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Research Article

A Study on Factors Associated with Maternal Knowledge and Health Seeking Behaviour on Neonatal Danger Signs among Mothers Attending Child Welfare Clinics in Piliyandala Medical Officer of Health (MOH) Area

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Abstract

Introduction: Early identification of danger signs of neonatal illness is essential to improve outcomes. Health seeking behaviors of mothers for neonatal illness is highly influence by their knowledge. A descriptive epidemiology of maternal knowledge on neonatal danger signs is required to identify gaps and barriers for late health seeking behavior and reduce the burden of neonatal morbidity and mortality.

Methodology: A community based, descriptive cross-sectional study was conducted to assess maternal knowledge on neonatal danger signs among mothers attending CWC in Piliyandala MOH area. Data collected from August to November 2017. Participants were selected using convenient sampling method. Data collection was done using pretested structured questionnaire consisted of multiple choice questions and yes/no questions. Mothers who answered the knowledge questions categorized as Highly, Moderately and Poorly knowledgeable. Pearson chi-square test used to assess the relationship. Confidence intervals and p value for statistical significance were determined 95% and the p = 0.05 level.

Results: 294 mothers were enrolled in the study. Knowledge related identification of danger signs was more than 90%. But nearly 30% of mothers did not identify the going off feeds and cold to touch as danger signs. Overall, most of the respondents 77.6% (228) had moderate knowledge of neonatal danger signs while 15% were highly knowledgeable and 7.5% were poorly knowledgeable. The level of knowledge associate with age of mother, type of family and educational level of the mother.

Discussion: Although the overall level of knowledge of neonatal danger signs was more than 90% among the mothers in our study sample, their knowledge on some common, yet early danger signs were not satisfactory. Going off feeds in a neonate is an ominous sign. It could be due to a variety of reasons, one of them being neonatal sepsis. Therefore, making mothers aware of this early sign which is easily detectable is worthwhile. Most mothers knew that a rise in body temperature of a neonate was a danger sign, but only 70.7% of mothers appreciated that lowering of body temperature detected by the baby being cold to touch as a danger sign. Hypothermia makes a baby more vulnerable to multiple adverse neonatal outcomes and making mothers aware of this will help them to seek medical attention early.

Conclusion: Findings indicate the need to enhance education of mothers' knowledge related to the going off feeds and cold to touch. Further health education is required to enhance the knowledge on neonatal danger signs those who have poor and moderate knowledge.

Keywords: *Maternal Knowledge; Neonate; Danger Signs; Health Seeking Behavior*

Abbreviations

ANC: Antenatal Clinics; CBR: Crude Birth Rate; CHDR: Child Health Development Record; CWC: Child Welfare Clinic; IMR: Infant Mortality Rate; MCH: Maternal and Child Health; MOH: Medical Officer of Health Area; NMR: Neonatal Mortality Rate; NNJ: Neonatal Jaundice; PHM: Public Health Midwife Areas; PNC: Postnatal Clinic; SPPSS: Statistical Package for Social Scientists; U5MR: Under Five Child Mortality Rate; UN: United Nation; WHO: World Health Organization

Introduction

Danger signs in the neonatal period (0 - 28 days) are nonspecific and can be a manifestation of any newborn disease. Neonates are more prone to show indirect sign of illnesses. Lethargy or difficulty in feeding are sometimes the only signs exhibit and illness may advance quickly. Over 130 million babies are born every year worldwide and more than 8 million of them die before their first birthday and 10 million die before their fifth birthday, almost 98% of deaths take place in developing countries [1].

Neonatal Mortality Rate (NMR) is defined as number of neonatal deaths per 1000 live births. Babies die after birth because they are severely malformed, are born very prematurely, suffer from obstetric complications before or during birth, have difficulty adapting to extra uterine life, or because of harmful practices after birth that lead to infections [1].

According to the Annual Health Bulletin, Sri Lanka [2], the neonatal mortality rate is 5.8% per 1000 live births for the year 2013 and it is revealed that 20% of the neonatal deaths are due to asphyxia and sepsis. Awasthi., *et al*. [3] have shown that lack of knowledge regarding the clinical manifestations of various preventable neonatal morbidities is caused difficulty in making complete diagnosis and delay in seeking care results high mortality and morbidity.

The large numbers of children who die in developing countries without ever reaching a health facility and amongst those who are taken to the health facility but then die, many deaths are attributed to delays in seeking care. Appropriate care-seeking is of particular importance in areas where access to health services is limited, because it is in these areas that caregivers would benefit most from being able to discern which episodes require care at a health facility and which can be successfully treated at home. Therefore, this study was aimed at assessing the maternal knowledge of neonatal danger signs and health seeking behavior in Piliyandala Medical Officer of Health (MOH) area.

According to Nigatu., *et al*. [4] socio demographic, economic and maternal obstetric factors, parental educational status, attending Antenatal Clinics (ANC) and Postnatal Clinics (PNC) and mothers' access for television services were the factors that significantly affect maternal knowledge related to neonatal danger signs. Furthermore it was revealed that the mothers secondary education and above college level was three times, to be knowledgeable about neonatal danger signs as compared to mothers at primary education level respectively.

Rajindrith., *et al*. [5] have shown that there were 3600 neonatal deaths reported in Sri Lanka and 1,946 neonatal deaths have investigated and 90.5% of them have occurred during the first week of life. The leading causes were preterm deliveries (33.2%), infections (19.8%) and cardiac anomalies (17.4%).

IMR (Infant Mortality Rate) of Sri Lanka 8.8% per 1000 live births. Most of them succumbed to the congenital abnormalities and prematurity. Asphyxia happened to be the next common cause of infant death. Number of cases related to sepsis, other disease and asphyxia are presented with the danger signs. Identification of danger signs was more important than treating for the above disease.

Research will be aided to appraise mothers' knowledge related to neonatal danger sings. Association factors mainly focus on the demographical and educational level of the mothers who are attending o the Child Welfare Clinics (CWC). Result may use as evaluation tool of mothers in Piliyandala MOH area mean time result determine whether MOH need to conduct any special programs to improve mothers' knowledge regarding neonatal danger signs such as stopped feeding well, convulsions, no spontaneous movement, fever, low body temperature, any jaundice or skin discoloration. Early detection of danger signs of neonates can seek early medical care and reduce the compromised morbidity and mortality. Being educating mothers related to danger signs of neonates can reduce the health cost. They will attend to primary care when the significant sings appeared. Other correlation factors that can lead to link with mothers' knowledge can address by studying the topic.

Results of the study may not be benefited mothers who participated to the study until they have the next baby. The result will be used as a tool in antenatal clinics that improve knowledge regarding the neonatal danger signs in the community.

This study, therefore, sought to identify the gaps in the knowledge and associate factors among mothers who experienced about newborn care and to providing inputs into developing achievable and sustainable community-based interventions to improve neonatal survival.

Furthermore, research focused on mother's health seeking behavior at serious illness such as danger sings and minor illness such as common flue. Initiation of appropriate treatment or referral place better resource necessary for better outcome from the disease.

Materials and Methods

Study design

A community based descriptive cross-sectional study was conducted to assess the factors associated with maternal knowledge on neonatal danger signs among mothers attending CWC in Piliyandala MOH area, Sri Lanka.

Study area and population

The study was conducted in Piliyandala MOH area. Piliyandala is a town which belongs to the Colombo district in the Western Province of Sri Lanka. The distance from Piliyandala to Sri Lanka's capital Colombo is approximately 17 km.

Sample size

Sample size was calculated based on the following formula.

$$\sqrt{\frac{z^2 p(1-p)}{d^2}}$$

n = required minimal Sample size

z = 1.96; Critical Value of specified confidence, at 95% confidence interval.

P = Probable estimate of proportion of given characteristic. (Maternal knowledge on danger signs)

Since no previous prevalence study on knowledge towards neonate danger signs among mothers had been carried out in Sri Lanka the anticipated population proportion was taken as 50%

D =degree of accuracy desired set as 0.06

$$\sqrt{\frac{(1.96)^2 \times 0.5 \times (1-0.5)}{0.062}}$$

n = 267

Anticipated nonresponse rate = 10%

n = 294

Sampling technique

14 of CWC in Piliyandala MOH area were selected the 294 sample of mothers with children were selected by using non probable convenient sampling technique until required sample size obtained during the actual data collection period. Convenient sampling technique was used to collect data.

Data collection

Data collection was done from August to November 2017. The ethical clearance was obtained by the Ethical Review Committee of Faculty of Medicine, General Sir John Kotelawala Defense University. In addition, permission was obtained to conduct this community-based research by the Regional Director of Health Services (RDHS), Colombo and MOH, Piliyandala. Data collection was carried out without hindrance to the usual activities of child welfare clinics.

Decision to participate in this study was entirely voluntary. Before enrolling the mothers for the study, we gave a clear idea to them regarding the purpose of this study and also gave an opportunity to ask questions and clarify their problems. Informed written consent was obtained from all the participants.

Data analysis

Data entering, coding and clearing was performed using SPSS. Descriptive statics, Pearson chi square test and cross tabulation were used for the analysis. P- Value of <0.05 and 95% confidence level was used as a difference of statistical significance. Finally, results were compiled and presented using tables, graphs and texts.

Results and Discussion

Socio demographic characteristics of the study sample

This study was carried out to determine the knowledge of neonatal danger signs among mothers attending child welfare clinics in Piliyandala MOH area. A total of 294 mothers participated in this study. Most of the participants (42.9%) belonged to the age category of 25 - 29 years 33.3%, 12.2% and 9.5% of mothers respectively belongs to age group 30 - 34 years, 20 - 24 years and more than 35 years old. Out of total 99.3% of mothers were married. Regarding the socio demographic characteristics of the participants, 92.2% were Buddhists and 96.3% were Sinhalese.

Most of the participants (54.4 %) were educated up to Advanced Level while 35.4%, 7.8% and 2.4% educate up to Ordinary Level, University and above and up to grade 8. More than half of the participants (69.4%) were housewives and rest of them were occupied in private (14.6%) and government (12.6%) sector. The majority of participants had a monthly income between Rs. 20,000/= to Rs. 40,000/=. Most of families (59.2%) were from nuclear families while 40.5% had extended family support. The percentage of mothers who had one child was 43.5% and 42.5% had two children (Table 1).

Characteristics of Mothers		Frequency (%)
Age of the mother	< 19 years old	6 (2.0)
	20 - 24 years old	36 (12.2)
	25 - 29 years old	126 (42.9)
	30 - 34 years old	98 (33.3)
	> 35 years old	28 (9.5)
		294 (100)
Marital status	Married	292 (99.3)
	Single	2 (0.7)
		294 (100)
Ethnicity	Sinhala	283 (96.3)
	Tamil	8 (2.7)
	Muslim	3 (1.0)
		294 (100)

Religion	Buddhism	271 (92.2)
	Hindu	3 (1.0)
	Islam	3 (1.0)
	Catholic	17 (5.8)
		294 (100)
Education	Up to grade 8	7 (2.4)
	Ordinary level (OL)	104 (35.4)
	Advanced level (AL)	160 (54.4)
	University and above	23 (7.8)
		294 (100)
Employment status	Government	37 (12.6)
	Private	43 (14.6)
	Housewife	204 (69.4)
	Self Employed	2 (0.7)
	Other	8 (2.7)
		294 (100)
Monthly income	Less than 20000	22 (7.5)
	20000 - 40000	140 (47.6)
	40000 - 60000	85 (28.9)
	More than 60000	47 (16.0)
		294 (100)
Type of family	Nuclear	174 (59.2)
	Extended	119 (40.8)
		294 (100)
Parity	1 child	128 (43.5)
	2 children	125 (42.5)
	3 children	36 (12.2)
	4 children	4 (1.4)
	5 children	1 (0.3)
		294 (100)
		294 (100)

Table 1: *Demographic Characteristics.*

The common danger signs associated with neonates within one week of life reported by mothers

One of the specific objectives of this research was to determine the common danger signs associated with neonates in Piliyandala Medical Officer of Health area. Out of 294 participants, 145 (49.3%) mentioned that their child did not present with any danger signs during first week of life. 149 (50.7%) participants mentioned that their child presented with at least one danger sign. Out of 149 participants, the most common danger signs were redness around the umbilicus 34 (22.8%) and jaundice 34 (22.8%). The least common danger sign was green color vomiting which is suggestive of intestinal obstructions which needs immediate surgical referral (Figure 1).

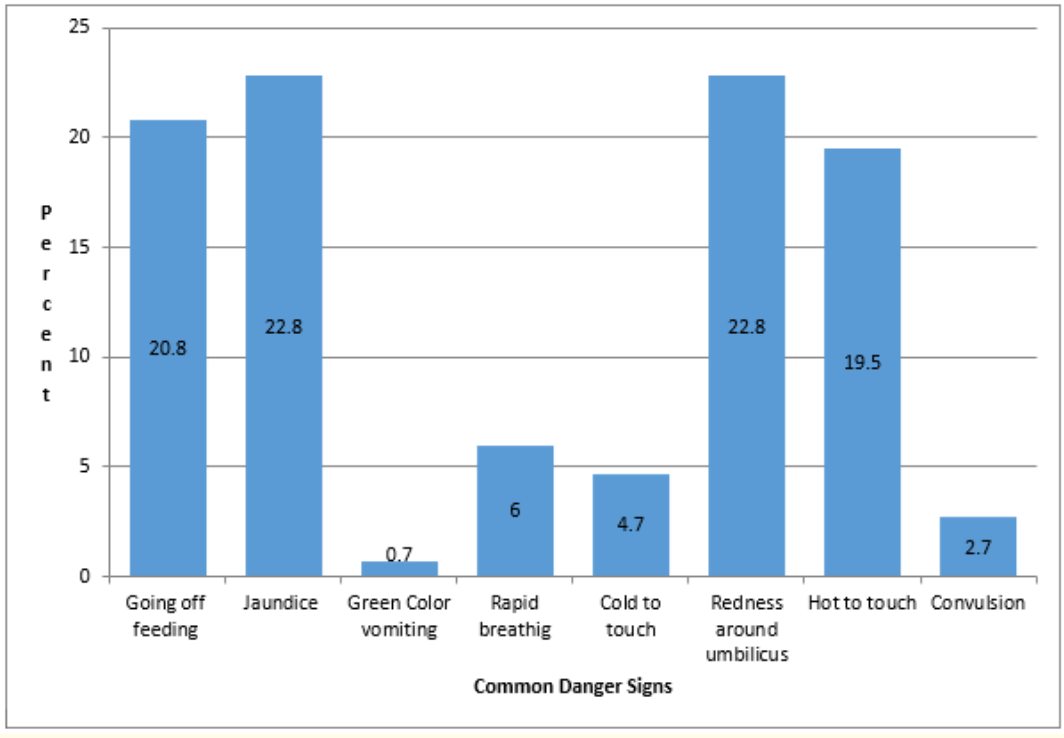

Figure 1: *Common danger signs among neonates within one week of life reported by mothers.*

Identification of neonatal danger signs

When question was asked about the several danger signs convulsions or repetitive jerking movements of limbs, face was the mostly recognized danger sign by 285 (96.9%) mothers. Out of 294 mothers 282 (95.9%), 271 (92.2%), 270 (91.8%) and 269 (91.5%) identified green color vomiting, increasing jaundice, redness around umbilical area and rapid breathing as neonatal danger signs respectively. Only 246 (83.7%) and 208 (70.7%) of mothers identified feel warm all over the body and feel cold to touch all over the body as neonatal danger signs respectively (Table 2).

Danger signs	Frequency	(%)
Convulsion	285	96.9
Green color vomiting	282	95.9
Increasing jaundice	271	92.2
Redness around umbilical area	270	91.8
Rapid breathing	269	91.5
Feel warm all over the body	246	83.7
Feel cold to touch all over the body	208	70.7
Stopped feeding well	204	69.4

Table 2: *Recognition of neonatal danger signs.*

Knowledge level of mothers on neonatal danger signs

The main objective of this study was to assess the mothers' knowledge on neonatal danger signs. According to the scoring of neonatal danger signs evaluated there were three knowledge categories as highly knowledgeable, moderately knowledgeable and poor knowledgeable. 77.6 % of mothers who participated in this study had a moderate knowledge on neonatal danger signs (Figure 2).

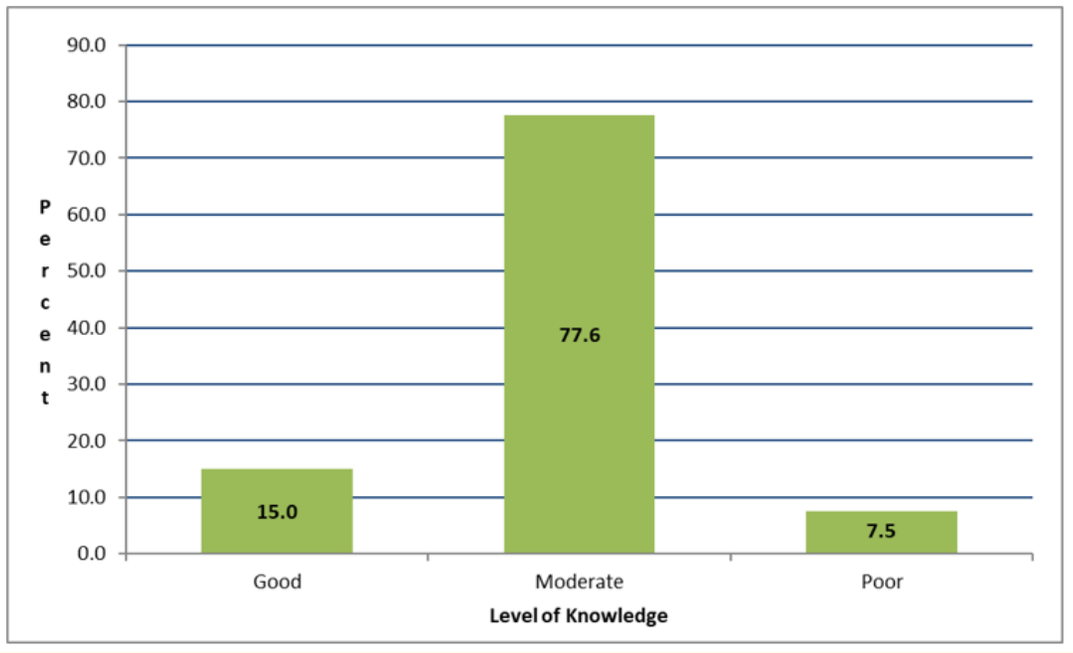

Figure 2: *Knowledge on neonatal danger signs.*

Healthcare seeking behavior for neonatal danger signs

The final objective of this study was to assess mothers' health seeking behavior for neonatal danger signs. They were asked about their health seeking behavior regarding a 3 days old baby rejecting breast milk for 24 hours. Question was asked to assess the health seeking behavior for urgent and critically sick neonate. The responses were shown in table 3.

Actions	Frequency	%
Waiting for the next child welfare clinic	6	2.0
Give breast milk from another mother	6	2.0
Seek immediate medical treatment	277	94.2
Give formula milk	5	1.7
Total	294	100

Table 3: *What is your action when your 3 days old baby rejects breast milk for the last 24 hours?*

The results showed that most of the mothers who came to the study would seek immediate medical treatment in the above situation. However, 17 mothers had different opinions on this regard.

Further, they were asked from where they are going to seek medical treatment for their one-week old baby when he or she is suffering from rapid breathing and breathing difficulties. Question was aimed to assess mothers' health seeking behavior on selecting health care institution when the neonate has a danger sign. Most would seek treatment from the nearest government hospital (Table 4).

Healthcare institution	Frequency	%
Child welfare clinic	13	4.4
Nearest government hospital	181	61.6
Lady Ridgway hospital for children	27	12.6
Private medical clinic	61	20.7
Ayurveda practitioner	2	0.7
Total	294	100

Table 4: *What type of healthcare institutions do you select when one-month old baby present with rapid breathing and breathing difficulties?*

More-over they have been asked to mention the person from whom they would first seeking advice when their baby is suffering from cold and cough. Question was mainly asked to assess mothers' health seeking behavior on neonate with mild signs and symptoms. Most of them prefer to seek medical advice from a general physician (Table 5).

Health care personals	Frequency	%
Mild wife	69	23.5
Pediatrician	100	34.0
General physician	119	40.0
Relatives	6	2.0
Total	294	100

Table 5: *What type of health care personals do you consult when the one-month old baby suffering from cold and fever?*

Reasons for possible delayed health care seeking

Reasons for possible delay in seeking health care were assessed during the study. Causes that have assessed were time wasted in taking for treatment, lack of family support, severity of the illness of the baby, long distance of health facility, availability of local advice for treatment, having other children at home and financial treatment. Mothers respond as follows (Figure 3).

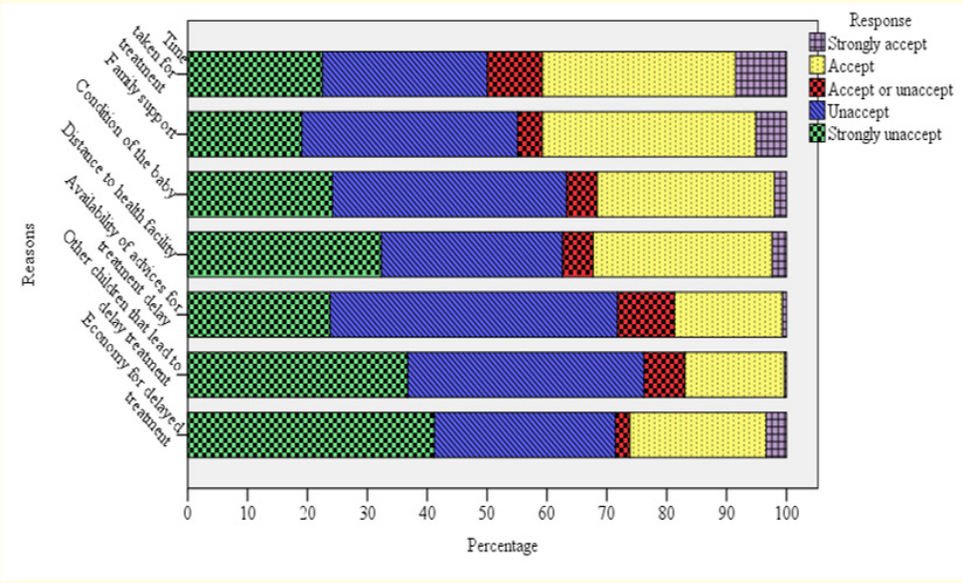

Figure 3: *Reasons for delayed health care seeking for sick neonates of mothers in Piliyandala MOH area.*

Most of mothers said that having other children at home and financial status will not affect to delay treatment. Nearly 40% of mothers think family support and time wasted in taking treatment may affect to delay treatment.

Level of knowledge and association with demographic factors

Pearson chi-square test was conducted to check significant association in age the mother, ethnicity, educational level, religion, occupation, monthly income and family type. There was statistically significant relationship between age of the mother (p = 0.001), educational level (p = 0.000) and type of the family (p = 0.025) (Table 6).

Socio demographic factor High		Level of knowledge			P value	Pearson chi square
		Moderate	Poor			
Age	<19	0	4	2	0.001	25.486
	20-24	1	28	7		
	25-29	21	97	8		
	30-35	21	73	4		
	>32	5	26	1		
Marital status	Married	44	226	22	0.747	0.583
	Unmarried	0	2	0		
Ethnicity	Sinhala	42	221	21	0.330	4.609
	Tamil	2	5	0		
	Muslim	0	2	1		
Religion	Buddhism	40	211	20	0.537	5.055
	Hindu	0	3	0		
	Islam	0	2	1		
	Catholic	4	12	1		
Educational level	Up to grade 8	1	4	2	0.000	27.017
	Ordinary level (OL)	9	81	14		
	Advanced level (AL)	25	129	6		
	University and above	9	44	0		
Employment status	Government	7	27	3	0.497	7.370
	Private	9	32	2		
	HouseWife	28	161	15		
	Self Employed	0	2	0		
	Other	0	6	2		
Monthly income	Less than 20000	0	19	3	0.053	12.436
	20000-40000	19	107	14		
	40000-60000	13	68	4		
	More than 60000	12	34	1		
Type of family	Nuclear	34	132	8	0.004	10.859
	Extended	10	96	14		
Husband influence	Less than 1 hour	0	1	0	0.854	2.625
	Between 1-2 hours	0	2	0		
	Between 2-4 hours	6	33	2		
	More than 4 hours	38	192	21		
Did attend all ANC	Yes	43	217	22	0.444	1.625
	No	1	11	0		

Table 6: *Level of knowledge and association with demographic factors.*

Discussion

The results found that majority (54.4%) of the study participants were in the age group 25 - 29 who were attending to the child welfare clinics in Piliyandala MOH area. The reason for such result because it appears to be the active reproductive and child bearing age among women [6].

The study showed that about 50.7% participants mentioned that their child presented with at least one danger sign. The most commonly reported danger signs were redness around umbilicus 34 (22.8%), jaundice 34 (22.8%), going off feeding 31 (20.8%) and hot to touch 29 (19.5%). Out of 294 participants, 145 (49.3%) were mentioned that their child did not present with any danger signs during the first week of life. Research conducted in Ethiopia showed Four hundred four (76.7%) of mothers noticed one or more of their newborn danger signs. The most common neonatal danger signs recognized by mothers were unable to feed/poor sucking (43.5%) and fever (39.8%) [7]. These discrepancies might be due to the difference in social environment that encourage health care seeking behavior towards neonatal danger signs, differences in accessibility of health facilities and improvement of community health care. Educational levels also influence mother's health care seeking behavior towards neonatal danger signs and health service utilization.

According to this study most mothers mentioned genetic factors, germs, environmental factors and congenital factors as causes for neonatal danger signs 184 (62.6%), 280 (95.2%), 264 (89.8%) and 198 (67.3%) respectively. Mothers knowledge related to causative agent of the neonatal danger signs were high. 16.7% and 29.6% responded that the cause of neonatal illness were evil spirit and the gender of the baby. Although 98% of mothers were educated above ordinary level. But there were mothers who believe gender of the baby and evil spirit cause illness. That showed the cultural and social believes towards care for newborns. These results were similar to research conducted in the Ethiopia, that study discovered poor hygiene (54%), poor feeding (18.2%), exposure to cold and wind (10.7%) and evil spirit (1.1%) were causes for the neonatal illness of selected area. Socio cultural beliefs may be affected for such results.

Khan., *et al.* [8] in India reported that knowledge about convulsion and pus discharge from umbilicus were identified as 36% and 43%. It was concluded as poor knowledge regarding neonatal danger signs among participated mothers. Further maternal knowledge related to palm and sole yellow (25.5%), chest in drawing (74.5%), hot to touch (91%) and cold to touch (14%) were found from the study. In Nigerian study most mothers knew fever (89.1%) and refusal to breast feed (84.6%) as a danger sign. However, fewer mothers knew convulsions (20.1%) and difficulty in breathing (3.1%) as danger [9]. None of the mothers reported hypothermia (baby feels too cold) as a danger sign. Dongre., *et al*. [10] in India undertook a triangulated study of quantitative and qualitative methods. 72 identified mothers of children 0 - 11 months were interviewed. Out of these, 29 (40.3%), 16 (22.2%) and 10 (13.9%) identified difficulty in breathing, poor sucking and lethargy/unconsciousness as newborn danger signs, respectively. Only 7 (9.7%) and 2 (2.8%) identified convulsion and hypothermia as newborn danger signs, respectively. In the present study, maternal knowledge related to convulsions was 96.9 % (285). Out of 294 mothers 282 (95.9%), 271 (92.2%), 270 (91.8%) and 269 (91.5%) were identified green color vomiting, increasing jaundice, redness around umbilical area, rapid breathing as newborn danger signs respectively. Maternal knowledge related convulsion, green color vomiting, increasing jaundice, redness around umbilicus, rapid breathing and hot to touch were high. The important finding was cold to touch and stopped feeding well were signs nearly 30% of mothers do not aware that they were danger signs meantime 20.8% of mothers reported that they have experienced stopped feeding well. The reasons for well demarcated different related to the maternal knowledge related to danger signs could be the literacy rate and intervention that provided by the curative health care service from antenatal clinics.

According results of the study, about 44 (15%) were highly knowledgeable, 228 (77.6%) moderately knowledgeable and 22 (7.5%) were poor knowledgeable about neonatal danger signs. When we compared our findings with those of other finding's we found both supporting and contrasting results. There was a study conducted in Addis Ababa, Ethiopia in which 24.2% had high knowledge, 59.8% moderate knowledge and 16% had poor knowledge about neonatal danger signs. There was another study conducted in Mangalore, Karnataka, India in which 62% of had good knowledge and 36% of the sample had average knowledge, 1% of the sample had excellent knowledge and 1% of had poor knowledge. These different could be attributed to presence or absence of relevant intervention to promote neonatal care in these study areas.

In this study it was interesting to note that most of the mothers sought appropriate care could decide on health seeking behavior. It was showed that rejecting breast feeding 3 days old baby for 24 hours sought 277 (94.2%) immediate medical care out of 294 total participants. Molly., *et al*. (2017) showed mothers who recognized neonatal danger signs, 41.3% of them sought medical care, while 55.2% of mothers sought non-medical care for neonatal danger signs. Among two hundred twenty-three mothers who sought non-medical care, 37.7% of them gave home remedies and 30.1% of mothers sought spiritual care. Results may be differing due to free health services and education level of the mothers.

Health seeking for one-week old child with breathing difficulties was 181 (61.6%) to nearest government hospital means most of the mothers selected government hospital as the health care institution for danger signs. This finding was comparatively differed in the population of peri-urban India, the study of Dongre., *et al*. [10] showed that mothers gave first preference to private doctors and hospitals, explaining their availability and prompt care in an emergency, comparing them to public hospitals that are more distant and have lower quality of care Although free newborn care services were provided by the civil hospital, first preference for medical advice was the private practitioner. These differences showed faith on public sectors health services and importance of the free health services.

Health seeking behavior for one-week old baby with cold and fever was identified general physician 40.5% (119) and pediatrician 34.0% (100) reflected the consultation of professional health care personals. The results were similar to research conducted by Haq., *et al*. [11] showed that most of the mothers sought appropriate care (90.1%) and had taken their children to professional doctors.

Study assessed the factors that are contributing to the delay health care seeking such as time taken for treatment, family support, condition of the baby, distance to the health facilities, availability of advice, other children that make delay sick child to treat and economic status. Many of the respondents were not accepted that economic status, distance to heath facility and availability of advices that delay the health seeking behavior, this finding was different to study that conducted in southern Tanzania accessibility, lack of money, lack of drug and abusive language by health personals were mentioned as barriers to neonatal health seeking. This study also varies with the study conducted in Ethiopia also showed 38% of mothers brought their sick neonate to the health facilities within one to two hours after recognition of signs of illness. The main reason for delay health 49% of mothers mentioned was thinking the neonate would be better. The reason could be that present study conducted in urban district where better access of heath care and free health services provide by the Sri Lanka government.

The study has showed that This finding is different with study conducted in Nepal by Chandrashekhar., *et al*. in 2006 [12], found total family income, number of symptoms, mother's education and perceived severity of illness were the predictors of care seeking behavior and most of the mothers sought inappropriate care taking their child to a pharmacy 46.2% compared to appropriate care in 26.4%. No care was sought for 8 (2.7%) children and 26 (8.9%) children received traditional or home remedies.

The Pearson chi-square test has been conducted to check significant association in age the mother, ethnicity, educational level, religion, occupation, monthly income and family type with the mothers' knowledge on neonatal danger signs. There was statistically significant relationship between age of the mother ($p = 0.001$), educational level ($p = 0.000$) and type of the family ($p = 0.025$) with mothers' knowledge on neonatal danger signs in this study. This finding was different with study conducted in Uganda in which no significant association between knowing at least one danger sign and any socio demographic characteristics were found. This different might be due to difference in socio demographic conditions in the areas [13-36].

Conclusion

The study showed that the main factors associated to knowledge about neonatal danger signs were age of the mother, mother's educational status, type of family, action taken to sick neonate and decision making ability for care seeking.

Study suggested knowledge of neonatal danger signs was moderate among mothers attending CWC in Piliyandala in MOH area. Most common danger signs of neonate, mainly jaundice, redness around umbilicus and feel to warm. Knowledge related identification of danger signs were more than 90% except hot to touch 83.7% (246), cold to touch 70.7% (208) and stopped feeding well 69.4% (204).

Most of the respondents 77.6% (228) were moderate knowledgeable of neonatal danger signs while 15% were highly knowledgeable and 7.5% were poorly knowledgeable. There was statistically significant relationship between age of the mother, educational level and type of family.

This study also revealed that health-seeking behavior of mothers towards neonatal danger signs. Mothers' health seeking behavior for critically sick neonates was immediate medical care in the study area. More than half of the mothers of the study tends to seek medical care in government hospital for their sick neonates. Even neonate with mild disease such as common cold and cough most of the mothers consult general physician or pediatrician to seek medical advice. Most mothers could decide on health care seeking for their neonate which is good.

Mothers are believed that economic status, distance to health facility, number of children and conditions of the baby were not delay the seeking treatment. If the baby with any kind off mild disease mothers have a tendency to have medical advice and seek professional medical care soon. That might be the one of the reasons for Sri Lanka reported the lowest rate of NMR in SEAR (South East Asian Region).

Recommendations

It is recommended that issues related to neonatal danger signs should be further addressed at the community level. Effort should be made to provide health messages on neonatal danger signs to all mothers attending antenatal clinic, post-natal clinic and child welfare clinics.

Appropriate intervention should be taken to knowledge related clod to touch and stop feeding well such as educational session during the ANC and PNC on CWC. As well as intervention for diminish the occurrence of most common danger signs in Piliyandala MOH area which were reported by mothers such as redness around umbilicus, jaundice and going off feeding.

Through the MOH of Piliyandala should design regular training and workshop about neonate care for health professional working about neonate care for health professional working at maternal and child health clinic in Piliyandala to increase the awareness of mother regarding these issues.

Mothers may need to educate about danger signs where stated in the Child Health Development Record. Leaflet with relevant pictures will be provided by the investigators to each clinic to use as a teaching aid for the antenatal classes.

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