Pediatric Nurses' Knowledge and Practices Regarding Nursing Management of Premature Babies in Neonatal Intensive Care Unit at Soba University Hospital, Khartoum State, Sudan

Widad Ibrahim A/gadir A/moula[1], Ietimad Ibrahim Abd Elrahman kambal[2]

[1]Faculty of nursing sciences, Bahri University - Sudan
[2]Faculty of applied sciences, Gezira University –Sudan

Abstract: **Prematurity used to be a major cause of infant deaths. The premature babies need improved medical and nursing techniques by highly competence nursing team.**

Material and Methods: This descriptive hospital based study was conducted at Soba university hospital, Khartoum state in the period from January to March 2014. The study aimed at assessing the knowledge and practices of pediatric nurses in neonatal intensive care unit concerning nursing management of preterm babies. The sample size compromised of 50 nurses that constituted the total coverage of study population during the period of the study. Data were collected using structured interview questionnaire and observation check list designed f or the study. The data was analyzed using statistical package for social sciences (SPSS). Results:The results obtained that the majority of nurses were knowledgeable about the characteristics of preterm babies, causes of prematurity, immediate nursing care of preterm, signs of hypothermia were adequate (100%, 92%, 100%,100% respectively). Half of them (50%) identify the breathing pattern of preterm baby. The nurses clinical performance were inadequate where 70% of them recorded pulse rate only when recorded the baby pulse.100% did not wear mask, 80% find a difficulty on selecting appropriate vein for sampling . Also 48% of nurses gave feeding incorrect and 60% of them did not aspirate gastric contents before feeding.

Conclusion: The study concluded that the majority of pediatric nurses had adequate knowledge about prematurity, but they were lacking in their clinical skills to manage the preterm baby. So the study recommended continuous training programs for the nurses to refresh their knowledge and practices towards management of preterm babies to ideal standards.

Keywords: **Pediatric Nurses' Knowledge, Practices Regarding Nursing Management, Premature Babies.**

1. INTRODUCTION

Back ground: Preterm birth refers to the birth of a baby of less than 37weeks gestational age. premature birth, commonly used as a synonym   for preterm birth, refers to the birth of baby before its organs mature enough to allow normal post natal survival, and growth and development as a child .premature infants are at greater risk for short and long term complications, including disabilities and impediments in growth and mental development. Significant progress has been made in the care of premature infants, but not in reducing the prevalence of preterm birth. (Goldenberg 2008)**.** Prematurity is the major cause of neonatal mortality in developed countries. In the normal human fetus, several organ systems mature between 34 and 37 weeks, and the fetus reaches adequate maturity by the end of this period. The lungs are one of the last organs to develop in the womb; because of these premature babies typically spend the first days/weeks of their life on a ventilator. .prematurity can be reduced to a small extent by using drugs to accelerate maturation of the fetus and to a greater extent by preventing preterm birth. (http:/www.reproline.jhu)

Problem statement: Preterm infants usually show physical signs of prematurity in reverse proportion to the gestational age .They are at risk for numerous medical problems affecting different organ systems. Premature born infant are also at greater risk for having subsequent serious chronic health problems .Neurological problems as apnea of prematurity, hypoxic ischemic encephalopathy (HIE) ,retinopathy of prematurity(ROP]),developmental disability ,cerebral palsy and intraventricular hemorrhage. The later affecting 25% of babies born preterm, usually before32weeks of pregnancy. Mild brain bleeds usually leave no or few lasting complications, but severe bleeds often result in brain damage or even death. Cardiovascular complications may arise from the failure of the ducts arteriosus to close after birth; patent ducts arteriosus (PDA).respiratory problems are common, specifically the respiratory distress syndrome (RDS) or (previously called hyaline membranedisease. Gastrointestinal and metabolic issues can arise from hypoglycemia, feeding difficulties, rickets of prematurity; hypocalcaemia, inguinal hernia, and necrotizing enter colitis (NEC).Hematologic complications include anemia of prematurity, thrombocytopenia, and hyperbilirubinemea that can lead to kernicterus. Infections include sepsis, pneumonia, and urinary tract infection can affect premature babies.(Goldenberg .2008)

Worldwide: The new white paper shows that in 2005, an estimated 13 million babies worldwide were born preterm, defined as birth at less than 37 full weeks gestation. This is almost 10percent of total births worldwide. About one million death in the first month of life. the highest preterm birth rates in the world are found in Africa, followed by north America (united states and Canada combined).the study shows that premature birth are an enormous global problem. That is exactly a huge toll emotionally, physically, and financially on families, medical system and economicies. (Http;//www science daily-com)

Developed countries studies:

Preterm birth in the united state was increased to be(36%) in the past 25 year, key factors contributing to this increase include rise in the number of pregnancies in woman over age 35, the growing use of assisted reproduction techniques, leading to an increase in the number of twin and higher older multiple births: and there rise in the number of late preterm births .At last the author said that there is indicated difficulty to count the incidence of preterm birth, because there are few countries currently have good health statistics and information systems or birth surveillance registries. (http:// www. Science codex-com/ global death.)

In Developing countries:

The neonatal mortality rate (NMR) for Bangladesh infants as 133 per 1000 live births. The NMR for infants born after fewer than 32 weeks of gestation was 769 and was780 for infants whose birth weights were under 1500g.84% of neonatal death occurred in the first seven days, half within 48 hours. Preterm delivery was implicated in three quarter of neonatal deaths, but was associated with only one third of low birth weight approximately. (www.scielosp.orgiscielo.php)

Studies done In Sudan: Research done in Wad Madani Teaching Hospital by Amel Mahmud, 2003-University of Gezira about The quality of care of neonate with critical care condition. The author said that the birth of the baby is a wonderful yet very complex process. Many physical and emotional changes occur for the mother& the baby at the time of birth a baby must make many physical adjustments to adapt with the external life. Many baby systems change dramatically from the way they functioned during fetal life being born prematurely, having a difficult delivery, or birth defects can make these changes even more challenging. The study aimed to determine the causes and level of neonatal morbidity & mortality, to determine the midwifery and nursing role in immediate care of all neonates, and to examine the quality of equipment and the nursing role in the care of neonate with critical care condition. The study depended on primary data based on a simple random sample of (171) babies from neonate care survey in Wad Madani pediatrics hospital 2003.

This study shows a high level of neonatal mortality & morbidity (11.7 %).May be due to poor antenatal care, delivery itself (place and the quality of birth attendance). While the time is very important determinant for neonatal morbidity & mortality, most baby take more time from decision to seeking care to admission. The quality and availability of the equipment in the nursery is not adequate because it is either not existent or not operating. (Amel-2003).

Justification and rational:

The preterm baby delivered before 37 weeks of gestational age with un complete functional system, so he need proper care, which must started immediately at birth, e.g. he have un mature respiratory system with low surfactant level, the deficiency of oxygen to the brain can lead to brain death .

ISSN 2349-7823

International Journal of Recent Research in Life Sciences (IJRRLS)
Vol. 3, Issue 4, pp: (1-9), Month: October - December 2016, Available at: **www.paperpublications.org**

Premature infant's accounts for the majority of high risk newborns, the preterm faces a variety of physiologic handicaps. The premature need to stay in the postnatal ward or to be placed in special unit called a neonatal intensive care unit (NICU).or special care baby unit. The babies need [proper observation & care from competence nurses and careful assessment and other therapeutic interventions as needed.

Objectives:

General objectives:

- To assessment the nurses knowledge and practices regarding nursing management of preterm babies at neonatal intensive care unit at Soba University Hospital .

Specific objectives:

- Assess the knowledge among pediatric nurses regarding premature baby and their nursing management including causes of prematurity, characteristics, immediate nursing care and signs of hypothermia.

- To identify the clinical skills of the target sample about specific nursing performance for premature babies.

2. MATERIALS & METHODS

Study design:

Descriptive hospital based study aimed at assessing pediatric nurses' knowledge and practices about nursing management of preterm babies at neonatal intensive care unit at Soba university hospital, conducted from January to march, 2014.

Study area:

The study was conducted at soba university hospital, It is located near the main road of Madani- Khartoum, it is about 30 minute drive from Khartoum. The hospital composes of many sections and departments, including antenatal clinics, ultra scan section, obstetrics and gynecology unit neonatal intensive care unit, family planning centre, x-ray department, laboratory, pharmacy, surgical laparoscopy, delivery room, blood banks , nutrition centre, statistical department, accounting department, security department, etc. the neonatal intensive care unit have 50 female nurses with different qualification, working in 2 shift.

Study population All of pediatric nurses working at neonatal intensive care unit are female and Sudanese, were chosen to conduct the study to assess their knowledge and practices regarding management of preterm baby.

Inclusion criteria: All pediatric nurses working in Neonatal intensive care unit during the period of the study.

Exclusion criteria: Other nurses in the hospital who does not work in the NICU.

Sample size:50 nurses who constituted all nurses working at NIUC during the period of the study from January to march, 2014.

3. DATA COLLECTION TOOLS

Two tools were used as follow:

1. A designed questionnaire was used to collect the data about age, causes, risk factor, preterm breathing, characteristics, immediate nursing care, signs of hypothermia, indication of oxygen, period during suction, barriers interfere with infection control, protection from complication of phototherapy, health education for mothers to care their baby. (Appendix 1)

2. Observation check list consisting of most general nursing practices that were usually done for the management of preterm babies. (Appendix 2)

Sampling technique:

- Official letters were written to seek for permission to do this work from the head master of administration.

- Explanation was given to the nurses in the unit about this study.

ISSN 2349-7823

International Journal of Recent Research in Life Sciences (IJRRLS)
Vol. 3, Issue 4, pp: (1-9), Month: October - December 2016, Available at: **www.paperpublications.org**

- Every nurse completed the questionnaire within 40 minutes under the guidance of the researcher.

- The researcher observed each nurse for her nursing skills in managing the preterm babies using observation check list.

Data analysis:

The data were coded and analyzed manually and statistical tables, bar charts and pie charts were constructed from the data using a statistical package for social sciences (SPSS).

Table (3.1): Distribution of man power in the Neonatal Intensive Care Unit, Soba university Hospital

Man power position	Number
Consultant	2
Registrars	4
Medical officers	6
House officer	22
Professional Nurses	50
Pharmacists	2
Total	86

Source: statistical department of Soba University Hospital, 2014.

Table (3.3): Distribution of cases of preterm babies admitted at the Neonatal Intensive Care Unit, Soba University Hospital, 2014

Months	No of cases
January	20
February	26
March	18
April	14
May	25
June	19
July	22
August	30
September	34
October	27
November	48
December	56
Total	349

Source: Statistical Department of Soba University Hospital

4. RESULTS AND DISCUSSION

4.1 Results:

Table (4.1) Distribution of pediatric nurses according to their age by year NO (50)

Age	Frequency	%
20--30	16	32
31--40	30	60
Above 40	4	8
Total	**50**	**100**
* Gender		
Male	0	0
Female	50	100
Total	**50**	**100**

* The majority 60% of nurses within the age group (31—40) years, and fewer percent(8%) of nurses above 40 years.
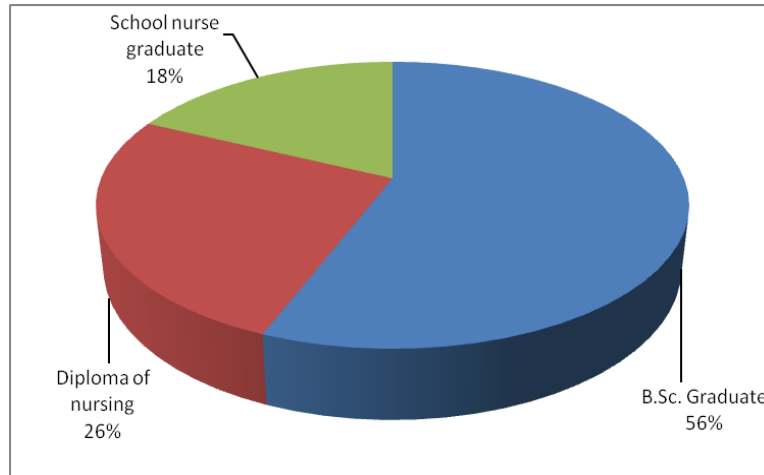
Figure (1) Distribution of pediatric nurses according to level of education .

* The majority of pediatric nurses (56%) working in the unit were first degree holder and only (18%) were school nurse graduate.
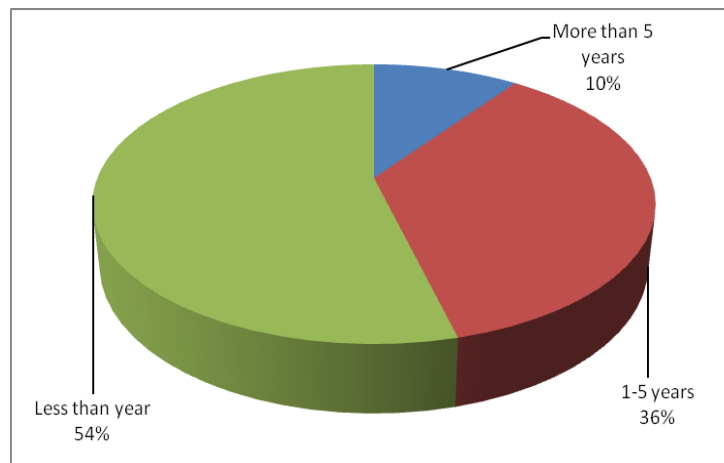

Figure (2): The distribution of pediatric nurses according to their experience in nursing.

More than half of working nurses (54%) have experiences less than one year in the field of nursing.
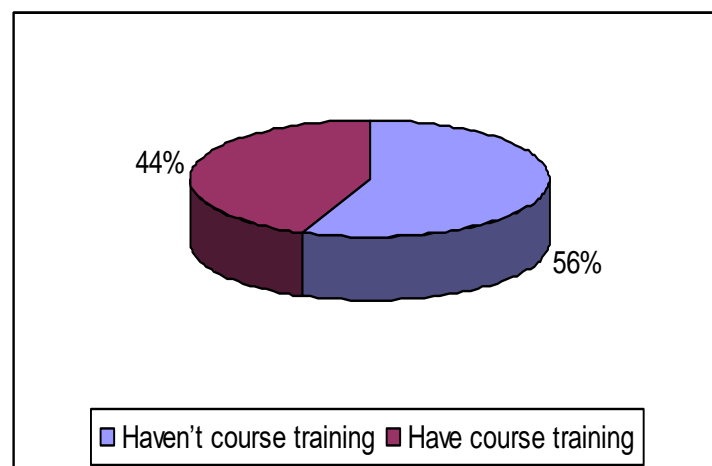

Figure (3): Distribution of pediatric nurses according to their training courses about management of preterm babies.

The table shows that, 56% of them haven't course training in the management of preterm babies.

Table (4.2): Pediatric nurses distribution according to their knowledge regarding age of preterm babies.

Age of preterm (weeks of gestation)	frequency	%
Less than 40 weeks	0	0
Less than42 weeks	0	0
Less than 37 weeks	50	100

100% of study sample knew that the age of preterm is less than 37weeke gestation.

This excellent result for them to determine the preterm age for immediate intervention & nursing care.

Table (4.3): The distribution of pediatric nurses according to their knowledge regarding the direct causes leading to preterm babies NO(50)

Items	frequency	%
Constriction of the cervix	4	8
Cervical incompetence	46	92
Low social economic status	31	62
Accident or trauma	45	90

* More than one answer were selected by the study sample.

Most of study samples knew the cervix incompetence(92%) &an accident or trauma 90% as the direct causes of preterm babies.
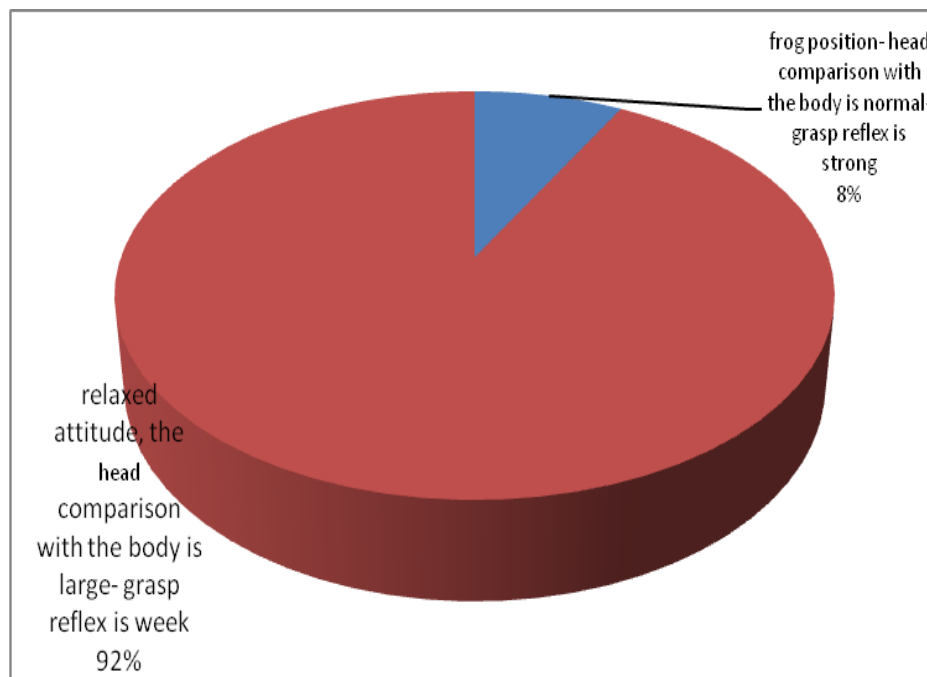
NO (50)

Figure (4): Nurses knowledge regarding the characteristics of preterm babies.

Approximately all the nurses mentioned the normal characteristics of preterm baby (92%).
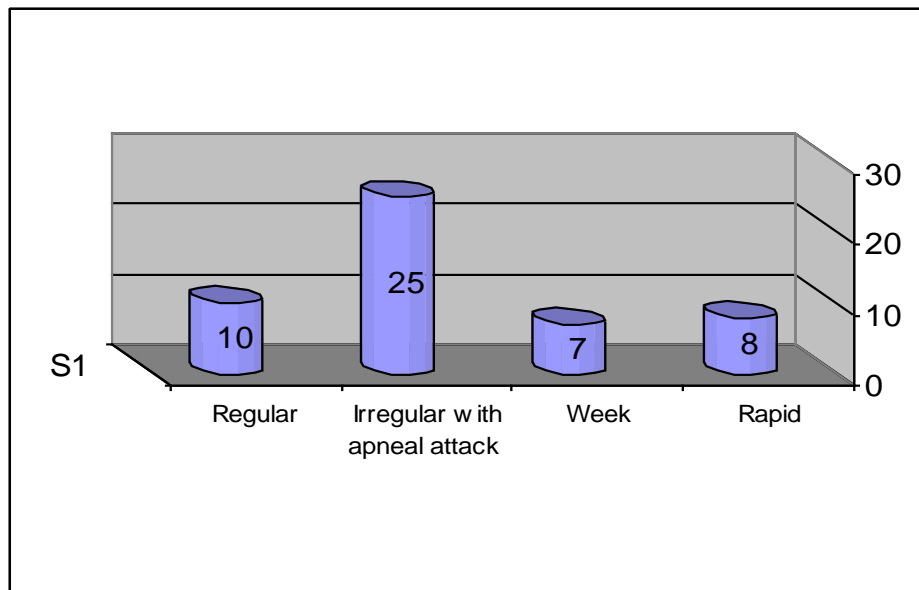
NO (50)

Figure (5): Nurses' knowledge regarding the pattern of respiration of preterm baby.

The table shows that half of study sample aware about pattern of premature breathing.

Table (4.5): The distribution of study sample according to their knowledge about the immediate nursing care for preterm. NO (50)

Items	Frequency	Percent
Prevent hypothermia	50	100%
Nesogastric tube nsertion	8	16%
Suction& oxygen administration	45	90%
Weighing	32	64%

100% of nurses showed that prevention of hypothermia as immediate nursing care of preterm following 90% of them for suctioning & oxygen administration.

4.2 Discussion:

Premature infant account for the majority of high risk newborns, he faces a variety of physiological handicaps. The ability to suck, swallow and breathe in a coordination fashion is not in place until 34-36 weeks of gestation. so he need to stay in the especial unit called a neonatal intensive care unit to help babies carry out these important functions, they need proper observation & care by competent health professionals.

This study aimed at assessing pediatric nurses' knowledge and practices about management of prematurity at neonatal intensive care unit, soba university hospital during the period from January to march 2010.

In the present study majority of the nurses (60%) in the NICU were aged between 31-40 years (Table 1) while all the pediatric nurses (100%) in the unit are female which may be due to the hospital polices that the woman have a sense of mother naturally.

The result of this study revealed that nurse knowledge about age, causes, risk factor, characteristics' , immediate nursing care of preterm baby , were adequate as showed by their responses (100%, 92%, 96%, 92%, 100%).

Approximately all study samples knew the cervical incompetence 92% &an accident or trauma 90% are the direct causes of preterm babies. The maternal obesity have no effect on pregnancies unless associated with other diseases. This is good result, because they have a big role in orientation of pregnant woman in the community and that lead to decrease the incidence of prematurity. This is different from the study done by (Amani Ali . 2006) of Khartoum teaching hospital who stated that nurses knowledge are weak and the knowledge they have is guessed from their practical work in the nursery unit. (Amani Ali. 2006).

Half of study group (50%) did not know the normal breathing of preterm baby they need to update their knowledge. They should be 100% of them to know the preterm have normal apnea not associated with any disease, because the preterm baby deliver with immature respiratory system & inadequate surfactant amount which reduce tension in the alveoli and prevents their collapse with expiration. Most of study group did suction to let airway clearance with some mistakes, did not wear mask, inserting catheter with enforcement, 50%of study sample knew the period between on & off during suction, it should be 100% of them to know that, because more than 5 seconds can stimulate the vocal cord and lead to bradycardia.

The result showed that the study wear when checking pulse 80% recorded rate only, and did not recorded abnormality (chest end rowing, tachyapnea.etc), Which isn't correct, the pulse is one of the vital signs reflect physiological changes& it indicates abnormal finding in the babies health, 70% of nurses did not count for full minute when check the respiration, this is not correct because the preterm has irregular breathing. This result were similar with the study done by Mona .Mohamed .Ahmed (2005), who stated that the nurses did not documented the other details after check of the preterm pulse and check respiration. (Mona .M.A. 2005. Academy of medical Sciences)..

The finding of the present study showed that 60% of the study group kept the babies warm by setting temperature of incubators, 40% kept babies warm by heaters warmer when they nursed him in cots, That is good result to prevent hypothermia the babies should be kept warm during other nursing care like weighing, feeding, taking a sample... etc. this result is different from the study done by (Amel.M.2003). of Gezira university who stated that there were three incubators but all of them were not operating, no heaters machine, no any thermometers inside the nursery. They were warming the baby by using kangaroo care.(Amel .M. M.2003)

The result showed that 70% of the study group insert nesogastric tube correctly, 30% of them did some mistakes (did not measured the length of the tube should be inserted, do enforcement). well knows how to prepare formula and keep equipment clean, 60% of the study group gave feeding correctly, 40% of them did some mistake during giving feeding (improper position of the child, gave amount quickly, raise the syringe above the child chin, not flush the tube with sterile water 1-2ml after feeding, did not record the baby response to feeding

5. CONCLUSION AND RECOMMENDATIONS

Conclusion: Based on the result of this study, the researcher concluded that the majority of the pediatric nurses were knowledgeable about the general information about preterm babies but they are lacking in their clinical skills of nursing management of preterm neonates especially in sampling technique and feeding technique and recording the pulse characteristics .

Recommendations:

Based on the results the researcher recommended the following:

• Staff should complete infections control program and continuous courses to prevent nosocommial infection.

• Continuous training program about management of high risk neonates for upgrading nursing knowledge and practices.

• The hospitals polices should plan for calculating and documentation the incidence of premature babies according to their age and these report put up to ministry of health from hole of Sudan, separately from abortion because the preterm is alive baby that to determine the problem statement accurately in Sudan, and that can aid to find solutions as possible.

• The nurses should educate mothers or care givers on discharge about the recognition and good care of premature babies at home.

• The neonatal intensive care unit should be well equipped with advanced technical equipments and facilities to insure ideal nursing managements for preterm babies.

REFERENCES

[1] Adams-Chapman I. (2006). Neurodevelopmental outcome of the preterm infant. (2006) 947-964.

[2] Amani Ali Mohamed (2006) assessment of pediatric nurses knowledge, practice and attidudes regarding nursing management.

[3] Amel Mahmoud Mohamed (2003) .The quality of care of neonate with critical care condition in neonatal intensive care unit at Wad medani teaching hospital.

[4] American Academy of pediatrics (AAP) (2004), Management of infant at risk.page549-57.

[5] American Academy of pediatrics. (2000) Neonatal morbidity & prenatal mortality in prerterm birth (2000) .43-49.

[6] American Academy of pediatrics for prenatal care, (2002). Gils tarp LC, oh W, eds,5 thed (2002).

[7] American Academy of pediatrics. (2004). In Gilstrap LC, ohW,eds. Guiadelines for prenatal care (2004).

[8] Annamma Jacob. (2009). Maternal & neonatal nursing care plans. First Edition (2009) page (409).

[9] Ballard (Eds), (2002) Avery's disease of the new born (479-483).Printed in Philadelphia by W. B. Sautrnders .

[10] Balistreri WF. Cholestasis. In: Behrman RE, Kleim gman RM, Jenson HB (2000), eds. Nelson textbook of pediatrics: 1195-1202.

[11] BT Basavanthappa(2006). Tsxt book of Mid wifery & Reproductive health Nursing. (2006). First Edition .page (658).

[12] Chin, P.L., & Kramer, M.K.(2000).Theory and nursing: Asystamic approach (5th ed).St.Louis, Mo: Mosby.