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Mothers' knowledge of danger signs in childhood illnesses: the integrated management of childhood illness (IMCI) strategy in Alimosho area of Lagos State, Nigeria

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Abstract

Introduction: *according to the integrated management of childhood illness (IMCI), adequate knowledge of danger signs by caregivers is a vital parental tool that will result in a positive healthcare-seeking behavior. Most studies done in Nigeria have been facility-based. This study aimed at collecting baseline information on mothers/caregivers regarding their knowledge of danger signs of common childhood illnesses in under-five children in Alimosho Local government area of Lagos State.* ***Methods:*** *this was a community based descriptive cross-sectional study using a multi-stage sampling method to administer a pre-tested questionnaire on a total of 360 mothers of under-five children residing in Alimosho Local government area of Lagos State between March and May 2016. Descriptive statistics were employed to analyze the data using SPSS version 22.0.* ***Results:*** *over 90% of the mothers showed good knowledge and ability to recognize the general danger signs of childhood illnesses. Health workers were the most reported source of information for their knowledge. Nearly all the respondents agreed that they worry when their children had fever, fast breathing and convulsion. High maternal education and parity were significantly associated with knowledge of danger signs ($p<0.05$).* ***Conclusion:*** *the knowledge of the mothers towards danger signs of common childhood illnesses was high and they had a positive attitude and practices towards the proper management of the identified danger signs.*

Introduction

Every year, more than 10 million children under five years die [1] due to preventable causes. In Lagos state alone, one out of every 20 live births die before reaching their fifth birthday [2]. The World Health Organization (WHO) and the UNICEF (United Nation International Children Emergency Fund) recognizing the importance of care seeking, enumerated activities to improve family and country health practices such as danger signs recognition and care seeking as part of the central components of the integrated management of childhood illness(IMCI) [3,4]. Adequate knowledge and recognition of danger signs is a vital parenting tool with resultant positive impact on the health care seeking behavior [5,6]. Families need to respond appropriately when their children are ill, seek appropriate care and timely assistance and offer recommended treatment [6,7]. According to the community integrated management of childhood illness strategy, mothers/caregivers at home should have adequate knowledge of the causes, prevention as well as when to seek appropriate help in the health facility when a child is not getting better [8]. Danger signs are warning signs indicating potential hazardous conditions that may become life threatening. Danger signs in IMCI include a child being excessively thirsty or unable to drink, (or breastfeed), vomiting everything given, convulsing during current illness, the child being lethargic, no longer smiling, talking, crying, walking or becoming unconscious [1,9]. Other danger signs are difficult breathing or fast breathing and high-grade fever [10]. The ability of the caregiver or mother to recognize these danger signs and know when to seek help will reduce morbidity and mortality from the underlying cause. A mother´s knowledge and recognition of critical signs and symptoms is important in determining the outcome of a child´s ill health.

Studies done in health facilities from low and middle-income countries showed that mothers´ knowledge of certain signs and symptoms of childhood illnesses and perceived illness severity, were important factors determining health-seeking behaviors [11-13]. Delay in seeking appropriate care or not seeking any care at all, contribute immensely to deaths in children [13]. Mothers are the primary caregivers for their children. Their ability to recognize the severity of illness early enough will determine their responses in preventing mortality by seeking early treatment. There is the need to ensure that mothers know danger signs of various illnesses especially when they are life threatening. Signs like difficulty in

breathing, lethargy, convulsions, excessive vomiting refusal to drink and fever are signs that mothers ought to be familiar with. There is limited data on danger signs knowledge in community-based studies in Nigeria. This community-based study therefore, aimed to collect baseline information on mothers regarding the knowledge of danger signs of common childhood illnesses and to assess their health-seeking behaviors in under-five children in Alimosho local government area of Lagos State. The information gathered should aid policy makers in setting up strategies that will further decrease the mortality rate due to childhood illnesses in the local government.

Methods

This was a community-based descriptive cross-sectional study conducted on mothers with children under-five years of age who reside in Alimosho LGA, a semirural area of Lagos State. Mothers were excluded if they were visitors in Alimosho, did not have an under-5 child during the study period or declined consent to participate in the study. Caregivers who were not direct mothers of the under-5 children were also excluded. A minimum sample size of 360 participants was calculated using the Cochran formula for cross-sectional studies while assuming a 10% non-response rate. A multistage sampling technique was employed to select the 360 participants for the study. Using the lists of wards in Alimosho Local Government area as a sampling frame, six wards were selected from the sample frame of 36 wards using simple random sampling method. From lists of the streets obtained from the LGA council, 6 streets from each ward were selected by balloting. There was an average of 30 houses per street. Ten of the 30 houses on each street were selected by systematic sampling, every third house was selected. The starting point was identified by balloting. One household was selected by balloting if there were more than one household per house. An eligible mother with a child below five years was selected for questionnaire administration. In a household where there was more than one eligible participant, one was selected by balloting. Where the mother in the selected household was unavailable or declined consent, the next house was selected and the questionnaire administered until the required 360 was achieved.

Data collection: data was obtained using an interviewer administered, standardized and structured questionnaires which was adapted from the IMCI questionnaire [9,14]. The questionnaires had four sections: Socio-demographic characteristic, mother´s knowledge of danger signs, their attitude and health seeking behavior during a child´s illness. Mother´s knowledge of danger signs were sought for in fever, cough, diarrhoea, fast breathing with chest in-drawing, difficulty in breathing, restlessness, drowsiness, weakness, inability to play, convulsions in current illness and loss of consciousness. To assess knowledge, each question on danger signs answered correctly was given a score of one, while questions answered wrongly were awarded a score of zero. The scoring was then converted to percentage. A score of >75% was scored as good or adequate knowledge, while a score of ≤74%, was scored as poor knowledge. A five point Likert scoring system (strongly agreed, agreed, not sure, disagreed, strongly disagreed) was used to categorize the perception and attitude of mothers towards childhood illness and danger signs while the health seeking behavior of mothers for a child with danger signs were sought using questions that included if the child had ever been taken to any health facility.

Date analysis: data collected were coded, entered, cleaned, and analyzed using the statistical package for social science (SPSS) version 20.0. Results were presented in the form of tables and figures. Categorical data were presented using frequency and percentages while measures of central tendencies (mean and standard deviation; median and inter-quartile range) were used for continuous data where appropriate. Tests of association between dependent variables such as knowledge, attitude and health seeking behaviours were analyzed against the independent variables using Pearson chi-squared test or Fisher exact when the

sample was small. A p- value <0.05 was regarded as statistically significant. Unconditional logistic regression analysis was used to examine determinants of knowledge, attitude and behavior while controlling for possible confounders. For this approach, knowledge, attitude and behaviour were treated as dichotomous variables and recoded as 1 or 0 for adequate and poor respectively.

Ethical consideration ethical approval to conduct the study was obtained from the Human Research and Ethics Committee (HREC) of the Lagos University Teaching Hospital, Lagos and permission to conduct the study was also obtained from the chairman of Alimosho local Government Area, before commencement of the study. Informed consent was obtained from all the participants before administering the questionnaire. Anonimization of data collected was used to ensure confidentiality.

Results

The 360 participants completely filled and returned the questionnaires. Table 1 shows the socio-demographic characteristic of the study participants. The mean maternal age was 32.69 ± 6.46 years. Majority of the respondents (81.4%) had between 2 and 4 children, while only 15.8% of mothers had 1 child. On the respondent´s knowledge and ability to recognize danger signs of childhood illnesses, nearly all the respondents were able to adequately recognize the general danger signs of illness in a child such as: fever (98.1% of the respondents), vomiting everything given (95 % of the respondents), child not feeding or breast feeding (94%), child unconscious (95.3 %), child convulsing (91.7% of the respondents). But only a little over two-thirds of the respondents were able to identify chest in-drawing as a critical danger sign in an ill child (78.6% of the respondents). Most of the mothers (77.2%) obtained information on danger signs of childhood illnesses from health workers while in 4.7% of the respondents, the source of information was from family members (Figure 1). Overall, 328 (91.1%) had good knowledge of danger signs of childhood illnesses, while 8.9% of the respondents had poor knowledge of the danger signs of childhood illnesses. When asked the prevalent danger signs the mothers encountered in the preceding two weeks before the study, fever had the highest prevalence (35% of the respondents) while convulsion was the least prevalent danger sign reported (16.7% of the respondents). Fast breathing and diarrhea recorded 29.2% and 20.0% responses respectively.

Table 2 shows mothers´ attitude towards danger signs of childhood illnesses. Most mothers agreed that they should worry when their child´s body is hot and that a child who is breathing fast is ill. They also agreed that a child who was passing watery stool should be placed on oral rehydration solution. Table 3 shows that there was a significant association between respondents´ level of knowledge and their educational status, as well as their parity ($p < 0.05$). Mothers´ with higher educational level had better knowledge and with increased parity comes experience and better knowledge. There was also a statistically significant association between respondents´ level of knowledge and their attitude level. Out of the 328 respondents classified as having good knowledge, 190 (58%) of them demonstrated positive attitude compared to the 32 with poor knowledge with 5 (15.6%) demonstrating positive attitude ($p <0.001$). Respondents with better knowledge of danger signs had more positive attitude towards childhood illnesses. Respondents who had good knowledge of danger signs also had better health seeking behavior and this was statistically significant, $p = 0.001$. Table 4 shows the relationship between maternal characteristics and appropriate IMCI practices. The maternal age was a significant determinant of appropriate practices. The older mothers were on the average more likely to engage in appropriate IMCI practices than the younger counterparts with a 5% increase in odds of better practice. When controlled for mothers' age, parity was no longer significant at 0.05.

Discussion

The likelihood for appropriate response to childhood illnesses increases with increased knowledge. This study assessed mothers´ knowledge of danger signs of common childhood illnesses in the context of IMCI and explored their attitudes and responses to these danger signs. A mother´s actions and inactions have been thought to influence children´s progression to illness or health and the ability of the mother to recognize a sick child has been associated with good response in terms of appropriate action [15]. This study, showed that knowledge of symptoms of childhood diseases was high in the respondents which is similar to the reports of other researchers [15-18]. In two studies conducted in Enugu, South East Nigeria, both reported high knowledge of danger signs in childhood illnesses among the respondents [16,17]. The studies from Tanzania [18] and Dar Salaam [19] also reported high awareness of danger signs recognition in respondents. In the present study, fever was the most critical and most prevalent danger sign reported in childhood illnesses while convulsion is the least prevalent. Fever was also documented in several studies as a major symptom in childhood illnesses [20-22]. The experience of the mother also improves danger signs recognition. Our study showed significant increase in the knowledge of the mothers about danger signs with increasing number of children they have. Increased parity comes with experience and better knowledge. This may be the reason Roberts *et al.* reported that the ability to recognize danger signs was increased with maternal age and skill level [9]. Mothers´ with higher educational level also had better knowledge of danger signs. This may have come from exposure to different sources of information. Majority of the mothers reported their sources of information on danger signs to be from health care providers. Social media such as television and newspapers also contributed as sources of information for the respondents. Health information to the community on common childhood illnesses is the mandate of IMCI. The information provided by health care workers should be correct and devoid of ambiguities as the community depends on them for guidance.

The overall attitude of mothers towards the danger signs of childhood illnesses was positive and encouraging. The respondents´ knowledge and attitude to danger signs like fever, difficulty in breathing and fast breathing were high and they sought appropriate care for most of the childhood illnesses which is similar to the findings of Farhad *et al*. [23] and in keeping with the health belief model which states that if symptoms are perceived as a threat (danger signs), individuals take action [24]. The likelihood for appropriate response to childhood illnesses increased with increased knowledge. The practices reported by mothers to the danger signs were varied with respondents who had good knowledge of danger signs showing better practices with higher health seeking behaviors. The majority of the respondents in our study would take their children to health facilities if they have danger signs. This is similar to the study in Enugu [18], in which majority of the respondents also took their children to the hospitals when they had cough, rapid breathing or difficulty in breathing [16]. Our study however, showed poor health seeking behaviors in mothers with poor knowledge of danger signs. This is not unexpected as inability to recognize a danger may delay taking actions to mitigate it. Several studies had shown that perceived illness severity and maternal knowledge of certain signs and symptoms of childhood illnesses were important factors determining health-seeking behavior [12,23,25]. There is need to continue health education for mothers at every opportunity. IMCI should not relent as there is still a lot of work to be done. Health workers should be trained on how to pass effective information on practices concerning danger signs. This is the time to build on the progress being made on the sustainable development goals (SDGs). To meet up with the SDGs, more awareness should be created towards the danger signs of common childhood illnesses and the actions to mitigate it. The health of our

children are priority and mothers had to be empowered to recognize dangers signs during illnesses and to take appropriate actions to ameliorate them.

Conclusion

The knowledge of danger signs of common childhood illnesses by mothers in this study was high. A good number of them had positive attitude towards the identified danger signs with appropriate practices directed towards management of the childhood illnesses. However, a lot still need to be done to achieve the IMCI target and SDG goal three. Health care providers should consistently provide health education to mothers on danger signs of common childhood illnesses and employ the IMCI strategy in their management.

What is known about this topic

- *IMCI is a WHO integrated strategy for community and health worker management of childhood illnesses;*
- *Mothers´ knowledge of signs and symptoms of childhood illnesses and perceived illness severity, were important factors determining health-seeking behaviors;*
- *Delay in seeking appropriate care or not seeking any care at all, contribute to deaths in children.*

What this study adds

- *Mothers' with higher educational level had better knowledge and with increased parity comes experience and better knowledge;*
- *Maternal age and parity are important factors in knowledge of danger signs;*
- *The experience of the mother improves danger signs recognition.*

Competing interests

The authors declare no competing interests.

Authors' contributions

ED developed the concept and design of the study, participated in the acquisition of data, drafted the manuscript and approved the final version to be published; BE contributed to the study design, interpretation of data, revised the manuscript for intellectual content and approved the final version to be published; AR contributed to the study design and revised the manuscript for intellectual content and approved the final version to be published; EE contributed to the study design, interpretation of data, revised the manuscript and approved the final version to be published.

Tables and figure

Table 1: socio demographic characteristics of the study participants
Table 2: respondents' attitude and perceptions towards certain childhood illnesses and danger signs
Table 3: association between respondents' social demographic characteristics, health seeking behavior and level of knowledge of danger signs among the respondents
Table 4: unconditional logistic regression analysis of the relationship between maternal characteristics and appropriate IMCI practices
Figure 1: respondents' sources of information on danger signs

References

1. Benguigui Y. Integrated management of childhood illness (IMCI): an innovative vision for child health care. Rev Bras Saude Mater Infant. 2001;1(3): 223-236. **Google Scholar**
2. National Bureau of Statistics (NBS), Lagos State Bureau of Statistics, United Nations Children´s Fund (UNICEF). Multiple Indicator Cluster Survey 2016-17, Final Report. Lagos, Nigeria: National Bureau of Statistics and United Nations Children´s Fund. 2018. Accessed May 13 2020.

3. Cesar G Victora, Taghreed Adam, Jennifer Bryce, David B Evans Dean T Jamison, Joel G Breman, Anthony R Measha *et al*. Integrated Management of the Sick Child. In: Disease Control Priorities in Developing Countries, 2nd edition. Washington (DC): The International Bank for Reconstruction and Development/The World Bank. 2006 Chapter 63. **PubMed**| **Google Scholar**
4. World Health Organization. The multi-country evaluation of IMCI effectiveness, cost and impact (MCE): progress report, May 2000-April 2001. 2001. World Health Organization. Accessed May 13 2020.
5. Durrani HM, Kumar R, Durrani SM. Recognizing the danger signs and health seeking behavior of mothers in childhood illness in Karachi, Pakistan. Universal J Public Health. 2015;3(2): 49-54. **Google Scholar**
6. Achamyelesh G, Alemayehu W, Yemane B. Less than one-third of caretakers sought formal Health Care Facilities for common childhood illnesses in Ethiopia: Evidence from the 2011 Ethiopian Demographic Health Survey. Int J Family Med. 2015;2015: 516532. **PubMed**| **Google Scholar**
7. Bekele D, Berhanu E, Habtamu Z, Zergu T, Getu G, Tilahun T *et al*. Assessment of health care seeking behavior of caregivers for common childhood illnesses in Shashogo Woreda, Southern Ethiopia. Ethiop J Health Dev. 2014;1(28): 36-43. **Google Scholar**
8. Hill Z, Kirkwood BR, Edmond K, World Health Organization. Family and community practices that promote child survival, growth and development: a review of the evidence. Geneva: World Health Organization. 2004.
9. Roberts AA, Akanni BO, Odugbemi TO, Oshinaike BO. Recognition of childhood illness danger signs, prehospital actions and satisfaction to care at a tertiary health facility, Lagos, Nigeria. Niger Hosp Pract. 2013;12(3-6): 30-5. **Google Scholar**
10. World Health Organization. Field epidemiology training. World Health Organization. Accessed May 13 2020.
11. Geldsetzer P, Williams TC, Kirolos A, Mitchell S, Ratcliffe LA, Kohli-Lynch MK *et al*. The recognition of and care seeking behaviour for childhood illness in developing Countries: a systematic review. PLOS One. 2014; 9(4): e93427. **PubMed**| **Google Scholar**
12. Yoder PS, Hornik RS. Symptoms and perceived severity of illness as predictive of treatment for diarrhea in six Asian and African sites. Soc Sci Med. 1996 Aug; 43(4): 429-439. **PubMed**| **Google Scholar**
13. Chandrashekhar TS, Ravi PS, Binu VS, Sonu HS, Hari SJ, Uma R *et al*. Care seeking behaviour for childhood illness- a questionnaire survey in western Nepal. BMC Int Health and Hum Right. 2006;6: 7. **PubMed**| **Google Scholar**
14. UNICEF, WHO. Child health IMCI. Household baseline Survey. Prepared by EPP/evaluation and health section of UNICEF in collaboration with IMCI Inter-Agency Working Groups; 1999. Accessed Mar 19 2016.
15. Nsabagasani X, Jesca-Nsungwa S , K?llander K, Peterson S, Pariyo G, Tomson G. Home-based management of fever in rural Uganda: community perceptions and provider opinions. Malar J. 2007;6: 11. **PubMed**| **Google Scholar**
16. Ndu IK, Ekwochi U, Osuorah CDI, Onah KS, Obuoha E, Odetunde OI *et al*. Danger signs of childhood pneumonia: caregiver awareness and care seeking behavior in a developing Country. Int J Pediatr. 2015;2015: 167261. **PubMed**| **Google Scholar**
17. Ekwochi U, Ndu IK, Osuorah CDI, Amadi OF, Okeke IB, Obuoha E *et al*. Knowledge of danger signs in newborns and health seeking practices of mothers and care givers in Enugu state, South-East Nigeria. Ital J Pediatr. 2015; 41: 18. **PubMed**| **Google Scholar**
18. Athumani J. Knowledge, attitudes and practices of mothers on symptoms and signs of integrated management of Childhood Illnesses (IMCI) strategy at Buguruni Reproductive and Child Health clinics in Dar es Salaam. Dar Es Salaam Med Stud J. 2010; 15(1): 4-8. **Google Scholar**

19. Desavigny D, Mayombana C, Mwageni E, Masanja H, Minhaj A, Mkilindi Y *et al*. Care-seeking patterns for fatal malaria in Tanzania. Malar J. 2004; 3: 27. **PubMed**| **Google Scholar**
20. Abu IN, Madu IA, Ajaero CK. The prevalence and determinants of under-five Mortality in Benue State, Nigeria. SAGE Open. 2015;2015: 1-11. **Google Scholar**
21. Abu-Baker NN, Gharaibeh HF, Al-Zoubi HM, Savage C, Gharaibeh MK. Mothers´ knowledge and practices of managing minor illnesses of children under five years. J Res Nurs. 2013 Nov 1;18(7): 651-66. **Google Scholar**
22. Diaz T, George A S, Rao SR, Bangura PS, Baimba JB, McMahon SA *et al*. Healthcare seeking for diarrhoea, malaria and pneumonia among children in four poor rural districts in Sierra Leone in the context of free health care: results of a cross-sectional survey. BMC Public Health. 2013;13: 157. **PubMed**| **Google Scholar**
23. Farhad J, Malihe A, Fatemeh A, Mahmood S. The Knowledge, attitude and practice of mothers regarding acute respiratory tract infection in children. Biosci Biotechnol Res Asia. 2014;11(1): 343-8. **Google Scholar**
24. Rosenstock IM. Why People Use Health Services. Milbank Q. 2005;83(4): 1-32. **PubMed**| **Google Scholar**
25. Goldman N, Heuveline P. Health-seeking behaviour for child illness in Guatemala. Trop Med Int Health. 2000; 5(2): 145-55. **PubMed**| **Google Scholar**

Table 1: socio demographic characteristics of the study participants	
Variables	**Frequency (%) n=360**
Age group (years)	
20-29	128 (35.6)
30-39	175 (48.6)
40-49	57 (15.8)
Marital status	
Married	334 (92.8)
Single	3 (0.8)
Widowed	4 (1.1)
Separated	18 (5.0)
Divorced	1 (0.3)
Ethnic group	
Hausa	22 (6.1)
Yoruba	230 (63.9)
Igbo	90 (25.0)
Others	18 (5.0)
Level of education	
None	14 (3.9)
Primary education	35 (9.7)
Secondary education	174 (48.3)
Tertiary education	132 (36.7)
Others	5 (1.4)
Parity	
1	57(15.8)
2-4	293(81.4)
>4	10(2.8)
Occupation of mothers	
High grade professional	46 (12.8)
Intermediate/lower grade professional	107 (29.7)
Self-employed and skilled worker	95 (26.4)
Smaller self-employed/ semi-skilled	112 (31.1)
Unskilled manual worker	0 (0.0)

Table 2: respondents' attitude and perceptions towards certain childhood illnesses and danger signs					
Descriptive statements (n=360)	SD n (%)	D n (%)	NS n (%)	A n (%)	SA n (%)
A mother should be concerned when child's body is hot	4(1.1)	2(0.6)	4(1.1)	196(54.4)	154(42.8)
A child who is breathing fast is very sick	1(0.3)	7(1.9)	21(5.8)	210(58.3)	121(33.6)
A child who cannot eat or drink is very ill	3(0.8)	13(3.6)	17(4.7)	206(57.2)	121(33.6)
I worry about a child sleeping too much	9(2.5)	23(6.4)	38(10.6)	212(58.9)	78(21.7)
A child who is vomiting throughout the day should be taken to hospital	22(6.1)	41(11.4)	70(19.4)	159(44.2)	68(18.9)
Immunization should be given for all children	5(1.4)	8(2.2)	6(1.7)	246(68.4)	95(26.4)
A child who cannot feed should still be offered food	3(0.8)	6(1.7)	5(1.4)	211(58.6)	135(37.5)
A child who is not drinking should not be offered drinks	10(2.8)	38(10.6)	51(14.2)	200(55.6)	61(16.9)
Teething always causes sickness in child and should be giving teething powder	45(12.5	71(19.7)	29(8.1)	164(45.6)	51(14.20)
A child playing excessively is not ill	12(3.3)	24(6.7)	28(7.8)	230(63.9)	66(18.3)
A child who has diarrhoea and sunken eye should be placed on ORS	3(0.8)	1(0.3)	22(6.1)	193(53.6)	141(39.2)
A child convulsing should be restrained	14(3.9)	26(7.2)	38(10.6)	194(53.9)	88(24.4)

Table 3: association between respondents' social demographic characteristics, health seeking behavior and level of knowledge of danger signs among the respondents				
Variables	Level of knowledge of danger signs		Total	p
	Poor n=32	Good n=328		
Age group (years)				
20-29	13(10.2)	115(89.8)	128(100.0)	0.80
30-39	14(8.0)	161(92.0)	175(100.0)	
40-49	5(8.8)	52(91.2)	57(100.0)	
Marital status				
Married	30(9.0)	304(91.0)	334(100.0)	0.86
Single	0(0.0)	3(100.0)	23(100.0)	
Others	2(8.7)	21(91.3)	1(4.3	
Level of education				
None	1(7.1)	13(92.9)	14(100.0)	0.001*
Primary education	3(8.6)	32(91.4)	35(100.0)	
Secondary education	10(5.7)	164(94.3)	174(100.0)	
Tertiary education	15(11.4)	117(88.6)	132(100.0)	
Others	3(60.0)	2(40.0)	5(100.0)	
Number of children				
1	5(8.8)	52(91.2)	57(100.0)	0.01
2-4	23(7.8)	270(92.2)	293(100.0)	
>4	0(0.0)	10(100.0)	10(100.0)	
	Health seeking behavior			
	Poor n=16	Good n=344		
Knowledge of danger signs				0.001
Poor	5(15.6)	27(84.4)	32(100.0)	
Good	11(3.4)	317(96.6)	328(100.0)	
*=Fisher's exact test applied				

Table 4: unconditional logistic regression analysis of the relationship between maternal characteristics and appropriate IMCI practices							
Term	**Odds Ratio**	**95%**	**C.I.**	**Coefficient**	**S. E.**	**Z-Statistic**	**P-Value**
Monthly income (Yes/No)	1.2699	0.9116	1.7690	0.2389	0.1691	1.4129	0.1577
Parity	0.7878	0.6138	1.0111	-0.2385	0.1273	-1.8731	0.0611
Maternal age	1.0500	1.0048	1.0972	0.0487	0.0224	2.1721	0.0298

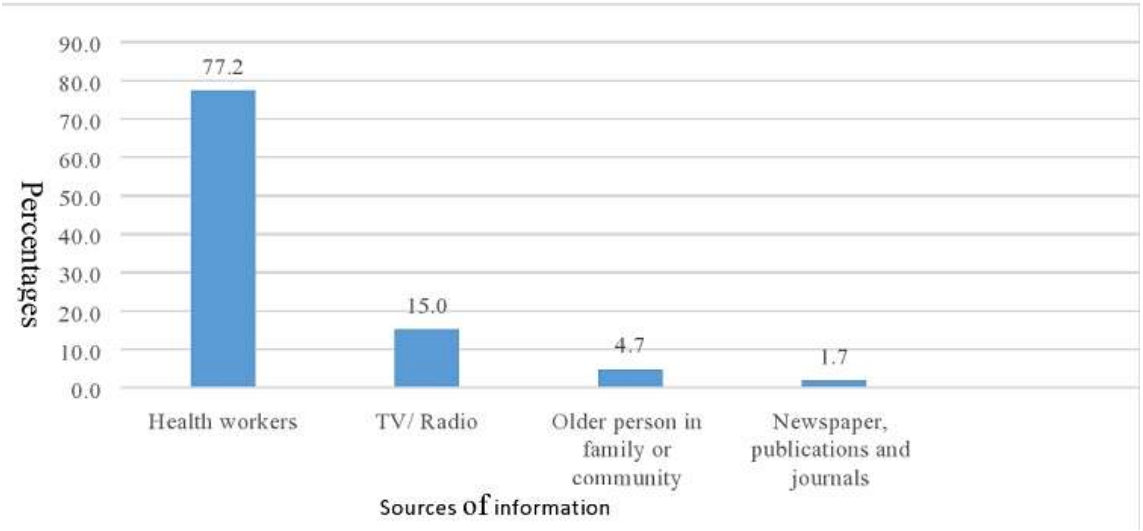

Figure 1: respondents´ sources of information on danger signs