the knowledge, attitude and practices of mothers in front of neonatal danger signs, we found that the majority of mothers have a poor knowledge of these danger signs, especially those who were less educated. Many of the mothers had a good attitude towards neonatal danger signs. However, a significant proportion did not seek medical attention because they were unaware of the seriousness of the signs presented by their baby.

Thus, increased education of mothers about neonatal danger signs would contribute greatly to the reduction of neonatal morbidity and mortality.

## Acknowledgement

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**Conflicts of Interest** The authors declare no conflicts of interest.

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