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Factors Associated with Maternal Knowledge of Newborn Care among Postnatal Mothers Attending a Rural and an Urban Hospital in Egypt

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Abstract: The aim of this study was to assess mothers' knowledge on newborn care as well as factors associated with poor knowledge. The study setting was two maternity hospitals, one urban and other rural, which were randomly selected from the maternity hospitals in Alexandria and El Behera governorates. A convenience sample of 422 mothers of newborns was selected from the previously mentioned settings. A structured interview questionnaire was designed and utilized by the researchers to collect the data. Maternal knowledge on newborn care was assessed and a knowledge score was created by allocating 1 point for each correct response. Knowledge score was classified as 'good', 'satisfactory' and 'poor' scores. The study results showed that 59.5% of mothers had either satisfactory or good overall knowledge. More than half of the mothers (55.7%) demonstrated a poor knowledge about some breastfeeding practices, mainly on initiation of breastfeeding (43.7%), proper attitude towards hypogalactia (42.7%), giving pre-lacteal feeds (38.4%), non-timed lactation (19.9%) and only 17.7% correctly identified the duration of exclusive breastfeeding. Mothers demonstrated satisfactory and good knowledge about the newborn warning signs (67.8%), with more than 70% of mothers recognizing 8 of 9 symptoms and/or signs that needed the urgent attention of a healthcare provider. According to multivariate analysis, rural women (odds ratio (OR)= 1.62; 95% CI 1.43-2.12), primiparae (OR= 1.77; 95% CI 1.53-2.72), mothers with lower family monthly income (OR=2.04; 95% CI 1.33-3.32) and those who never attended schools (OR=2.00; 95% CI 1.28-3.11) were more likely to have poor knowledge. In conclusion, mothers had satisfactory or good levels of knowledge about care of the umbilical cord and recognition of dangerous signs, but knowledge about breastfeeding was poor. Maternal education programs should place more emphasis on first-time mothers and those having lower socio-economic level as evident by lower monthly family income and lack of education.
Keywords: Maternal, Knowledge, Factors, Newborn, Egypt.

INTRODUCTION

The first 28 days of life are usually considered the most serious period for the neonate. This is called the neonatal period and it showed the highest

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incidence of morbidity and mortality, accounting for 40% of all deaths in under-five children. Three quarters of neonatal deaths occur in the first week, highlighting the need for early care.[1]

Although infant mortality has fallen in many developing countries over the past two decades, the rate of fall is slowing. One reason is the contribution of neonatal mortality, which has remained fairly steady over this period.[2] Ninety-nine percent of newborn deaths occur in developing countries, mostly occurring at home against a background of poverty, suboptimum care seeking and weak health systems.[3-6] In Egypt, according to 2008 Egyptian Demographic and Health Survey (EDHS), under-five mortality was 28 deaths per 1.000 births, while the neonatal mortality rate was 16 deaths per 1.000. This indicates that around 58% of early childhood deaths in Egypt are taking place during the first month of life. A large differential in under-five mortality by urban–rural residence in Egypt is particularly noteworthy.[7] However, very little is known about the natural history of neonates born in rural areas in many developing countries because most of them are never seen by a physician. [8]

The World Health Organization guidelines for essential newborn care encompass cleanliness, thermal protection, initiation of breathing, early and exclusive breast feeding, eye care, immunization, management of illness and care of low birth weight infants.[9]

Improving knowledge of mothers and family members about essential newborn care plays an important role in achieving a reduction in neonatal morbidity and mortality.[10,11] Evidence suggests that essential newborn care practices, for example related to feeding, hygiene/ cord care, thermal control, bathing, skin care and recognition of dangerous signs are clearly associated with major causes of neonatal mortality. [12-14]

Signs of newborn illness are non-specific and include poor sucking, lethargy, fever or hypothermia, respiratory distress and convulsions. Some of these may be difficult to differentiate from the spectrum of normal behavior.[15]

Women acquire knowledge about caring for their newborns during pre-conception, antenatal and postnatal periods through various channels of communications.[16] Since most newborns are discharged from the health facility early, families should be able to recognize signs of newborn illness and bring these to the attention of a health professional.[17]

Neonates in communities in developing countries are cared for at home mostly in rural settings and often in inadequately protected environments.[18]

While an increasing proportion of births in rural Egypt occur in facilities, a woman's family- especially her mother- typically provides support and share traditional knowledge before, during and after birth.[19]

Available literature in developing countries, including Egypt, does not provide much information about mothers' knowledge of newborn care. Therefore, the present study aimed to assess mothers' knowledge on selected aspects of newborn care and to identify factors associated with poor maternal knowledge in a rural and an urban area in Egypt, in order to improve neonatal home care through identifying the gaps in knowledge and factors affecting it.

SUBJECTS AND METHODS

Study design and settings

The study was conducted using a cross-sectional descriptive design. Two maternity hospitals were selected based on the highest utilization rates, namely El-Shatby Maternity University Hospital affiliated to University of Alexandria representing an urban area and Abou El Matameer Maternity hospital in Damanhour representing a rural area.

Sample

According to Open Epi, Version 2,

taking a level of precision of 5%, confidence interval of 95% and unknown prevalence of 50%, the total required sample size would not be less than 420 women. Accordingly, a sample of 422 females (to compensate for missing data) was randomly selected from the previously mentioned hospitals representing both rural and urban areas, and it was divided equally between the two hospitals. Eligible for the study were primi- and multi-parous mothers who delivered mature and healthy babies. Mothers suffering from complications or general health problems were excluded. Eligible mothers were subjected for scheduled interview following childbirth, immediately before being discharged from hospitals.

Data collection tool

After reviewing the relevant literature, a structured interview questionnaire was developed and utilized by the researchers to collect the necessary data. The content validity of the developed tool was tested by volunteered staff from Alexandria University. Apart from the socio-demographic characteristics and obstetric history, mothers were inquired about their knowledge concerning breast feeding practices, umbilical cord care, as well as neonatal warning signs necessitating doctor's consultation. Mothers were also asked about the different sources for their knowledge. A verbal consent was obtained from mothers after clarifying the objectives of the study, only volunteer responses were included.

Data collection procedures

A pilot study was conducted on 40 mothers (not included in the sample), after which the questionnaire was revised and the necessary modifications were done. Data were collected over a period of 4 months, starting from the beginning of Novmber, 2009 till the end of February, 2010.

Statistical analysis

Data analyses were performed using

SPSS version 16.0 (SPSS Inc., Chicago IL, USA).

A scoring system for maternal knowledge was developed, allocating 1 point for each correct response and zero for incorrect or unknown responses. The maximum possible score for an interviewee was 27. The overall knowledge score was divided into good knowledge score of ≥75% of the total (20-27), satisfactory knowledge of less than 75% to more than 50% (13-19), while scores of ≤ 50% of the total (< 13) were considered as poor knowledge score.

To identify the factors affecting mothers' knowledge, the levels of knowledge were cross-tabulated against explanatory variables of interest using χ^2 test. Subsequently, all these variables were combined into a multiple logistic regression model in a stepwise forward manner to identify the factors that were significantly associated with 'poor maternal knowledge'. The associations between poor knowledge and each independent variable were examined by odds ratios (OR) and 95% CI. P value of <0.05 was taken as the cut-off level of significance in the present study.

RESULTS

Socio-demographic characteristics of the sample

Table 1 shows that, of the total 422 mothers interviewed, 48.6% were of an urban residence and the remaining were from rural residence. Women's age ranged from 17 to 38 years, with an average of 25.18 years (±3.81 years). Among the mothers, 36.7% never attended school while 8.8% of them were graduates. The majority of the mothers (91.1%) were housewives. Most of the mothers (64.4%) belonged to families that had a per capita income per month of ≥400 Egyptian Pounds. Four in ten women (40.0%) presented with their first childbirth. Enquiry into antenatal care practices revealed that the majority (90.8%) had received antenatal care, made four or more clinic

visits (73.7%) and had mainly visited private sector facilities (51.2%). Finally, 39.8% stated that they received some education on caring for newborns during the antenatal period (Data not shown).

Maternal knowledge on breastfeeding, care of the umbilical cord and warning signs of newborn

Knowledge of the mothers in various aspects of neonatal care was analyzed as shown in Table 2. Approximately 93.9% of responding mothers were aware that the umbilical stump should be left uncovered without any dressing, whilst 58.9% correctly answered that 'surgical spirit' (a commercially available preparation of 70% isopropyl alcohol) should not be applied on the umbilical stump. Only 24.7% of the mothers correctly identified the range of time when the stump falls off.

Mothers demonstrated a satisfactory knowledge about some breastfeeding practices, the majority acknowledged the importance of overnight nursing (96.2%), correctly identified the advantages of colostrums (82.8%), knowing about breastfeeding on demand (74.2%), and almost three quarters of them identified correctly how to know that the baby had enough breastfeeding. The majority, instead, showed poor knowledge on some aspects of breastfeeding such as time of initiation of breastfeeding (43.7%), proper attitude towards hypogalactia (42.7%), giving pre-lacteal feeds (38.4%) and non-timed lactation (19.9%). Only 17.7% of the mothers correctly identified the duration of exclusive breastfeeding.

In general, mothers demonstrated a satisfactory knowledge about the newborn warning signs, with >70% of mothers could recognize 8 of 9 symptoms and/or signs that needed the urgent attention of a healthcare provider.

Although 94.8% of mothers recognized fever as a warning sign, only 70.3% knew that hypothermia may be a sign of serious illness in newborns.

The need to seek health advice when an active baby becomes lethargic was known to 90.9% of mothers. A relatively lower proportion of mothers (56.8%) were aware that the non-passage of urine for 48 hours after birth is a condition that deserves prompt attention by healthcare providers.

Neonatal knowledge score and Factors associated with poor knowledge

Table 3 reveals the distribution of the mothers by their knowledge scores on different aspects of neonatal care. Data revealed that more than half of the mothers (55.7%) were classified as having poor knowledge regarding breastfeeding, while only 19.4% having good knowledge on breastfeeding. Four in ten women (39.8%) had poor Knowledge on umbilical cord care. Slightly higher proportion of mothers had good Knowledge on neonatal warning signs than those who had poor knowledge (39.1% vs. 32.5%). Generally, women tended had either good (32.2%) or satisfactory (27.3%) total knowledge score on neonatal and poor total knowledge score (40.5%).

Data from Table 4 illustrates the univariate analysis of the factors affecting the total maternal knowledge score on newborn care. Regarding place of residence, rural women tended to have significantly more poor knowledge score than urban women (59.9% vs. 20%), $p<0.001$). Mothers' age did not affect their total knowledge on newborn care in the present sample ($P>0.05$). Mothers with less monthly family income were significantly more likely to have poor knowledge on newborn care than those with highest income categories (50.0% vs. 15.4%, $p<0.05$). Not working for cash (45.9%) was more likely to be associated with poor knowledge than working status (22.5%), $p <0.05$. Mothers who never attended schools were significantly more likely to have poor knowledge score than mothers with secondary education (65.2%

vs. 44.4%, p<0.01). Primiparae had significantly poor knowledge than multiparae of 4 and more children (40% vs.16.8%, p<0.001).

Mothers who did not had any antenatal care (ANC) were significantly more likely to have inadequate knowledge compared with those who had any antenatal care (59% vs. 38.6%, p<0.001).

Table 5 illustrates the results of the multiple logistic regression analysis. The results revealed that primiparae were 1.77 times (95% CI 1.53—2.70) more likely to have poor knowledge than multiparae. Mothers from rural residence were 1.62 (95% CI 1.43—2.12) times more likely to have poor knowledge than urban women. Mothers living in families with lesser family income were 2.04 times (95% CI 1.33—3.23) more likely to have poor knowledge. Mothers who never attended school were twice as likely to have poor knowledge (95% CI 1.28-3.11). The multivariate analysis did not reveal any association between maternal knowledge and age or mothers' employment status in the present sample. Moreover, antenatal characteristics such as number of visits, place of ANC and having received antenatal education on care of the newborn were not predictive of maternal knowledge.

Sources of knowledge during the antenatal period

Majority of the mothers (90.2%) received advice on care of their newborns from relatives and friends during antenatal period and 41.1% received advice from health care providers (Fig 1).

DISCUSSION

Although infant mortality rates have dropped considerably in many developing countries, the rate for neonates and in particular, early neonatal mortality have declined more slowly and in some regions have remained static.[20] Maternal health knowledge appears to be a crucial skill in improving neonatal care and survival.

According to the results of the present

study, maternal knowledge about caring of umbilical cord was satisfactory in some elements such as utilizing surgical spirit and the range of time required for the stump to fall. Applying something to the cord is generally recognized in some developing countries.[21,22]

This is in agreement with Senarath et al. in their study in Sri Lanka who reported that only 21.7% of interviewed mothers answered that surgical spirit should not be applied to the stump.[22]

Poor maternal knowledge about the cord has been reported by Fayed (2008) [23] in her study conducted in Behera, Egypt. The fact that using antimicrobial agents is beneficial for cord care has been supported by Mullany and Darmstadt (2007) in their study in rural areas in Nepal. [24] They found that without using antimicrobial agents, neonates were at higher risks of infections to umbilical stump.

Support and counseling should be available routinely during antenatal care, to prepare mothers; at the time of birth to help them initiate breastfeeding; and in the postnatal period to ensure that breastfeeding is fully established. According to the WHO guidelines [25], breastfeeding must be initiated within one hour of birth, and exclusive breast feeding should continue until six months of age. Recent studies have shown that starting breast feeding within one hour of birth can help reduce the risk of neonatal mortality by up to one third. [26, 27] The Promotion of Breast Feeding Intervention Trial, showed that gastrointestinal infections and atopic eczema were significantly reduced by early promotion of breast feeding.[28]

Moreover, the unique nutritional and antibody properties of colostrum and the disadvantages to those infants not fed with colostrum are now well recognized and documented.[29]

Fortunately, in the present study, mothers' knowledge about breast feeding practices has been satisfactory for many

aspects such as acknowledging the advantages of colostrums, overnight feeding and feeding on demand. This may well reflect the impact of the ongoing efforts made by the health services in training healthcare providers and in educating mothers during pregnancy, delivery and postpartum periods on breastfeeding. [30] However, the present results indicate that there is still a need for improvement of knowledge in some areas, such as acknowledging the advantages of exclusive breastfeeding and avoiding the traditional practice of giving pre-lacteal feeds during early infancy. Hence, the importance of timely introduction of supplementary feeds needs to be stressed.

Data from the 2008 EDHS revealed that almost all the Egyptian children born in the five year period before the survey were breastfed for some period of time. Among the children who were ever breastfed, the majority began breastfeeding soon after birth; 88 percent of the children were put to the breast within the first day after delivery, and 56 percent within the first hour. However, prelacteal feeding is common; 47 percent of all children born in the five years prior to the survey received prelacteal feeds during the first three days after birth. Data from EDHS (2008) also revealed that among children, only 12% were exclusively breastfed. [7]

Analysis of EDHS (2008) data also revealed differences between urban and rural mothers regarding some breastfeeding practices. Proportion of mothers who started breastfeeding within one hour of birth was much lower in the urban than rural mothers (51.3% vs. 58.7%). Furthermore, the median duration of exclusive breastfeeding was lower in the urban than rural mothers; 2.1 vs. 3 months. The percentage who received a pre-lacteal feed was almost similar between urban and rural women (46.2% vs. 46.8%).[7] These figures, however, may indicate a better breastfeeding practices among rural

mothers, contrary to their total knowledge of neonatal care described by the present study.

Incomplete maternal knowledge has been endorsed by Fayed (2008), where almost 70% of her study sample had unsatisfactory knowledge about some aspects of breastfeeding. [23] Knowing about breastfeeding on demand and the advantages of colostrums had similarly been recognized by the majority of mothers in a study in Sri Lanka. [22] Delayed initiation of breast feeding, discarding colostrums and giving pre-lacteal feeds to almost all neonates are still highly recognized in Northern India. [31]

The lack of specificity of the clinical manifestations of various neonatal morbidities have been noted, resulting in difficulty in making a definitive diagnosis, delay in seeking care and resultant high mortality.[31]

In the present study, mothers' awareness with danger signs was generally satisfactory. In contrast, in a study in Bangaladesh, there was poor awareness of danger signs. [32]

Although the majority of mothers in our study recognized fever as a warning sign, only three quarters of them knew that hypothermia may be a sign of serious illness in newborns. Similar gap in knowledge between fever and hypothermia has been documented elsewhere. [22, 31] Whilst emphasizing the due importance of recognizing danger signs, healthcare providers also need to explain the interpretation of benign signs to mothers and family members. Hypothermia is a more common sign of serious illness than fever in newborns, and this should be highlighted during educational sessions.

Luckily, decreased frequency of urination (non passage of urine for 48 hours) has been recognized by more than half of mothers, although it has been recognized only by 5% of mothers in Northern India.[31]

Interestingly, a recent Brazilian study emphasized a limited knowledge on basic

prenatal care. The study also found that when the danger signs that require taking the child to a health service are not readily recognized, the risk lies in seeking medical care too late, when little can be done for the child.(33)

Analysis of the predictors of poor maternal knowledge indicated that first time mothers, illiterate and mothers living in families with lower monthly family income, as well as those from rural residence had poor knowledge on newborn care than others. Senarah et al. (2007) highlighted that primiparous mothers are unprepared to care for themselves and their babies.(22)

In addition, maternal literacy, poor socioeconomic status and residence in rural areas had been documented to have an impact on different aspects of infant's health, as evidenced by a large scale randomized controlled trial from Pakistan.(34)

Preparation of mothers before they give birth is fundamental to the promotion of many neonatal practices. In our study it was seen that only 60% of the women had received any advice on neonatal care during antenatal period and only 41.1% had this advice from a healthcare providers. Support and counseling should be available routinely during ante-natal care, to prepare mothers; at the time of birth to help them initiate breastfeeding; and in the postnatal period to ensure that breastfeeding is fully established.

Worth noting that, the majority of mothers in the present study acquired some of their knowledge from relatives and friends. This is supported by findings of Fayed (2008) who mentioned that mothers' main source of information on neonatal care was non-professional persons, namely mothers and mothers- in- law. (23) This was confirmed by Barton (2001) who pointed out that mothers usually gain their knowledge through informal way, that misinformation is clearly present, regarding proper care of neonates especially in caring of the

umbilical cord and the importance of hygienic care. [35]

CONCLUSION & RECOMMENDATIONS

This study reveals that the knowledge of this group of postnatal mothers towards some aspects of neonatal care is still far from satisfactory. Mothers had either satisfactory or good levels of knowledge about care of the umbilical cord and recognition of dangerous signs, but knowledge about breastfeeding was poor. The analysis of the predictors of poor maternal knowledge among the participants indicated that first time mothers, those having lower socio-economic levels as evident by lower monthly income, illiterate and lack of education, as well as those from rural residence had poor knowledge on newborn care than others.

There is a need for programmes to support and enhance knowledge on neonatal care particularly at a primary health care level, focusing more on younger, less educated women and those from lower socioeconomic class. Training of health care providers in primary health care setting for appropriate and timely counseling of antenatal mothers on breastfeeding must be stressed.

Moreover, continuous training programs should be done for the traditional birth attendants as they are preferred by women in rural area, emphasizing the baby care and early detection and referral of newborns with any warning signs.

Mass media and information, education & communication programs should disseminate focused, accurate & culturally sensitive information about newborn care.

Table 1: Socio-demographic characteristics of the studied women.

Item	Number	Percent
Residence		
Urban	205	48.6
Rural	217	51.4
Age		
<20 yrs	74	17.5
20-	136	32.2
25-	102	24.2
30-	74	17.5
35 years.	36	8.5
Occupation		
Housewives	385	91.1
Working for cash	37	8.9
Income category		
<400	146	34.6
400-	276	41.8
≥800 E.P.	100	23.6
Level of education		
Illiterate/ Read write	155	36.7
Primary/ Preparatory	86	20.4
Secondary education	144	34.1
University education	37	8.8
Gravidity		
Once	169	40.0
Two -three	182	43.2
4 or more	71	16.8
Antenatal care		
No	39	9.2
Yes	383	90.8
Number of antenatal visits #		
1 to 3 visits	100	26.1
4 or more visits	283	73.9
Place for antenatal #		
Governmental facilities	187	48.8
Private facilities	196	51.2
Antenatal education on neonatal care #		
No	230	60.2
Yes	153	39.8
Total	**422**	**100.0**

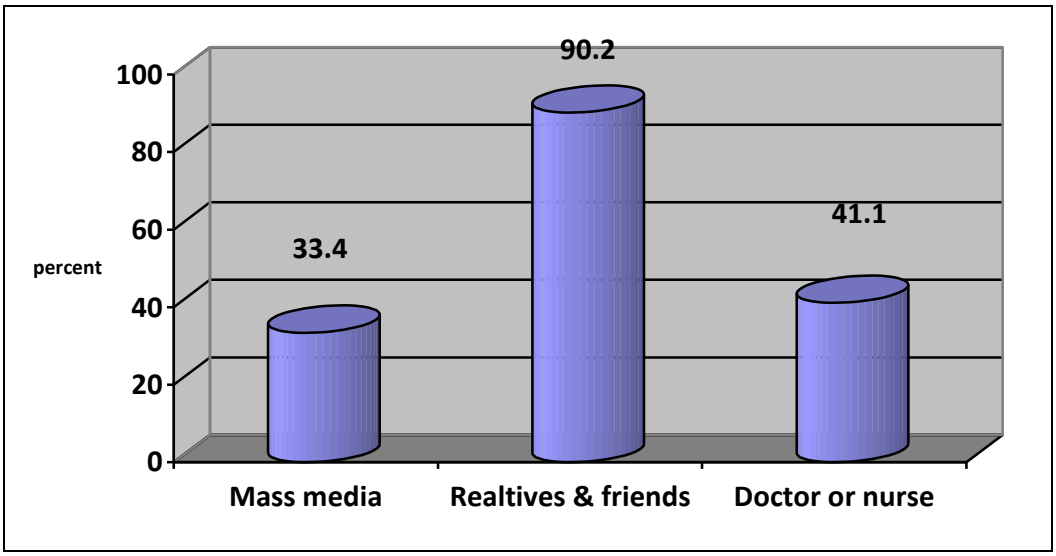
 # Percent of the total who had any antenatal care; E.P. Egyptian Pounds.

Table 2: Maternal knowledge on breastfeeding, care of the umbilical cord and warning signs of the newborn (n=422).

Factor	Percentage of correct responses
Knowledge on breastfeeding	
Importance of breast feeding for the child's health	**100**
Time of initiation of breastfeeding	**43.7**
Colostrum feeding	**82.8**
Non-timed lactation	**19.9**
Breastfeeding on demand	**74.2**
Proper attitude towards hypogalactia	**42.7**
Need for breast care	**19.9**
Agree that the bay should take pre-lacteal feeds	**38.4**
Duration of exclusive breastfeeding	**17.7**
Overnight nursing	**96.2**
Identified correctly that the baby had enough breastfeeding	**74.0**
Identified correctly one breastfeeding position	**72.7**
Mean knowledge score on breastfeeding **(±SD)**	**6.2 (±1.72)**
Knowledge on umbilical cord care	
Umbilical cord stump should be left uncovered without any dressing	**93.9**
Drying the cord stump thoroughly after cleaning or bathing	**71.0**
Identified the correct timing when the stump fall off	**24.7**
'Surgical spirit' should not be applied on the cord stump	**58.9**
Correctly identified signs of cord infection	**64.6**
Mean knowledge score on umbilical cord care **(±SD)**	**2.7 (±0.81)**
Knowledge on neonatal warning signs	
Baby who was previously active becomes lethargic	**90.9**
Abnormal fast breathing	**87.6**
Jaundice (Yellowish discoloration of eyes, palms or soles	**93.7**
Non passage of urine for 48 hours after birth	**56.8**
Increase in body temperature above 38	**94.8**
Decrease in the newborn's body temperature below 36.5	**75.3**
Persistent projectile or bile stained vomiting	**92.9**
Diarrhea (passes watery stools frequently)	**94.2**
Convulsions (getting abnormal jerky movements in limbs	**72.2**
Mean knowledge score on warning signs **(±SD)**	**7.7 (±1.44)**
Mean total knowledge score (±SD)	**16.6 (±2.31)**

Table 3: Distribution of the mothers by different maternal knowledge scores on caring for neonates.

	Number	Percent
Knowledge on breastfeeding		
Good	82	19.4
Satisfactory	105	24.9
Poor	235	55.7
Knowledge on umbilical cord care		
Good	112	26.5
Satisfactory	142	33.6
Poor	168	39.8
Knowledge on neonatal warning signs		
Good	165	39.1
Satisfactory	120	28.4
Poor	137	32.5
Total knowledge score		
Good	115	27.3
Satisfactory	136	32.2
Poor	171	40.5
Total	422	100.0



Respondents often identified more than one source or type of information.
N= 230, as 153 respondents did not receive any advice on neonatal care.

Figure 1: Sources of knowledge on newborn care to the mothers during the antenatal period.

Table 4: Factors affecting the total maternal knowledge score on newborn care: univariate analysis (*n* = 422). #

			Total knowledge score				
	Good		Satisfactory		Poor		Significance#
	No.	%	No.	%	No.	%	P< 0.001
Residence							
Urban	85	41.5	79	38.5	41	20.0	
Rural	30	13.8	57	26.3	130	59.9	
Age							
<20 yrs	22	29.7	26	35.1	26	35.1	P>0.05
20-	16	11.8	62	45.6	58	42.6	
25-	36	35.3	30	29.4	36	35.3	
30-	25	33.8	10	13.5	39	52.7	
35 years	16	44.4	8	22.2	12	33.3	
Income category							
< 400	42	25.0	42	25.0	84	50.0	P<0.05
400-	36	20.5	65	36.9	75	42.6	
> 800 E.P	37	47.4	29	37.2	12	15.4	
Level of education							
Illiterate / read write	19	12.3	35	22.6	101	65.2	P< 0.001
Primary /preparatory	35	40.7	45	52.3	6	7.0	
Secondary education	32	22.2	48	33.3	64	44.4	
University education	29	78.4	8	21.6	0	0.0	
Occupation							P<0.05
Housewives	97	23.4	126	30.7	162	45.9	
Working for cash	18	40.8	10	36.7	9	22.5	
Parity							
Once	16	9.5	45	26.6	108	63.9	P< 0.01
Two/three	75	31.5	50	37.7	57	30.8	
Four or more	24	33.8	41	57.7	6	8.5	
Antenatal care							
No	7	17.9	9	23.1	23	59.0	P< 0.001
Yes	108	28.2	127	33.2	148	38.6	
Total	115		136		171		

Chi square Test, P significant at <0.05.; E.P. Egyptian Pounds

Table 5: Factors associated with 'poor' maternal knowledge on newborn care: multivariate analysis (*n* = 422).#

Characteristic	OR (95% CI)	*P*-value
Residence		
Urban	**1**	<0.05
Rural	**1.62 (1.43-2.12)**	
Pariy		
Primiparae	**1.77 (1.53-2.72)**	<0.01
Multiparae ®	**1**	
Mother's education		
Never attended school	**2.00 (1.28-3.11)**	<0.01
Had any form of schooling	**1**	
Monthly family income		
< 400	**2.04 (1.33-3.3)**	<0.01
≥400 E.P	**1**	

®: Reference Category; EP: Egyptian Pounds; OR: odds ratio;
Below 50% of total knowledge score was classified as 'poor' knowledge

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