

Annexure 1

Swami Rama Himalayan University

Swami Ram Nagar,
P.O. Jolly Grant, Dehra dun 248016 (INDIA)
Phone: 91-135-2471111, Extn. 328, Fax 910135-24711122

SRHU/HIMS/ETHICS/2017/134

Dated: 12.10.2018

“Ethics Committee”

The Ethics committee in its meeting held on 12.10.2018 approved the Research Project entitled:

“Effectiveness of Home-Based newborn Care (HBNC) on knowledge, attitude & Practices among ASHAs (Accredited Social Health Activitsts). Working in rural aras of Uttarakhand”

Submitted by Principal investigator, by Rajkumari Sylvia Devi, Asstt. Professor, Himalayan College of Nursing, Swami Rama Himalayan University.

Dt:- 12.10.2018



Dr. D.C. Dhasmana
Secretary, Ethics Committee



Annexure 2

To,
Dr. Kunwar Singh Bhandari
Chief Medical Superintendent
CHC Doiwala
Dehradun

Subject: Requesting permission for conducting research study among ASHAs and Post natal mothers in Doiwala Block

Respected Sir,

I am a PhD research scholar of Swami Rama Himalayan University (SRHU), Dehradun and working on a study titled, "A study to assess the effectiveness of Home Based Newborn Care (HBNC) on Knowledge, Attitude and Practices among ASHAs (Accredited Social Health Activists) working in rural areas of Uttarakhand". The study has been reviewed and approved by ethical committee, SRHU and Research Committee of Himalayan College of Nursing.

To proceed with next phase of study, I need your administration permission to collect data from ASHAs and postnatal mothers of Doiwala Block. The topic, objectives and tools of my study are enclosed herewith for your reference and needful.

I request you to kindly grant me administrative permission to conduct the study in Doiwala Block.

Anticipating your kind support and cooperation.

Thanking You,

Yours Sincerely,


Rajkumari Sylvia Devi
Associate Professor, HCN and
Research Scholar
(Enrollment no. SRHU17000849)
SRHU, Dehradun

*Forwarded with a request
to kindly permit to support.*


3/12/2018
Dean, Faculty of Nursing
Himalayan College of Nursing
Swami Rama Himalayan University
Swami Ram Nagar, Jolly Grant
Dehradun - 248016

Permitted

03/12/18

Annexure 3

CERTIFICATE FOR TOOL VALIDATION

This is to certify that I have validated the research tools for Mrs. Rajkumari Sylvia Devi, Ph. D Scholar, Swami Rama Himalayan University, Dehradun, Uttarakhand on research statement “A study to assess the effectiveness of Home - Based Newborn Care (HBNC) on knowledge, attitude and practices among ASHAs (Accredited Social Health Activists) working in rural areas of Uttarakhand.”

Date: 24.08.2018



Dr. Jyoti Sarin
Dean & Director
M.M College of Nursing
Maharshi Markandeshwar
University
Mullana, Ambala,
Haryana

Annexure 4

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Dr. Jayanti Semwal
Professor
Dept. of Community Medicine,
Himalayan Institute of Medical Sciences,
Swami Rama Himalayan University,
Dehradun

Annexure 5

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Name & Signature: Dr. Renu Thirum.

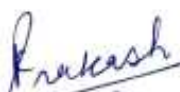
Designation: Principal/Professor.

Address: C/o College of Nursing
CMC & Hospital.
Ludhiana 141008.
Punjab.

Annexure 6

CERTIFICATE FOR TOOL VALIDATION

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Dr. Kamli Prakash
Name & Signature:

Designation: Professor

Address: Himalayan College of Nursing
Swami Rama Himalayan University
Swami Ram Nagar
Dehradun.

Annexure 7

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Dr. V. D. Semwal
SDMO, Rural Development Institute,
Swami Ram Nagar, Jolly Grant,
Dehradun

Annexure 8

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Name & Signature:

PREMA P
Principal
Muzaffarnagar Nursing
Institute

Designation:

Principal
Muzaffarnagar (U.P.)

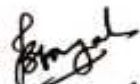
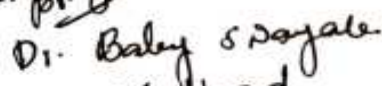
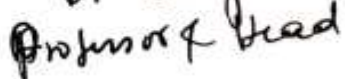
Address:

MUZAFFARNAGAR NURSING INSTITUTE
OPP. BEGRAMPUR INDUSTRIAL AREA,
GHASI PURA, DEHRADUN - DELHI
HIGHWAY, MEERUT ROAD
MUZAFFARNAGAR - 251203

Annexure 9

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Name & Signature: 
Designation: 


Address: **Professor & Head**
Dept. of Child Health/Paediatric Nursing
Manipal College of Nursing Manipal
MAHE, Manipal - 576 104

Annexure 10

CERTIFICATE FOR TOOL VALIDATION

This is to certify that I have validated Hindi tools for Mrs. Rajkumari Sylvia Devi, Ph. D Scholar, Swami Rama Himalayan University, Dehradun, Uttarakhand on research statement "A study to assess the effectiveness of Home - Based Newborn Care (HBNC) on knowledge, attitude and practices among ASHAs (Accredited Social Health Activists) working in rural areas of Uttarakhand." The language used in the study tools is appropriate and relevant.

Dilwari (Meeta Tigar)

Name & Signature:



Designation: *Vice principal*

Address: *A - 5 Govind Puri
University Road
Gwalior (M.P.)*

Annexure 11

Letter seeking consent from the participants

Informed consent

I, Mrs. _____ aged, _____ years voluntarily participating in the research study conducted by Mrs. Rajkumar Sylvia Devi from Swami Rama Himalayan University, Jolly Grant, Dehradun, Uttarakhand. I understand that the research project is designed to gather information about knowledge, attitude & practices of ASHAs and mother regarding Home Based Newborn Care.

My participation in this project is voluntary. I understand that I will not be paid for my participation. I may withdraw and discontinue participation at any time of study. It has been informed to me that participation involves responding to knowledge & practice questionnaires, video and audio recordings.

My name and information provided by me will be kept confidential and subsequent uses of records and data will be subject to standard data and policies which protect the anonymity of individuals and institutions.

I understand that this research study has been approved by the institutional Ethical and Legal committee.

I have read and understood the explanation provided to me by the researcher. I agree to participate in this study voluntarily and giving my consent willingly and not under any kind of threat / pressure.

Name _____

Signature _____

Dated _____

Annexure 12

RE-EDUCATION PLAN ON HOME BASED NEWBORN CARE (HBNC) FOR ASHA

Objectives of the session:

By the end of the session, the ASHAs will learn about:

1. The role of an ASHA and the activities expected from her.
2. The health outcomes that her work should result in.
3. The sets of skills that she needs to be effective in.
4. The records that she has to maintain.
5. The arrangements for her support and supervision.
6. Diagnose and refer which babies are at high risk.
7. Emphasize importance of early and exclusive breastfeeding.
8. Counsel the mother on how to breastfeed a normal, pre-term/Low Birth Weight (LBW) newborn.
9. Teach mothers to express milk and feed such babies using a bowl or spoon.
10. Manage breastfeeding problems (engorgement, cracked nipple, mother feels she does not have enough milk).
11. Identify the newborn whose body temperature is less than normal and whose body temperature is more than normal.
12. Teach mothers how to keep the newborns warm and re-warm cold babies.
13. Teach mothers how to control newborn temperature in hot weather.
14. How to take the temperature.

INTRODUCTION:

Effective interventions to reduce neonatal deaths span both maternal and neonatal care and encompass interventions for appropriate care during pregnancy, care for the mother and newborn during and immediately after delivery, and care for the newborn during the first weeks of life, Home Based New Born Care.

1. ROLE OF ASHA:

ASHA is considered to be a healthcare facilitator and provider of limited range healthcare services. Health rights would be integral to her work and would be focused in the areas of community mobilization to improve health status, access to services and promote people's participation in health programs.

2. ACTIVITIES OF AN ASHA:

ASHAs work consists of mainly following activities:

- i. **HOME VISITS:** For two to three hours every day, for at least four or five days a week, the ASHA should visit the families living in her allotted area. Home visits should take place at least once in a month if not more. Home visits are mainly for health promotion and preventive care. Over time, families will come to her when there is a problem and she would not have to go so often to their houses. Meeting them anywhere in the community/village is enough. However, where there is a child below two years of age or any malnourished child or a pregnant woman, she should visit the families at home for counselling them. Also, if there is a newborn in the house, a series of five visits or more becomes essential.
- ii. **VISITS TO HEALTH FACILITY:** This is usually accompanying a pregnant woman or some other neighbour who requests her services for escort. The visit could also be to attend a training program or review meeting. In some months, there would be only one visit, in others, there would be more.
- iii. **MAINTAIN RECORDS:** Which would make her more organized and make her work easier, and help to plan better for the health of the people.

Measurable outcomes of the ASHA program:

Newborn and child health:

- A. Every newborn is visited as per the schedule, more often if there are problems and receives essential home based care as well as appropriate referral for the sick newborn.
- B. That every family receives the information and support it needs to access immunization.
- C. That all families with children below the age of two years counselled and supported for prevention of illness such as malaria, recurrent diarrhoea and respiratory infection.
- D. That every child below five years with diarrhoea, fever, acute respiratory infection (ARI) and worms, brought to her attention is counselled on whether referral is immediately required or whether, given the problems of access to a doctor, first contact curative care with home remedies and drugs in her kit, the child can be managed.

Essential skills for an ASHA:

The essential skills that an ASHA requires can be classified into six sets. These are simple skills requiring only a few hours to learn, but they can save thousands of lives. These six sets of skills are given below:

Newborn Care when visiting the newborn at home:

- a. Counseling and problem solving on breastfeeding
- b. Keeping the baby warm

- c. Identification and basic management of LBW (Low Birth Weight) and pre-term baby
- d. Examinations needed for identification/first contact care for sepsis and asphyxia

Qualities that Make an ASHA Effective:

For an ASHA to be effective in improving people's access to health services and their health status, an ASHA should:

- i. Have the knowledge and skills to explain the basic maternal and child health services, educate on preventive and promotive aspects of maternal and child health, and provide some measure of immediate relief and advice if there is any illness.
- ii. Have the knowledge and skills on other general health issues, especially related to common infections, and be able to provide information on access to services and preventive and promotive aspects of healthcare.
- iii. Be friendly and polite with people and known among community, and establish rapport with the family during household visits.
- iv. Be a special friend to the needy, the marginalized, and the less powerful.
- v. Possess the art of listening.
- vi. Have the skill of coordination with Panchayati Raj Institution (PRI), AWW and ANM.
- vii. Be competent in conducting meetings in the community.
- viii. Be motivated and feel happy and rewarded to help community/serve people.
- ix. Have a positive attitude and be keen to learn new skills.

What Records do the ASHA Maintain?

Village Health Register in which you will record details of pregnant women, children, 0-5 years, eligible couples and others in need of services.

Maintaining drug kit stocks: You are provided with a drug kit so as to be able to treat minor ailments/problems. The drug kit contains: Paracetamol tablets, Albendazole tablets, Iron Folic Acid (IFA) tablets, Chloroquine tablets, Oral Rehydration Salts (ORS), and eye ointment. In addition, the kit may contain condoms and oral contraceptive pills, pregnancy testing kits, and malaria testing kits. The contents of the kit may change depending on the needs of the state. The drug kit is to be re-filled on a regular basis from the nearest PHC. To keep a record of consumption of the drugs, and for effective re-filling and ensuring adequate/timely availability, a drug kit stock card is maintained. This can be completed by the person who refills the kit or by you.

NEWBORN HEALTH:

1. CARE OF THE BABY AT THE TIME OF DELIVERY

- Many babies die immediately after birth due to asphyxia. In case of home delivery, when mild labor pains start; you can manage asphyxiated babies by removing mucus and can initiate respiration with the help of the instruments you have.
- You should encourage the mother to start breastfeeding immediately after the delivery, as this will help in quick delivery of placenta and minimizes bleeding. Starting to breastfeed immediately after the birth makes the baby stronger.
- Chances of the baby's death and getting sick are higher among the babies born before time (pre-term) and in LBW babies, (Weight less than 2500 gm increases the risk and below 1800 gm, the risk is considered very high.)

2. SCHEDULE OF HOME VISITS FOR THE CARE OF THE NEWBORN

The purpose of these visits is to ensure that the newborn is being kept warm and breastfed exclusively. Encourage the mother to breastfeed; discourage harmful practices such as bottle feeds, early baths, giving other substances by mouth, and to identify early signs of sepsis or other illnesses in the newborn.

- The newborn requires a visit immediately after birth (or within the first 24 hours), and on Day 2, if the baby is born at home.
- If the baby is born at a facility, persuade and support the mother to stay for at least 48 hours, and therefore, the first two visits are taken care in the institution. However, if you are there with the mother, as a birth companion, then you could be of assistance to the nurse/ANM there.
- If the baby is born in a health facility, or at home, you should visit the baby on Days 3, 7, 14, 21 and 28. Additional visits are needed for newborn babies which are LBW, born before term and are sick.

3. EXAMINING THE NEWBORN AT BIRTH

Steps for you to take “just after” the baby is born

If the baby is born at home, or if you are present at the delivery,

- i. Ask the mother about/observe the fluid after the waters break.
- ii. If the fluid is yellow/green, as soon as the head is seen (even before delivery of complete baby), clean the mouth of the baby with gauze piece.
- iii. As soon as the baby is born, note the time of birth and start counting time.
- iv. Observation of baby at birth or within the first 30 seconds and at 5 minutes after birth for movement of limbs, breathing and crying. The figure below will enable the assessment of whether the newborn should be recorded as a live or still birth. All six

have to be “No” to declare a still birth. Even if one is “yes” the baby should be declared as live birth.

- v. If there is no cry or a weak cry, if there is no breathing or weak breathing or gasping, this condition is called Asphyxia. If the baby is asphyxiated (does not breathe at birth), and there is no doctor or nurse, you should try to help. However, in many such newborns, your efforts may not make enough difference and you should not feel bad or blame yourself for this. (Management of asphyxia will be taught below).
- vi. Provide normal care at birth.
 - ✓ Dry the baby: Immediately after delivery, the newborn should be cleaned with a soft moist cloth and then the body and the head wiped dry with a soft dry cloth. The soft white substance with which the newborn is covered is actually protective and should not be rubbed off.
 - ✓ The baby should be kept close to mother’s chest and abdomen.
 - ✓ The baby should be wrapped in several layers of clothing/woolen clothing depending upon the season.
 - ✓ The room should be warm enough for an adult to feel just uncomfortable. The room should be free from strong wind.
- vii. You should weigh the newborn and decide whether the baby is normal or LBW.
- viii. Determine whether the baby is term or pre-term.
- ix. Measure newborn temperature.

First examination of newborn

a. You should conduct the first examination within first 24 hours of delivery and look for the following:

- Whether the baby has any abnormality such as curved limbs, jaundice, bump on head, cleft lip etc.
- How the baby’s suckling at the breast?
- Whether the baby has loose limbs.
- Listen to the cry of the baby.
- Provide care of eyes. If there are pus/purulent discharge from eyes and no doctor or nurse available, apply tetracycline ointment. Even for normal eyes, tetracycline is used as a preventive, so even in doubt as to whether it is pus, it could be given.
- Keep umbilical cord dry and clean.

b. General precautions the family must take

The newborn is delicate and can easily fall sick if the family and mother are not careful. You should explain some general precautions that the family should take.

- **Bathing the baby:** Although it is recommended that the baby should not be bathed until the first seven days, many families would like to bathe the baby on the first or second day. For a normal baby, if the family insists, the baby could be bathed after the second day (48hrs). But in the case of LBW baby, you must insist on their waiting for at least seven days (one week). You should explain that bathing the baby and leaving it wet or exposed may cause it to get cold and fall sick. Thus, it is better to wipe the baby with a warm wet cloth and dry the baby immediately.
- Keep the baby away from people who are sick.
- People who are sick with cold, cough, fever, skin infection, diarrhea, etc. should not hold the baby or come in close contact with the baby.
- The newborn baby should not be taken to places where there are other sick children.
- The newborn baby should also not be taken to places where there are large gatherings of people.

c. What are you expected to do during the newborn visits?

- Enquire and fill the mother's information on home visit form.
- Enquire and fill newborn information on home visit form. These forms help you to think about all the steps you need to take.
- Take out the necessary equipment from the bag and keep on a clean cloth.
- Wash your hands well as taught.
- Then examine the baby –
 - ✓ Measure temperature
 - ✓ Weigh the baby
 - ✓ Perform other activities in the sequence provided in the newborn home visit form.
- Provide the care of eyes, skin and cord.
- Check that the home visit form is filled in completely

d. Learning proper hand washing

- You must make sure that your hands are washed properly with soap before touching the baby. You should also teach the mother and family members to wash their hands before touching the baby.

e. Learning how to measuring temperature

- You should measure the temperature of the newborn using a special thermometer to see if the body temperature is normal or if baby has hypothermia (colder than normal).

f. Learn how to weigh the new born

- Baby should be weighed within two days of birth.

- It is important to weigh the baby after birth because babies may require special care on the basis of the birth weight.
- It is better to use a special color-coded weighing machine meant just for weighing newborn which records the weight as green, yellow or red.
 - If the baby's weight is "in the green zone: baby's weight is normal and can be managed with normal care as described above.
 - If in the yellow zone, the baby is mildly under weight, but can be managed at home with extra care as given below. (Below 2.5 kg but above 1.8 kg).
 - If in the red colored zone, this means that the baby is very small and must be referred to the health centre. These babies also need extra care as given below. (less than 1.8 kg)

g. Learn how to take care of babies less than 2.5 kg

Babies whose weight is in the yellow or red zone are small and require extra care as follows:

- Provide extra warmth.
- Family should ensure.
 - ✓ Baby is wrapped well with thin sheets and blankets.
 - ✓ The head is covered to prevent heat loss.
 - ✓ The baby is kept very close to the mother's abdomen and chest.
 - ✓ Warm water filled bottles wrapped in cloth may be kept on either side of the baby's blankets, when not being kept close to the mother's body.
 - ✓ The baby must be fed more frequently.

All babies below 1.8 kg must be taken to a 24x7 facility or other facility known to provide referral care for sick newborn and examined by a doctor or nurse.

h. Umbilical cord care

- Cord should be kept clamped, till it dries and falls off.
- No application of any medicine is required if there is no bleeding or discharge.
- The umbilical cord should be kept clean and dry at all times.

i. Eye care

Skill checklist for applying eye ointment

If a newborn has pus discharging from its eyes you can put antibiotic ointment in the baby's eyes or a capsule which is available in the market.

How to put antibiotic ointment?

- Gently pull the baby's lower eyelid down.
- Squeeze a thin line of ointment moving from the inside corner to the outside of the eye.

- Do not touch the baby's eye with the tip of the tube. If the tube touches the baby's eyes, it shouldn't be used again.
- If the eyes are swollen with pus, then put the ointment two times a day for 5 days.

4. BREASTFEEDING

a. Benefits for the baby

- Early skin-to-skin contact keeps the baby warm.
- It helps in early secretion of breast milk.
- Feeding first milk (colostrum) protects the baby from diseases.
- Helps mother and baby to develop a close and loving relationship.

b. Benefits for the mother

- Helps womb to contract and the placenta is expelled easily.
- Reduce the risk of excessive bleeding after delivery
- Burns calories and lose pregnancy weight faster
- Uterus returns to its pre pregnancy size
- Lowers risk of breast and ovarian cancer

c. Important facts about breastfeeding

- Start breastfeeding immediately or at least within one hour after birth.
- Give nothing else, not even water.
- Baby should be put to the mother's breast even before placenta is delivered. It is useful for both the baby as well as the mother.
- Breastfeed as often as the baby wants and for as long as the baby wants.
- Baby should be breastfed day and night at least 8-10 times in 24 hours.
- Feeding more often helps in production of more milk. The more the baby sucks, more milk is produced.
- Baby should not be given any other liquid or foods such as sugar water, honey, ghutti, goat's/cow's milk and not even water.

d. Breastfeeding observation tips

Signs of breastfeeding going well	Signs of possible difficulty
Mother's body relaxed, comfortable, confident, eye contact with baby, touching	Mother tense, leans over baby. Not much eye contact or touching
Baby's mouth well attached, covering most of the areola, opened wide, lower lip turned outwards	Mouth not opened wide, not covering areola Lips around nipple
Suckling well, deep sucks, bursts with pauses	Rapid sucks, cheeks tense or sucked in Smacking or clicking sounds

Cheeks round, swallowing heard or seen	
Baby calm and alert at breast, stays attached, Mother may feel uterus cramping, some milk may be leaking (showing that milk is flowing)	Baby restless or crying, slips off breast; Mother not feeling cramping, no milk is leaking (showing that milk is not flowing)
After feed, breast soft, nipples protruding	After feed, breast full or enlarged, nipples may be red, cracked, flat or inverted

e. Correct position for breastfeeding

To obtain maximum benefit of breastfeeding, the baby should be held in the correct position and be put correctly to the breast. The baby is in the correct position when:

- While holding the baby, the mother also supports the baby's bottom, and not just the head or shoulders.
- Mother holds the baby close to her body.
- The baby's face is facing the breast, with nose opposite the nipple

Breastfeeding Positions



f. Counseling tips

- You are there to help the mother, not to take over.
- Use verbal and non-verbal skills to make her feel at ease.
- Encourage and praise her; every mother has the ability to breastfeed. Often mothers are worried that they are inexperienced and lack the confidence. Many women do not breastfeed successfully because they do not get good advice, support and encouragement.

- If she says something that you do not agree with, do not say 'that is wrong'. Do not make her feel bad or stupid. You can repeat what she says (For example, 'I hear you saying that you think you don't have enough milk....' Ask her why she thinks so. Listen to what she is saying and why).
- After you assess the breastfeeding, you should check the baby's weight gain.
- Give advice in simple and clear language.
- Make sure the mother understands what you are saying.
- Have her repeat what she will try to do.

g. Why only breastfeeding?

Giving other food or fluid may harm the baby in following ways

- It reduces the amount of breast milk taken by the baby.
- It may contain germs from water or on feeding bottles or utensils. These germs can cause diarrhea.
- It may be too dilute, so the baby becomes malnourished.
- Baby does not get enough iron from cow's and goat's milk and may thus develop anemia.
- Baby may develop allergies.
- Baby may have difficulty digesting animal milk; the milk can cause diarrhea, rashes or other symptoms. Diarrhea may become persistent.
- Breast milk provides all the water a baby needs. Babies do not need extra water even during the summer months.

Managing Common Breastfeeding Problems

a. SORE NIPPLES

Causes: poor latch-on or positioning at breast

Management:

- Improve attachment and/or position.
- Continue breastfeeding (reduce engorgement if present).
- Build mother's confidence.
- Advise her to wash breast once a day; not to use soap for this.
- Put a little breast milk on nipples after feeding is finished (to lubricate the nipple) and air-dry.
- Wear loose clothing.
- If nipples are very red, shiny, flaky, itchy, and their condition does not get better with above treatment, it may be fungus infection. Apply gentian violet paint to

nipples after each breastfeed for five days. If the condition does not improve, refer to a doctor.

b. INVERTED NIPPLES

Sometimes the nipple will retract in to the breast, and can be checked even during pregnancy. The best treatment is to encourage the mother to gently pull out the nipple and roll it, several times in a day.

c. NOT ENOUGH MILK

Causes: Delayed initiation of breastfeeding; infrequent feeding; giving fluids other than breast milk; mother's anxiety, exhaustion, insecurity; inadequate family support.

Management

- Decide whether there is enough milk or not:
 - ✓ Does the baby pass urine six times or more each day?
 - ✓ Has the baby gained sufficient weight? (During the 1st week there is usually a small weight loss, after that a newborn should gain 150-200 gm per week.)
 - ✓ Is the baby satisfied after feeds?
- Re-assure mother.
- If there is not enough milk, have the baby feed more often.
- Check breastfeed to observe mother attachment and positioning of the mother and baby.
- Encourage rest. Emphasize the mother to drink and eat more.
- Praise her and return for follow-up.

d. Engorged and painful breasts (very full breasts)

Causes: Delayed initiation of breastfeeding, poor attachment, incomplete emptying of breasts, restricting the length of the feeds.

Management

- Prevent by:
 - ✓ Starting breastfeeding soon after delivery and feeding often.
 - ✓ Ensuring correct attachment.
 - ✓ Encouraging on-demand feeding.
- If baby is able to suckle, feed more frequently, help with positioning.
- If the baby is not able to attach, apply warm compresses to breast, gently massage from outside toward the nipple and express some milk until the areola is soft, then put baby to the breast, making sure that the attachment is correct.

- Have baby feed often to empty out the breasts. If it is not possible, ask the mother to express some milk herself.
- If breasts are red and hard, continue to feed often. Use warm compresses and gently massage breasts towards nipple. Take mother's temperature. If she has fever, mother should visit the doctor. She should continue to breastfeed (from both sides) even if she is taking antibiotics.

e. Expressing milk by hand

1. Wash hands with soap and water.
2. Place a warm compress on the breast for a few minutes if desired.
3. Gently massage the breast starting from the chest moving toward the nipple; do this in a circle (near the underarm, and then to the bottom of the breast etc.), so that all parts of the breast are massaged.
4. Lean forward and support the bottom of the breast with one hand.
5. Hold the areola between thumb and two fingers of other hand. Put her hand on the areola above the nipple and the two fingers on the areola below the nipple.
6. Press toward the chest (about 1-2 cm) and then squeeze the milk reservoirs beneath the areola (do not squeeze the nipple).
7. Press and release the thumb and first finger several times until the milk drips out. Use a clean bottle or a cup to collect the milk. Milk may drip at the beginning and then spray out after it starts flowing.
8. Rotate the thumbs and finger around the areola so that the milk is removed from all the reservoirs.
9. Repeat with the other breast.



Signs that the baby is not getting enough milk:

- Poor weight gain
 - Weight gain of less than 500 gm in a month
 - Less than birth weight after two weeks
- Passing small amounts of concentrated urine
 - Less than six times a day
 - Yellow and strong smelling
- Other signs are:
 - Baby not satisfied after breastfeed and often cries
 - Very frequent breastfeeds
 - Very long breastfeeds
 - Baby refuses to breastfeed
 - Baby has hard, dry or green stools
 - No milk comes when mother tries to express
 - Breast did not enlarge
 - Milk did not come in.

Mothers and families think that in the following situations, their milk is not enough, but in fact, these do not affect the breast milk supply:

- Age of mother

- Sexual intercourse
- Return of menstruation
- Disapproval of relatives and neighbors
- Age of baby
- Caesarean Section
- Many children
- Simple, ordinary diet

Breastfeeding Low Birth Weight/Pre-Term babies

Advantages of breast milk for LBW and pre-term Babies:

- Has the right nutrients for the pre-term/LBW baby
- Pre-term babies need more protein and a mother who has delivered pre-term has more breast milk.
- Is easily digestible.
- Contains factors to fight infection (small babies are more vulnerable to disease).
- Breastfeeding keeps the baby close to the mother and therefore, warm.
- This protects the pre-term baby from cold (Hypothermia), which can lead to infection.

Key Messages

For small babies who can suckle

- Try the underarm hold for more support or the alternate underarm hold.
- If sleeping, wake baby every 2-3 hours for breastfeeding by rubbing a damp cloth over baby's face.

For babies who are not able to suckle:

- Babies less than 1500 gm may not be able to breastfeed in the beginning.
- Express milk by applying gentle pressure over entire breast and collect milk in a clean bowl.
- Express milk every 2-3 hours to keep the milk supply up.
- Put baby to breast and allow her to lick the nipple, and try to suckle.
- Once the baby is able to suckle, she should be put to the breast as often as possible to stimulate milk production.
- Continue feeding with the spoon as well until the baby is getting its milk requirements directly from the breast.

How much to give?

- For a LBW baby: For first day 60 ml/kg body weight.
- Add 20 ml/kg body weight until baby is taking 200 ml per day.

- Divide the total into 8-12 feeds (every 2-3 hours).
- Colostrum can be kept for up to 12 hours at room temperature.
- Mature milk (after first 72 hours) can be kept for 6-8 hours at room temperature.
- Continue until baby can be fully breastfed.

5. KEEPING THE NEWBORN WARM

Why is it important to keep baby warm after delivery?

Babies have difficulty maintaining their temperature at birth and in the first day of life. They come out wet, and lose heat quickly. If they get cold, they use up energy, and can become sick. LBW and pre-term babies are at greater risk of getting cold.

When and why do most newborns get cold?

Most newborns lose heat in first minute after delivery. They are born wet. If they are left wet and naked, they lose a lot of heat to the air. A newborn baby's skin is very thin and baby's head is big in size compared to the baby's body. It loses heat very quickly from its head. Babies do not have the capacity to keep themselves warm. If the newborn baby is not properly dried, wrapped, and its head is not kept covered, it can lose 2 to 4 degree Celsius within 10-20 minutes.

Example: If the baby's temperature was 97.7 degree Fahrenheit (36.5 degree Celsius) (normal temperature) at the time of birth and if there was a loss of 2.7 degree Fahrenheit because the baby was not properly dried and covered, the body temperature will become 95 degree Fahrenheit (35.0 degree Celsius), which is below normal.

What is the term for a situation when a baby's temperature falls below normal?

When a baby has temperature below normal, it suffers from **hypothermia**.

What happens to a baby with hypothermia?

A baby who is cold, and has a low temperature (hypothermia) suffers from:

- Decreased ability to suckle at the breast, leading to poor feeding and weakness. Increased susceptibility to infections.
- Increased risk of death, especially in LBW and pre-term babies.

How can you tell if a baby is hypothermic?

- The early sign is cold feet.
- Then, the body becomes cold.
- The best method is to measure the baby's body temperature.

How to keep newborns warm?

- Before delivery, warm up the room (warm enough for adults).
- Immediately after delivery, dry the baby.
- Put a cap on the baby since a lot of heat could be lost through its head.
- Place in skin-to-skin contact (Kangaroo Mother Care) with mother.
- Cover or put clothes on the baby, wrap it up with clean cloth, and place it close to its mother.
- Initiate early breastfeeding.
- Bathing for newborns:
 - ✓ It is best to wait until the **second day to bathe the baby. One should wait seven days in case of LBW baby.**
 - ✓ If the family insists on bathing the first day, please ask them to delay for at least six hours to give the baby time to adjust with its new environment.
 - ✓ For small and pre-term babies, do not give a bath until the baby gains weight (this could be few weeks) and weight of baby become 2,000 gm.
- To keep a small baby clean, you can give a light oil massage but making sure that the room is warm and the baby is not left uncovered for more than 10 minutes. **DO NOT** pour oil into any orifice, like the nose or ears at any time.
- Keep baby loosely clothed and wrapped.
- If it is very warm outside, make sure the baby is not too heavily clothed and wrapped; the baby can also get too hot.
- Wherever possible, insist on referral to a facility that is managing sick newborns. If this is not immediately possible, begin the following steps:

How to re-warm a baby getting cold?

<97 degree Fahrenheit (36.1 degree Celsius) or too cold <95 degree Fahrenheit (35.0 degree Celsius)

- Increase the room temperature.
- Remove any wet or cold blankets and clothes.
- Hold the baby with its skin next to its mother's skin (skin-to-skin contact) and place a warmed cloth (not too hot to avoid burns) on its back or chest. As this cloth cools down, replace it with another warmed one, and repeat until the baby is warmer. Continue until the baby's temperature reaches the normal range.
- Put on its clothes and its cap, put it in warm bag, and make it lie close to its mother.

- Continue to breastfeed the baby to provide calories and fluids to prevent a drop in the blood glucose level.

- ✓ A common problem in hypothermic babies.

If a baby is too cold <95 degree Fahrenheit (35.0 degree Celsius), follow the above and advice

- Place skin-to-skin, and once the baby is a little warmer, then clothe baby and place in a bed pre-warmed with warm clothes, or a hot stone or hot water bottle. (Remove these articles before putting baby on the bed.)
- In an institutional delivery, there should be a newborn corner available with a radiant warmer or some other suitable heating arrangement where the newborn baby can be kept.

Kangaroo Mother Care or Skin to skin contact:

- A special way of caring for Low birth weight (LBW) babies
- It promotes
 - ✓ Effective thermal control
 - ✓ Breast feeding
 - ✓ Prevention of infection
 - ✓ Parental bonding

Components of KMC:

- i. Skin-to-skin contact: Early, continuous and prolonged skin-to-skin contact
- ii. Exclusive breast feeding: Promotes lactation and facilitates feeding

Benefits of KMC:

- **Breast feeding**
 - ✓ Increased breast feeding rates
 - ✓ Increased duration of breast feeding
- **Thermal control**
 - ✓ Effective thermal control
 - ✓ Equivalent to conventional incubator care
- **Lesser morbidity**
 - ✓ Regular breathing
 - ✓ Decreased episodes of apnea
 - ✓ Protection from nosocomial infections
- **Early discharge**
 - ✓ Better weight gain enhances early discharge
- **Other benefits**
 - ✓ Less stress to the infant
 - ✓ Stronger bonding

- ✓ Deep satisfaction for mother
- ✓ More confident parents

Eligibility criteria: Baby

- Birth weight >1800 gm: Start at birth
- Birth weight 1200-1799 gm: Hemodynamically stable
- Birth weight <1200 gm: Hemodynamically stable

Eligibility criteria: Mother

- Willingness
- General health & nutrition
- Hygiene
- Supportive family
- Supportive community

Preparing for KMC:

- **Mother's clothing**
 - ✓ Front-open, light dress as per the local culture
- **Baby's clothing**
 - ✓ Cap, socks, nappy and front-open sleeveless shirt or 'jhabala'

KMC procedure:

Kangaroo positioning

- Place baby between the mother's breasts in an upright position
- Head turned to one side and slightly extended
- Hips flexed and abducted in a "frog" position; arms flexed
- Baby's abdomen at mother's epigastrium
- Support baby's bottom



Fig. Kangaroo positioning

Monitoring during KMC:

Check if

- Neck position is neutral
- Airway is clear
- Breathing is regular
- Color is pink
- Temperature is being maintained

Any family member can do it!



KMC by father



KMC by grand mother

6. MANAGEMENT OF FEVER IN NEWBORN

A baby has fever if the temperature is above 99 degree Fahrenheit (**37.2 degree Celsius**). In the case of high body temperature of the baby during summer, verify in the following manner whether this is due to the body being overdressed or does it really have fever:

- Unwrap the baby and take off its cap.
- Ventilate the room too to cool the baby.
- Ask the mother to start breastfeeding.
- If there is a source of extra heat (like a fire) in the room, put it out.
- Wait for 30 minutes and take the temperature once again.

If the baby's temperature returns to normal, explain to the mother that in very warm weather, the baby does not have to be kept covered with additional cloth or kept wrapped.

If the temperature is still above normal after the above measures have been taken, refer the baby for treatment.

7. IMMUNIZATION:

Universal Immunization Program

- Immunization Program is one of the key interventions for protection of children from life threatening conditions, which are preventable. It is one of the largest immunization programs in the world and a major public health intervention in the country.
- Immunization Program in India was introduced in 1978 as Expanded Program of Immunization (EPI)
- The program gained momentum in 1985 and was expanded as Universal Immunization Program (UIP) to be implemented in phased manner to cover all districts in the country by 1989-90.
- UIP became a part of Child Survival and Safe Motherhood Program in 1992. Since, 1997, immunization activities have been an important component of National Reproductive and Child Health Programme and is currently one of the key areas under National Rural Health Mission (NRHM) since 2005
- Under the Universal Immunization Program, Government of India is providing vaccination to prevent seven vaccine preventable diseases i.e.
 - ✓ Diphtheria, Pertussis, Tetanus, Polio, Measles, severe form of Childhood Tuberculosis and Hepatitis B, Haemophilus influenza type b (Hib) and Diarrhea

National Immunization Schedule				
Vaccine	When to give	Dose	Route	Site
For Infants				
BCG	At birth or as early as possible till one year of age	0.1ml (0.05 ml until 1 month of age)	Intra -dermal	Left Upper Arm
Hepatitis B Birth dose	At birth or as early as possible within 24 hours	0.5 ml	Intramuscular	Anterolateral side of mid thigh-LEFT
OPV Birth dose	At birth or as early as possible within the first 15 days	2 drops	Oral	-
OPV 1,2 & 3	At 6 weeks, 10 weeks & 14 weeks	2 drops	Oral	-
IPV (inactivated Polio Vaccine)	14 weeks	0.5 ml	Intramuscular	Anterolateral side of mid thigh-RIGHT
Pentavelant 1,2 & 3	At 6 weeks, 10 weeks & 14 weeks	0.5 ml	Intramuscular	Anterolateral side of mid thigh-LEFT
Rota Virus Vaccine	At 6 weeks, 10 weeks & 14 weeks	5 drops	Oral	-
Measles 1 st Dose	9 completed months-12 months. (give up to 5 years if not received at 9-12 months age)	0.5 ml	Subcutaneous	Right Upper Arm
Vitamin A, 1 st Dose	At 9 months with measles	1 ml (1 lakh IU)	Oral	-

8. HIGH RISK ASSESSMENT AND MANAGEMENT OF LOW BIRTH WEIGHT/PRE-TERM BABIES:

Guidelines for ASHA on identifying a high risk baby

- Birth weight less than 2000 gm.
- Pre-term (delivery which happens when mother is 8 months and 14 days pregnant or less).
- Baby not taking feeds on Day 1.

If you were not present at the time of delivery and your first visit to the newborn is delayed, then the newborn is to be weighed on the day of your first visit. In such cases, using the following table, determine whether the baby is high risk or not:

Day on which baby is	Weighed for the first	Term
1 to 14 days	Less than 2 kg	High Risk Baby
15 to 21 days	Less than 2 kg 100 gm	High Risk Baby
22 to 27 days	Less than 2 kg 200 gm	High Risk Baby
28th day	Less than 2 kg 300 gm	High Risk Baby

Guidance that you should give to the family

- Keep the baby clothed from the very first day. In winter, cover the baby with a blanket.
- Do not bathe a baby until its weight is 2000 gm.
- Ensure that mother's nails are cut and that her hands are washed every time the baby is breastfed.
- After returning from the toilet, all family members must wash their hands with soap before touching the baby.
- High risk babies should be breastfed after every two hours.
- If baby is not suckling milk, squeeze the breast milk in a small bowl and then feed the baby with a spoon.
- The weight of high risk babies should improve every week from second week. If this does not happen, counsel them to consult you.
- Ask them to call you immediately if the baby develops any of the following:
- All limbs become limp, stops feeding, has chest in drawing, has fever, and is cold to touch.

What should you do if the baby is at high risk?

- Increase the number of home visits after delivery from 5 to 13.
- A daily visit, if possible, for the first week

- Once every three days until the baby is 28 days old, and if the baby is improving once on the 42nd day.
- Weigh the babies on Day 7, 14, 21, 28. Babies who weigh less than 2300 gm on the 28th day have a higher risk of dying. If the baby is not gaining weight, refer the baby to the hospital.
- Explain the high risk issues to the parents and family (see box above).
- Provide specific care as per the problem but in general, keep the baby warm and breastfeed more often every two hours.
- For poor breastfeeding, observe the mother breastfeeding. Ensure proper latch on and positioning. Encourage the mother so that she is motivated to feed the baby well. Counsel the mother that she should not give other liquids or feeds.
- If on Day 28 the weight is less than 2300 gm or weight gain in 28 days is less than 300 gm, then you should continue to visit once a week in the 2nd month and take the weight every week.
- Fill home visit form for high risk baby

9. ASPHYXIA DIAGNOSIS AND MANAGEMENT

What is Asphyxia?

A baby having any one of the following symptoms at the time of birth is asphyxiated:

- No cry
- Weak cry
- No breathing
- Weak breathing.

If a baby has asphyxia, it is an Emergency. A life can be saved or lost in these five minutes. If you are present at the time of birth, and there is no doctor or nurse, you should try to help to manage the baby. However, in many such newborns, your efforts may not make enough difference and you should not feel bad or blame yourself for this. Depending on the area in which you work, you may be trained in using a bag and mask to treat asphyxia.

Consequences of Asphyxia

Immediate (at birth)

- Baby is born dead (stillbirth)
- Dies at once or within a few days
- Unable to suckle.

Long term

If the baby survives, it may have:

- Mental retardation

- Epilepsy (seizures and fits)
- Spasticity (difficulty walking or moving arms and hands).

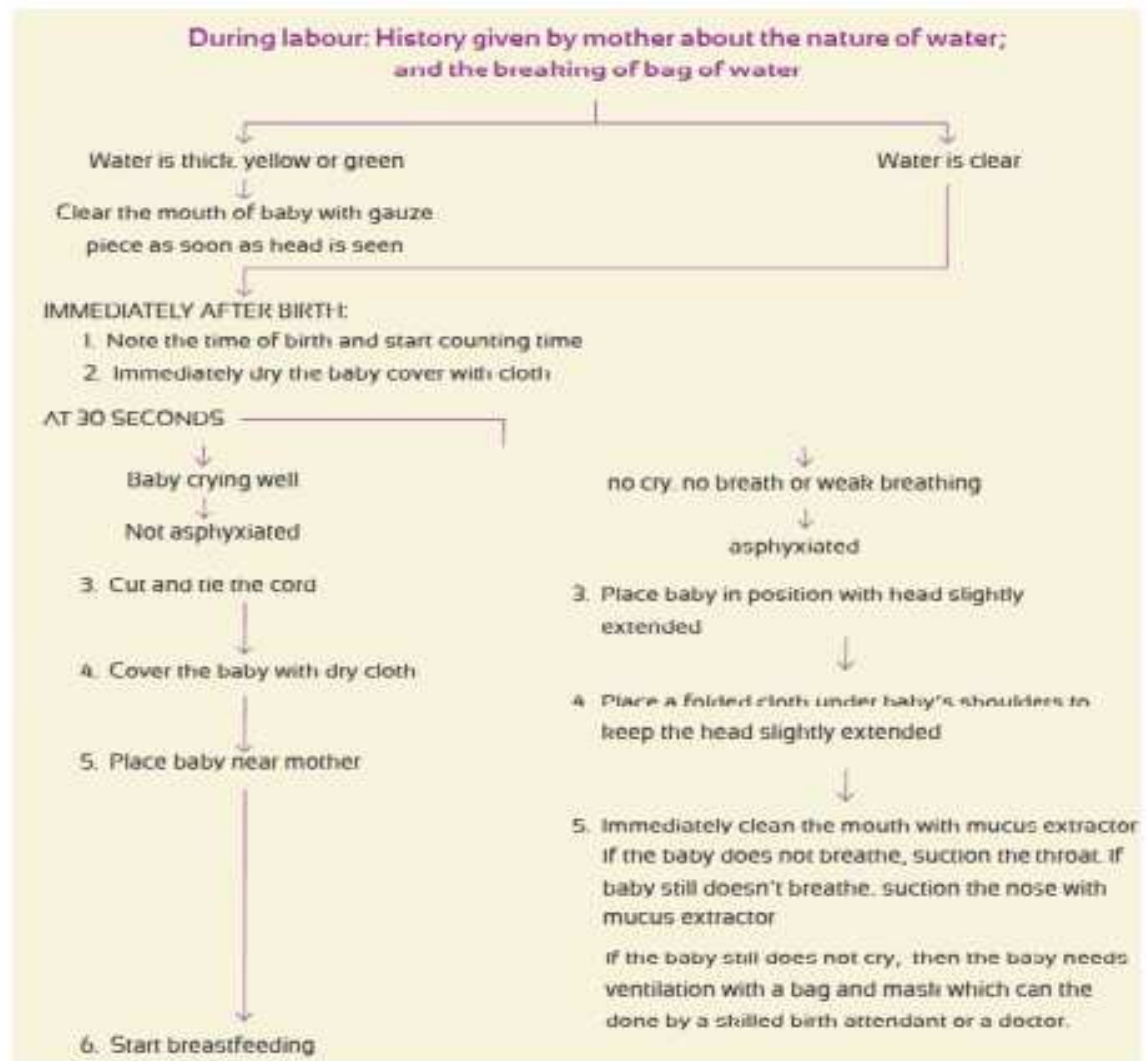
These signs warn of asphyxia during labour

1. Prolonged or difficult labour
2. Ruptured membranes with little fluid (dry delivery)
3. Green or yellow colour thick amniotic fluid
4. Cord comes out first or cord is wound tightly around the neck
5. Pre-term labour (delivery taking place less than 8 months 14 days of pregnancy)
6. Baby being born in a position in which the head does not come out first.

Asphyxia Action Tree:

You must know the signs during labour that may indicate asphyxia at birth.

In this module, ASHA will learn to manage asphyxia using a mucus extractor.



10. NEONATAL SEPSIS: DIAGNOSIS AND MANAGEMENT

“Sepsis” means infection. In newborn babies, “sepsis” refers to any serious infection in the baby whether in the lungs, brain or blood.

How common is sepsis and how serious?

- In rural India, one out of every ten newborns develops sepsis.
- Sepsis in the first month of life is very serious, and is the most common killer of newborns in the first month of life.
- Without treatment, many babies with sepsis will die; with treatment, most babies will get better, live and grow up normally.

Causes of neonatal sepsis:

- Mother has infection during pregnancy or delivery.
- Unclean techniques during delivery (poor hand washing, use of unclean blade or cord ties) can cause sepsis.
- Cord becomes infected from unclean cutting or putting dirty things on it
- Baby is weak; born pre-term or with LBW (less than 2000 gm)
- Baby becomes weak from poor feeding practices; not giving breast milk early and exclusively.
- Baby becomes weak – exposed to the cold after delivery.
- Baby comes into contact with someone who has an infection: mother, family members, or ASHA

Can sepsis be prevented? Yes, if the following are observed carefully

- Good hygiene: frequent hand washing; clean instruments during delivery; clean clothes
- Keeping the baby warm during the cold season
- Breastfeeding (early initiation and on demand, and exclusive)
- Keeping the umbilical cord clean and dry

Information about danger signs to parents: You should teach the parents that if any of the following signs develop, you should be called immediately or the baby should be taken at once for referral.

- Limbs become limp
- Stops feeding
- Has chest in drawing
- Has fever
- Is cold to touch.



Management of sepsis:

In case of sepsis in a newborn, if the baby is taken to the ANM, she would treat the baby with a combination of Oral Amoxicillin+ Injectable Gentamicin. If the ANM is not available or the referral facility is far off or the parents are not in a position to take the baby immediately, ASHA should start the treatment with Oral Amoxicillin (as described in the box below) and refer the baby to the facility. In such situations you should also:

- Counsel the mother/caregiver for urgent referral to the nearest health facility
- Arrange transport by calling ambulance services as part of the JSSK scheme

Amoxicillin is available as Syrup formulation and dispensable tablets	
Syrup (contains 125mg/5 ml)	
Dosage- 25 mg/kg/dose in two divided doses	
Newborn's Weight	Daily Dose (to be divided into two equal parts and given twice daily)
Less than 2.0 kg	2 ml
Between 2.0 to 3.0 kg	2.5 ml
Between 3.0 to 4.0 kg	3 ml
Between 4.0 to 5.0 kg	4ml
*You may use dropper or dispenser to measure the accurate dose	
**Avoid amoxicillin in babies already having diarrhea. Some babies could develop Diarrhea, Vomiting and rashes and must be referred to a PHC.	

During referral to the health facility, there are certain steps that you can take to help the sick child

1. Keep the baby warm by skin to skin contact with mother /care giver while arranging referral and during transport
2. Ask mother to breastfeed the child frequently, this will help in maintaining blood sugar in child. Give 20-50 ml expressed breast milk if baby is not able to breastfeed.

When to refer the baby?

- Baby has breastfeeding problems and is not solved by ASHA's counseling and home management after 24 hours.
- Baby has danger signs:
 - Not responding – after antibiotic treatment for 24 hours.
 - Becomes yellow (jaundice) on first day or jaundice persists after 14 days.

- Bleeding from nose, mouth or anus.
- Convulsions.
- Body temperature of baby continues to remain less than 95 degree F even after re-warming the baby for 24 hours.
- Tetanus (stiffness after the fourth day), unable to suckle or open mouth.

CONCLUSION:

A life can be saved or lost in the five minutes of delivery. If ASHAs are present at the time of birth, and there is no doctor or nurse, ASHA will try to help to manage the baby. So, training and teaching of ASHAs on HBNC is very important to manage a newborn at home.

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2. <http://nhsrcindia.org/category-detail/training-and-tools/MTg==#>
3. <http://gmch.gov.in/e-study/e%20lectures/Pediatrics/kmc.pdf>
4. <http://www.nrhmhp.gov.in/content/immunisation>

Annexure 13

Section I – 1.1: Baseline Information for ASHA

S. No:

Date:

Name:

Please complete the information required by encircling the appropriate option.

1. Age in years_____
2. Highest academic qualification
 - a. High School (Till 10th)
 - b. Higher Secondary (Till 12th)
 - c. Degree and above
3. Marital status
 - a. Married
 - b. Unmarried
 - c. Widow
 - d. Separated
4. Type of family
 - a. Joint family
 - b. Nuclear family
 - c. Extended
5. Number of children_____
6. Religion
 - a. Hindu
 - b. Muslim
 - c. Christian
 - d. Others
7. Work experience (in years)_____
8. Attended any training related to HBNC in last 6 months
 - a. Yes
 - b. No

If yes, specify place _____ and duration_____

Section I: 1.2: Knowledge Questionnaire for ASHA on Home based newborn care

Sl. No:

Date:

I request you to answer the following questions to the best of your knowledge. Please give your response by encircling only one option in each question.

I. General information about High risk newborn:

1. A high risk baby is described as
 - a. Baby with birth weight more than 2.5 kg
 - b. Baby with birth weight of 3 kg
 - c. Baby with birth weight less than 1.8 kg
 - d. A term baby with birth weight 2.5 kg
2. A low birth weight baby can be managed by
 - a. Provide extra warmth & frequent feeding
 - b. Provide normal care
 - c. Regular checking of birth weight
 - d. Frequent checking of temperature
3. Asphyxia can be prevented at birth by cleaning
 - a. Mouth and nose
 - b. Nose only
 - c. Mouth only
 - d. Whole face
4. Why should we give immunization?
 - a. To prevent from infections
 - b. To prevent from diseases in later age
 - c. To enhance proper growth & development
 - d. Provide immunity against infectious diseases
5. Which of the following immunizations are mandatory for newborns?
 - a. BCG, OPV 1, Hepatitis B Birth dose
 - b. BCG, Hepatitis B Birth dose , OPV Birth dose
 - c. BCG, OPV 1, Pentavelant 1, Hepatitis B
 - d. BCG, IPV, Hepatitis B Birth dose
6. Which of the following symptoms commonly occur after immunization?
 - a. Inability to take feeding
 - b. Irritability
 - c. Fever
 - d. Cry
7. Which one of the following causes sepsis in newborn?
 - a. Covering baby with blanket
 - b. Adequate feeding
 - c. Poor hygienic condition of baby care
 - d. Poor health of mother

8. Symptoms of sepsis include -
 - a. Fever, stop feeding, &limping
 - b. Feeding active baby
 - c. Sleepy baby
 - d. Too much demanding baby
9. Which types of diseases are prevented through immunization?
 - a. Congenital anomaly
 - b. Non communicable diseases
 - c. Malnutrition
 - d. Six killer diseases

II. Eye & Umbilical cord care:

10. How to care eyes of newborn baby?
 - a. Clean with warm water using clean cloth
 - b. Clean with dry cloth
 - c. Clean using antiseptic solution
 - d. No need of cleaning
11. How will you manage eye infection of newborn?
By cleaning eye with -
 - a. Antiseptic lotion
 - b. Antibiotic ointment/drops
 - c. Clean with warm water using clean cloth
 - d. Keeping it open
12. Which of the following is correct method of applying ointment on eyes?
 - a. Squeeze thin line of ointment moving from inside to outside of the eye
 - b. Apply ointment gently touching the eye with the tip of the tube
 - c. Apply thin line of ointment moving from outside to inside of the eye
 - d. Gently apply the ointment on the pupil
13. How long does umbilical stump of newborn take to shed off?
 - a. 6-12 days
 - b. 13-19 days
 - c. 20-26 days
 - d. 27-33 days
14. How to take care of umbilical cord of newborn?
 - a. Keep it dry & clean without applying any medicine
 - b. Apply antiseptics
 - c. Apply oil
 - d. Apply ash
15. What is the technique of cleaning the umbilical cord?
 - a. First clean the base followed by umbilical stump
 - b. First clean the umbilical stump followed by base
 - c. Clean only the umbilical stump without touching the base

- d. Clean it in any direction
- 16. What is the importance of cord care?
 - a. Early shed off
 - b. Maintenance of body temperature
 - c. Prevention of infections
 - d. Identification of cord abnormalities

III. Prevention of hypothermia:

- 17. Which among the following is the cause of low body temperature in newborns?
 - a. Delay in initiation of breast feeding
 - b. Improper drying, wrapping & left head uncovered
 - c. Delay rooming - in at home
 - d. Low room temperature where newborn is kept
- 18. Which one of the following help to keep baby warm?
 - a. KMC (skin-to-skin care)
 - a. Keep the baby in normal room temperature
 - b. Applying oil on the body of the baby
 - c. Bathing under the sunlight
- 19. Which of the following position is used for newborn in KMC?
 - a. Supine position
 - b. Frog - leg position
 - c. Prone position
 - d. Sitting position
- 20. Which body parts of newborn should ideally be covered to prevent hypothermia?
 - a. Head and whole body
 - b. Only trunk
 - c. Hands and legs
 - d. Only head
- 21. Maximum heat loss in newborn occurs through which part of the body?
 - a. Trunk
 - b. Extremities
 - c. Back
 - d. Head
- 22. What is the complication of hypothermia in newborns?
 - a. Dehydration
 - b. Fever
 - c. Body warm to touch
 - d. Infections & death
- 23. Which types of babies are in greater risks of hypothermia?
 - a. Full term newborns
 - b. Baby born with LSCS
 - c. Baby born at home

- d. Preterm & LBW

IV. Breast feeding care:

- 24. What is the initial feeding of newborns?
 - a. Ghee & butter
 - b. Honey and black tea
 - c. Breast milk with colostrum
 - d. Breast milk without colostrum
- 25. How often a newborn be breastfed?
 - a. Whenever baby cries
 - b. Every hourly
 - c. Every time when baby passes stool
 - d. Every time when baby passes urine
- 26. Which type of milk provides adequate amount of iron in newborns?
 - a. Cow's milk
 - b. Mother's milk
 - c. Powder milk
 - d. Goat's milk
- 27. Which position should mother adopt for breast feeding?
 - a. Sitting position
 - b. Lying position only
 - c. Underarm & alternate underarm positions
 - d. All of the above
- 28. Which of the following is breastfeeding problem?
 - a. Engorged and painful breasts
 - b. Poor attachment with newborn baby
 - c. Baby gains weight more than 500 gm per month
 - d. Frequent breast feeding
- 29. How will you recognize inadequate breast feeding?
 - a. Baby passing urine less than 6 times in a day
 - b. Adequate weight gain
 - c. Baby not crying
 - d. Baby sleeping comfortably
- 30. What is the common cause of engorged breast?
 - a. Early initiation of feeding
 - b. Incomplete emptying of breast
 - c. Good attachment
 - d. Prolonged feeding
- 31. What is the cause of sore nipple?
 - a. Poor latch – on
 - b. Ineffective positioning
 - c. Not cleaning breast with soap

- d. Overflow of milk

V. Hygiene and prevention of infection:

- 32. Which of the following is the way to prevent cross infections to newborns?
 - a. Maintaining warm room temperature where baby is kept
 - b. Washing hands using soap before and after touching baby
 - c. Washing babies clothes with soap and water
 - d. Mother maintain bond with newborn baby
- 33. How frequently newborn diaper should be changed?
 - a. Whenever it is wet & soiled
 - b. Once in a day after bath
 - c. Twice in day in morning & evening
 - d. Thrice in a day if required
- 34. What will be complication of prolonged contact with soiled cloth to the newborn?
 - a. Cloth rash
 - b. Fever
 - c. Diarrhea
 - d. Irritation
- 35. What is the complication of feeding animal milk in newborns?
 - a. Low infection episodes
 - b. Extra weight gain
 - c. Diarrhea, allergies & malnutrition
 - d. Less frequent sickness
- 36. When should a newborn be immediately referred to hospital?
 - a. Breast feeding related problems
 - b. Neonatal Sepsis
 - c. Changes in stool color of newborn
 - d. Weight reduction of baby in first week

Scoring category: Max score - 36

Poor knowledge – 0 -18

Average knowledge – 19 - 29

Good knowledge – 30 -36

Section I: 1.3: Attitude assessment scale of ASHAs on HBNC

Sl. No:

Date:

I request you to answer the following questions to the best of your knowledge. Please response to the statements by putting a tick mark (✓) to the most appropriate score.

Sl. No.	Statement	Strongly Disagree	Disagree	Agree	Strongly Agree
		1	2	3	4
Do you feel -					
1.	First newborn examination can be conducted anytime.				
2.	Cord stump falls automatically without any care.				
3.	Delaying bath of baby can keep baby warm.				
4.	Wrapping the newborn with multiple layers of clothes can cause fever.				
5.	Newborn can't self maintains body temperature.				
6.	Kangaroo Mother Care (KMC) is only for preterm babies.				
7.	KMC can be provided only by the mother.				
8.	KMC can be given to sick newborns.				
9.	A potential benefit of KMC is overstated.				
10.	Parents should be encouraged to practice KMC.				
11.	Feeding first breast milk protects the baby from diseases.				
12.	Baby shouldn't be given gripe water/ ghutti.				
13.	Frequent feeding reduces the milk production.				
14.	Baby should be fed breast milk with other feeds.				
15.	The mother should breastfeed the baby within an hour of delivery.				
16.	Breastfeeding improves bonding between mother and the baby.				
17.	Low birth weight baby has tendency to lose heat				

	faster than baby with normal weight.				
18.	Baby can be given bath with tap water.				
19.	A used razor blade shouldn't be using to cut the umbilical cord.				
20.	Regular weighing of newborn is important.				
21.	Breast milk can cause allergies to baby.				
22.	Baby requires extra water in summer with breast feed.				
23.	Immunization is not required in newborns.				
24.	Frequent visit to newborn's house is not important.				
25.	Newborn shouldn't be taken to family gatherings.				
26.	A dirty umbilical cord can cause infection to baby.				
27.	Inexperienced mothers don't have the ability to breastfeed.				
28.	Hand washing before touching the baby is not always required.				
29.	Babies fed with mother's milk are healthier than the babies fed with formula feed.				
30.	A newborn baby can get infection from anyone who has infection.				

Note: Negative statements are reversely scored.

Max Score -120

Arbitrary Scoring Category:

Negative attitude - ≤ 60

Positive attitude - > 60

Section I: 1.4: Self Reported Practices assessment scale for ASHA on HBNC

Sl. No:

Date:

I request you to answer the following questions to the best of your knowledge. Please give me your response by putting a tick mark (✓) in each question.

Sl. No.	Area of assessment Do you do the following?	Always 3	Often 2	Rarely 1	Never 0
1.	Wash your hands before providing care to babies at home?				
2.	Wash your hands after providing care to babies?				
3.	Provide care to newborn babies within first 24 hours?				
4.	Visit the newborn babies on 3 rd day?				
5.	Visit the newborn babies on 7 th day?				
6.	Visit the newborn babies on 14 th day?				
7.	Visit the newborn babies on 21 st day?				
8.	Visit the newborn babies on 28 th day?				
9.	Advise not to give gripe water/ ghutti to newborn baby?				
10.	Encourage initiating the breast feeding within first hour of delivery?				
11.	Advise mother to feed colostrum to the newborn baby?				
12.	Advise the mother to give exclusive breastfeeding to the newborn till 6 months of age?				
13.	Advise mother to give feed whenever baby cries or 7- 8 times in 24 hours?				
14.	Advise the mother to wash and clean the breast before feeding?				
15.	Advise for delay bathing for normal newborn at least 48 hours after birth?				
16.	Inform mother to cover head and whole body of newborn to prevent hypothermia?				
17.	Check newborns body temperature in axillary site using thermometer?				
18.	Advise to wrap the baby with multilayer of clothes?				
19.	Advise mother for routine skin to skin care?				
20.	Advise not to apply anything on the cord stump & keep it dry?				
21.	Advise to clean the stump of the umbilicus first followed by base?				

22.	Advise to clean the newborn eyes with clean cloth and warm water?				
23.	Advise the mother to ensure routine immunization of newborns?				
24.	Explain the mother about symptoms commonly experienced by newborns after immunization?				
25.	Advice to change newborn's diaper whenever it is wet & soiled?				
26.	Advise not to apply any kajal to baby's eyes?				
27.	Advise not to kiss on baby's face?				
28.	Advise to limit the visitors to newborn?				
29.	Advise when to bring sick baby to doctors?				
30.	Advise about warning signs of sepsis to parents?				

Scoring Category: Max score - 90

Poor practice – 30 - 45

Average – 46 -72

Good – 73 - 90

Section I: 1.5: Focus Group Discussion

Name:_____

Aim: To get feedback from ASHA on HBNC program.

1. What is your inspiration to become an ASHA?
2. How familiar are you with HBNC program?
3. Are you confident enough to deliver HBNC program?
4. Is there anything you like to comment on implementation of HBNC by ASHAs?

Annexure 14

Section II

2.1: Profile of Mother and Baby

Sl. No:

Date:

Name:

I request you to answer the following questions to the best of your knowledge.

1. Age (years)_____
2. Educational status_____
3. Occupation_____
4. Religion_____
5. Have you gone for any antenatal visit for recent pregnancy?
 - a. Yes
 - b. No
6. Have you visited obstetrician for antenatal check up?
 - a. Yes
 - b. No
7. Dosage of TT injection taken
 - a. One dose
 - b. Two dose
 - c. Not received
8. History of intake of folic acid, iron and calcium supplements
 - a. Taken
 - b. Not taken
9. Place of delivery
 - a. Home
 - b. Hospital
 - c. PHC
 - d. CHC
 - e. Sub-center

If home delivery, please specify the person who conducted the delivery_____

10. Any advise/counseling received on newborn care
 - a. Yes
 - b. No

If Yes, Please specify the source_____

11. No. of children
 - a. One
 - b. Two
 - c. Three and above
 - d. None

12. Birth Spacing between the children

- a. One year
 - b. Two years
 - c. Three years
 - d. Four and above
13. Birth order of the child
- a. First
 - b. Second
 - c. Third
 - d. Fourth and above
14. Duration of Hospital stay post-delivery
- a. 24 hours
 - b. 48 hours
 - c. 72 hours
 - d. More than 72 hours
15. Baby was borne
- a. Full term
 - b. Preterm
16. Birth weight of the baby is_____.
17. Did baby cried immediately at birth?
- a. Yes
 - b. No
18. Any immunizations given to baby till now
- a. Yes
 - b. No

If Yes, Please specify_____

19. Any history of child illness
- a. Yes
 - b. No

If Yes, Please specify_____

20. Any feeding problem
- a. Yes
 - b. No

If Yes, Please specify_____

Section II

Section II: 2.2: Self reported newborn care practices by mothers

Sl. No:

Date:

I request you to answer the following questions to the best of your knowledge. Please response to the statements by putting a tick mark (✓) to the most appropriate score in relation to your child.

Sl. No.	Postnatal Newborn Care Practices Do you do the following?	Yes 1	No 0	Reason
1.	Initiation of breast feeding within the first hour of delivery			
2.	Given gripe water/ ghutti to newborn baby			
3.	Wash and clean the breast before feeding			
4.	Changes clothes every day after taking bath			
5.	Fed colostrum to the newborn baby			
6.	Exclusive breastfeeding to the newborn			
7.	Feed the baby whenever cries or 7- 8 times in a day			
8.	Wrap the baby in multilayer of clothes			
9.	Delay bath till 48 hours after birth			
10.	Practiced the kangaroo care method			
11.	Cover the baby's head and whole body to prevent low body temperature			
12.	Avoid applying anything on the cord stump			
13.	Keep the umbilical cord stump dry			
14.	Clean the umbilical stump first followed by base of the umbilicus			
15.	Keep the baby's eyes clean			
16.	Clean the eyes with clean cloth and warm water			
17.	Wash hands using soap every time before handling the newborn			
18.	Baby has been taken to hospital for routine immunization.			
19.	Change newborn diaper whenever it is wet & soiled			
20.	Used pacifier to comfort the baby.			
21.	Given Prelacteal feeds/water to hydrate the baby.			

Section II

Section II: 2.3: Opinionnaire for mothers on HBNC provided by ASHA

Sl. No:

Date:

I request you to answer the following questions to the best of your knowledge. Please response to the statements by putting a tick mark (✓) to the most appropriate score.

Sl. No.	Items	Yes 2	No 1	Reasons
1.	Do you feel ASHA's visit to your home is useful?			
2.	Do you feel ASHA's regular advice to you is helpful?			
3.	Do you feel ASHA's advise about newborn care is appropriate for your child care?			
4.	Do you get ASHA's advised about hand hygiene during baby care?			
5.	Do you get ASHA's advised about newborn eye care?			
6.	Do you get ASHA's advised for exclusive breastfeeding along with feeding of colostrum to the newborn?			
7.	Do you get ASHA's advised about breast feeding techniques?			
8.	Have you been informed about breast feeding problems and care by ASHA?			
9.	Do you get ASHA's advised at the time of child's sickness?			
10.	Do you get ASHA's advised on care of newborn diaper and diaper rash?			
11.	Do you get ASHA's advised regarding the need of routine immunization of the newborn?			
12.	Do you get ASHA's advised regarding the symptoms after immunization of the newborn?			
13.	Do you get ASHA's advised regarding covering of the baby's to prevent low body temperature?			
14.	Do you get ASHA's advised regarding kangaroo care?			
15.	Do you get ASHA's advised regarding 48 hours delay of bath after birth?			
16.	Do you get ASHA's advised regarding family planning?			
17.	Do you get ASHA's advised regarding growth and development of newborn?			
18.	Do you get ASHA's advised regarding weaning diet of children?			
19.	Do you get ASHA's advised regarding prevention of infection?			
20.	Do ASHA provide information regarding prevention of home accidents?			

Annexure 15

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Maternal aspects of home based newborn care (HBNC) practices in rural areas of Uttarakhand, India: A cross-sectional study

Rajkumari Sylvia Devi^{a,*}, Sanchita Pugazhendhi^a, Ruchi Juyal^b, Salam Bhopen Singh^{c,d}

^a Himalayan College of Nursing (HCN), Swami Rama Himalayan University, Dehradun, India

^b Himalayan Institute of Medical Sciences (HIMS), Swami Rama Himalayan University, Dehradun, India

^c Department of Medical Chemistry, University of Debrecen, 4032, Debrecen, Hungary

^d School of Natural Sciences, Doon University, Dehradun, India

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ABSTRACT

Background and objectives: Around 2.6 million infants die within the first one month of life every year and India alone accounts for about one-fifth of global live births and one-fourth of neonatal deaths. Uttarakhand being a rural predominant state of India has neonatal mortality rate of 31 per 1000 live births in 2018 that is much higher than the targeted 12 deaths per 1000 live births by 2030 as per Sustainable Developmental Goal-3. The present study is being undertaken to examine Home Based Newborn Care practices of mothers in rural areas of Uttarakhand, India.

Methods: A community based cross-sectional study was conducted on 205 postnatal mothers who were within 42 days of delivery in Doiwala, Uttarakhand using total enumeration technique. Data were collected using reliable, structured and pretested tools comprising various aspects of home based newborn care practices. The data were analyzed using SPSS version 21.

Results: Delivery of most of the mothers (94.15%) took place in health centers though they never consulted obstetricians during pregnancy. While the remaining 5.85% of mothers gave birth at home with the help of local Dais and family members. Most of the babies (95.12%) were born full-term and about half of them (47.40%) were immunized with BCG, OPV and HEP-B vaccines. About 78.05% of mothers initiated breast feeding within the first hour of delivery and 88.29% of the mothers reported exclusive breastfeeding. However, the remaining 11.71% of mothers provided water, gripe water or ghutti to their babies as pre-lacteal feeds. 72.68% of mothers delayed the first bath of their baby for at least 48 h post-delivery and Kangaroo Mother Care (KMC) was practiced by 74.63% of mothers. Most of the participants (93.66%) were aware of keeping umbilical cords clean and dry, however, the remaining 6.34% of the mothers still practiced traditional methods of applying turmeric powder and ghee to the cord.

Conclusion: Most of the mothers were aware of hygiene maintenance and thermal protection for babies during the post-natal period. Some of the major challenges experienced by the mothers include early bathing of newborns, delayed initiation of breast feeding, cord care, avoidance of KMC, providing pre-lacteal feeds to newborns, as well as others.

1. Introduction

Around the world, more than 5.5 million children die every year before the age of five, out of which about 2.6 million (46%) infants are reported to die within the first one month of life (Phukan et al., 2018). The first month of life is a critical period for a child's survival since the risk of mortality due to numerous factors such as premature birth, asphyxia, pneumonia, trauma etc. is multiple times higher than

post-neonatal period (Sankar et al., 2016). The highest proportion of neonatal mortality has been reported from developing nations, particularly in sub-Saharan Africa (41%) and in south-central Asia (34%) (Amolo et al., 2017). One of the major reasons for high neonatal mortality in developing nations is due to a lack of access to health professionals or skilled attendants during pregnancy, as well as delivery. India, being the second largest populous country, accounts for about one-fifth of live births and one-fourth of neonatal deaths in the world (Sankar et al., 2016). Hence implementation of public health programs

* Corresponding author. Himalayan College of Nursing (HCN), Swami Rama Himalayan University, Jolly Grant, Dehradun, Uttarakhand, India.
E-mail address: sylvia.hcon@gmail.com (R.S. Devi).

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Abbreviations

NMR	Neonatal Mortality Rate
ASHA	Accredited Social Health Activists
CHC	Community Health Centers
HBNC	Home Based Newborn Care
IMR	Infant Mortality Rate
LSCS	Lower Segment Caesarean Section
NHM	National Health Mission
PHC	Primary Health Centers
SDG	Sustainable Developmental Goal
TT	Tetanus Toxoid

and interventions has been emphasized with a motive to accelerate the reduction of neonatal morbidity and mortality. Subsequently the Neonatal Mortality Rate (NMR) in India has been progressively decreasing in the last few decades, 69 per 1000 live births in 1980, 53 per 1000 live births in 1990, and 44 per 1000 live births in 2000, 32 per 1000 live births in 2010, 25 per 1000 live births in 2015 and further targeting to 20 per 1000 live births by 2020 (UNICEF, 2020a,b; Upadhyay et al., 2012). Despite considerable reduction of the NMR, the progress is still away from achieving Sustainable Developmental Goal (SDG) of WHO (12 per 1000 live births by 2030) (UNICEF, 2020a,b; Amolo et al., 2017). A wide variation of the NMR still exists in different states of India, predominantly due to higher neonatal mortality in rural as compared to urban regions. Similarly, Uttarakhand being a hilly state in the Western Himalayan Range, is predominantly a rural state with an Infant Mortality Rate (IMR) of 31 per 1000 live births in 2018, which is above the targeted range (SRS Bulletin, 2020).

Subsequently, community-based healthcare services have been given attention for the successful implementation of rural healthcare measures and also to improve survival rates of newborns primarily in rural areas. Trained female community-health workers, named Accredited Social Health Activists (ASHA), was introduced under the National Health Mission (NHM) in 2005 with a motive to create community-health awareness and to mobilize people towards planning, utilization, and accountability for the existing health services. Each ASHA is responsible for a population of 1000 to execute community health services during prenatal and postnatal periods of the mothers (Sapri et al., 2015). They act as a connecting link between professional healthcare providers and mothers in both urban and rural areas and provide necessary home-based newborn care (HBNC) practices. The government of India, under the NHM, and the Ministry of Health and Family Welfare, has undertaken several initiatives to control neonatal mortality in both rural and urban areas. Neonatal care practices and strategies incorporated into governmental child health programs, which include sanitation, feeding colostrum, exclusive breastfeeding, thermal protection, proper immunization, routine medical check-up, provision of medications such as vitamin A, paracetamol, cotrimoxazole syrup, oral amoxicillin, tetracycline ointment etc. Under a completely sponsored scheme of the government "Janani Suraksha Yojana" (Mothers Protection Programme), efforts have been made by offering cash rewards to families in order to increase infant deliveries in hospitals under the supervision of skilled medical personnel (National Rural Health Mission, 2005). This program also aims to encourage people to provide infants with nutritious food and better medical care.

Mothers play an important role in proper nourishment, safety and survival of neonates. Most of the women encounter multiple challenges during transition into motherhood regarding neonatal care practices such as breastfeeding, immunization, cord care, neonatal infections, physical and mental well-being. Mothers need to be guided with necessary information from authentic and reliable sources such as professional health workers, midwifery and ASHA because newborns are

more susceptible to the harmful effects of biotic and abiotic factors in environments. However large proportions of mothers remained abstain from availing the required facilities from skilled healthcare providers particularly in rural areas. The present study has been conducted to assess newborn care practices of mothers in rural areas of Doiwala, India. The findings of this study may help us find gaps that could be identified for further improvement of neonatal survival towards achieving Sustainable Developmental Goal-3 within the stipulated time.

2. Methods

A cross-sectional analysis using quantitative data was adopted to examine home-based newborn care practices of mothers. This study was conducted in Doiwala (30.17°N; 78.12°E) in the Dehradun district of Uttarakhand, India (Fig. 1). Doiwala has a total area of 205.35 km² with a total population of 2,21,513 of which 76.29% of people reside in rural areas according to the 2011 Indian Census (Census of India, 2011). The ratio of females to males was 925:1000 and the literacy rate was 74.50%, which was less than the state literacy rate of 78.82%. Additionally, the number of children under 6 years of age accounted for around 12% of the total population of Doiwala.

This study was approved by the Ethical Committee of the Institution (SRHU/HIMS/ETHICS/2017/134) and administrative permission for the study on postnatal mothers was obtained from the Chief Medical Superintendent, Doiwala, Dehradun. Written informed consent was obtained from each participant before starting data collection. Prior assurance for maintaining the anonymity of participants was provided. Data collection was carried out by visiting Community Health Centers (CHCs) and Primary Health Centers (PHCs) in Doiwala, such as CHC Doiwala, PHC Bhaniyawala, PHC Gumaniwala, and PHC Chhiddarwala, using reliable pre-tested tools comprising a variety of aspects of knowledge and safe practices of HBNC for newborn care. A total of 205 postnatal mothers from Doiwala, India who were within 42 days of delivery and registered to ASHA were enrolled in the study using a total enumeration technique. Cross sectional descriptive design was adopted for the study. The purpose of this study was thoroughly explained to the mothers participating.

2.1. Statistical analysis

Data were analyzed using the Statistical Package for Social Science (SPSS) software version 21 following a descriptive statistical approach for frequency and percentage expression.

3. Results

3.1. Baseline characteristics of the participants

Baseline characteristics of 205 postnatal mothers enrolled in the present study has been illustrated in Table 1. More than half (52.68%) of the participants were in the age group between 25 and 30 years. Majority of them were mother of single child (46.83%) and educated up to high school (42.44%). The participants were mostly from rural areas (83.99%) and surprisingly 94.14% of them had never consulted obstetricians during pregnancy. Instead, they were primarily taken care by their respective ASHA. About 13.17% of the participants had three or more children. Majority of the mothers (55%) maintained birth spacing of 2–3 years between deliveries while 37.20% of mothers could maintain a gap of 4–6 years.

3.2. Awareness of neonatal care services

Most of the mothers (87.32%) were reported to have received proper counseling regarding newborn care practices, amongst 81.58% of them was counseled by ASHA. About 93.66% of mothers had availed two doses of Tetanus Toxoid (TT) vaccination. They (95.12%) were also

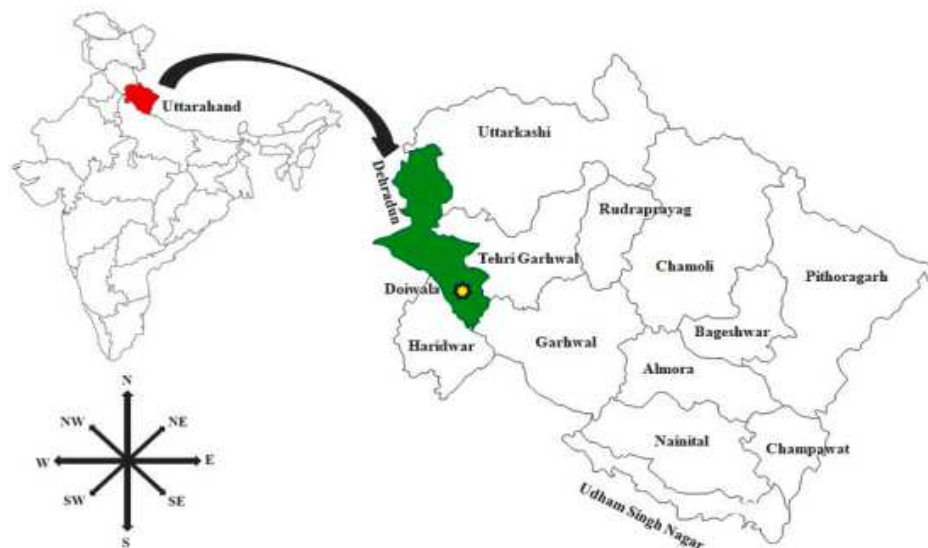


Fig. 1. Site of the study - Doiwala, Uttarakhand, India.

reported to be supplemented with necessary folic acid, iron and calcium supplements. Delivery of 94.15% of the mothers took place in health centers (hospitals, PHC and CHC), mainly in hospitals (78.05%). About 45.60% of mothers stayed in the hospital for 48 h after delivery, while 5.85% of deliveries took place at home, more than half (58.30%) of home deliveries were conducted by local Dais, and the rest were carried out by their family members. Most of the babies (95.12%) were reported to be full term and 78.05% of the babies were in the weight range between 2.50 and 3.80 kg. Administration of immunizations were reported to be given to 96.59% of the babies, of which 47.40% received BCG, OPV and HEP-B vaccines, while only 3.40% of babies were given Penta 1 (DPT, Hepatitis and Haemophilus) vaccine. History of illness such as fever, respiratory distress syndrome and jaundice was reported in only 4.88% of neonates in which jaundice was the most predominant (57.10%). About 90% of the mothers did not have any breast feeding problems, however, half of the remaining 10% encountered problems with no milk production because of lower segment caesarean sections (LSCS).

3.3. Safe maternal newborn care practices

The majority of the mothers (78.05%) initiated breast feeding within the first hour of delivery; however, the remaining 21.95% of mothers delayed initiation of breast feeding due to several reasons outlined in Table 2. Mothers (42.22%) delayed breastfeeding due to LSCS deliveries. Most of the mothers (93.66%) felt it was necessary to wash and clean their breasts before feeding. Mothers (88.29%) reported that they exclusively breastfed their newborns; however, the remaining 11.71% of mothers provided gripe water or ghutti to their babies mainly to get relief from abdominal cramps. Some of the mothers also provided gripe water or ghutti as pre-lacteal feeding to their baby as a part of their cultural practices. About 94.15% of the mothers fed colostrum to their newborn baby, while the remaining could not feed colostrum to their babies due to either LSCS delivery or because their baby was in an incubator being treated with machines. Most mothers (97.56%) considered it necessary to change their baby's clothes after each daily bath in order to maintain personal hygiene. 72.68% of mothers delayed their baby's first bath for at least 48 h after delivery to avoid sudden

drops in their baby's body temperature. However, 42.86% of the remaining mothers gave a bath to their baby within 48 h of delivery due to their cultural beliefs and practices. Kangaroo Mother Care was practiced by 74.63% of mothers, while the remaining did not practice KMC due to a lack of knowledge regarding the practice. Most mothers (93.66%) were aware of keeping the umbilical cord of their baby clean and dry; however, some of the mothers (6.34%) practiced traditional methods of cord care by applying turmeric powder and ghee to the cord. Additionally, 94.15% of mothers followed the correct technique of cleaning their baby's eyes by using a clean cloth and warm water.

Mothers' opinions regarding HBNC that was provided by ASHA were also assessed (Table 3). Almost all mothers reported that the information ASHA shared on their regular home visits was beneficial and found the information regarding neonatal care practices valuable. Most mothers (96.59%) felt that ASHA's advice regarding newborn care to be appropriate. More than 94% of mothers reported receiving appropriate advice from ASHA on various aspects of newborn care practices such as:

- hand hygiene
- eye care
- colostrum feeding
- breast feeding techniques
- exclusive breastfeeding
- breastfeeding problems
- weaning diets
- diaper rash care
- child healthcare
- routine immunizations
- proper covering of the newborn
 - Kangaroo Mother Care
 - family planning
- growth and development of the newborns
- prevention of infection and
- other possible home accidents.

However, 13.66% of mothers apparently did not receive advice from ASHA regarding the practice of at least 48 h delaying the baby's first bath after delivery.

Table 1
Baseline characteristics of the participants enrolled in the study (n = 205).

Variables	Frequency (f)	Percentage (%)
Age in years		
a) 19-24	70	34.15
b) 25-30	108	52.68
c) 31-36	27	13.17
Education status		
a) No formal education	20	9.76
b) High school	87	42.44
c) Higher secondary	52	25.36
d) Degree & above	46	22.44
Occupation		
a) Home maker	132	64.4
b) Employed	27	13.17
c) Self employed	22	10.73
d) Laborer	24	11.70
Religion		
a) Hindu	172	83.9
b) Muslim	27	13.17
c) Others	6	2.93
Area of residence		
a) Rural	172	83.90
b) Town	33	16.10
Frequency of antenatal visits		
a) Once in First trimester	00	0.00
b) Once in Second trimester	2	0.98
c) Once in Third trimester	8	3.90
d) Regular visits in all trimester	2	0.98
e) Never visited any obstetrician	193	94.14
Dosage of TT injection taken		
a) One dose	7	3.41
b) Two doses	192	93.66
c) Not received any dose	6	2.93
History of intake of folic acid, iron and calcium supplements		
a) Taken	195	95.12
b) Not taken	10	4.88
Place of delivery		
a) Home	12	5.85
b) Hospital	160	78.05
c) PHC	5	2.44
d) CHC	28	13.66
If home delivery, it was conducted by (n = 12)		
a) Family member	5	41.70
b) Local Dais	7	58.30
Any advice/counseling received on newborn care		
a) Yes	179	87.32
b) No	26	12.68
If yes, source of counseling on newborn care (n = 38)		
a) ASHA workers & ASHA facilitator	31	81.58
b) ANM & Doctor	7	18.42
No. of children		
a) One	96	46.83
b) Two	82	40.00
c) Three - five	27	13.17
Birth Spacing between the children (n = 129)		
a) One year	10	17.80
b) Two years	36	27.90
c) Three years	35	27.10
d) Four - six years	48	37.20
Birth order of the child		
a) First	93	45.36
b) Second	80	39.03
c) Third	24	11.71
d) Fourth to five	8	3.90
Duration of post-delivery stay in Hospital (n = 193)		
a) 24 h	18	9.33
b) 48 h	88	45.60
c) 72 h	41	21.24
d) More than 72 h	46	23.83
Baby was born		
a) Full term	195	95.12
b) Preterm	10	4.88
Birth weight of the baby		
a) 1000 g	1	0.49
b) >1000-1800 g	3	1.46

Table 1 (continued)

Variables	Frequency (f)	Percentage (%)
c) >1800-2500 g	41	20
d) >2500-3800g	160	78.05
Baby cried immediately at birth		
a) Yes	204	99.51
b) No	1	0.49
Any immunizations given to baby		
a) Yes	198	96.59
b) No	7	3.41
If yes, specify the vaccines (n = 59)		
a) BCG	27	45.80
b) BCG, HEP B	2	3.40
c) BCG, OPV, HEP-B	28	47.40
d) BCG, Penta I	2	3.40
Any history of child illness		
a) Yes	10	4.88
b) No	195	95.12
If yes, specify the illness (n = 7)		
a) Fever	1	14.30
b) Jaundice	4	57.10
c) Respiratory Distress Syndrome	2	28.60
Any feeding problem		
a) Yes	19	9.27
b) No	186	90.73
If yes, specify the feeding problem (n = 12)		
a) Baby not taking milk	3	25.00
b) Mother suffering from Fever	1	8.30
c) Flat nipple	2	16.70
d) No milk production due to LSCS	6	50.00

4. Discussion

The present study assessed the safe neonatal care practices of mothers in rural areas of Doiwala, India. The mother participants were mostly home-makers and educated up to the high school level, yet they did not consider it necessary to make an antenatal visit to an obstetrician. However, more than 90% of the deliveries took place in health centers (PHC, CHC and hospitals) where the mothers stayed for at least 48 h or more after delivery under the supervision of healthcare professionals. The remaining 5.85% of participants adopted traditional ways of delivering at home with the help of local dais and family members. As a result of early exposure to un-hygienic environmental conditions, 2-3x10⁵ infants die of tetanus infections every year, particularly in developing countries (Roper et al., 2007). About 4% of the neonatal deaths in South East Asia and up to 21% of neonatal deaths in India are estimated to be related to neonatal tetanus. Moreover, about half of neonatal deaths in Northern India, including Uttarakhand, is caused by neonatal tetanus (Singh et al., 2012). Therefore, Tetanus Toxoid (TT) vaccination of pregnant mothers has become obligatory by the National Immunization Schedule of India, as recommended by the WHO, with an aim of protecting mothers and their newborns from the TT deadly infection. TT vaccination induces long-term cellular and humoral immune responses through T-cell dependent mechanisms. The protection is mostly mediated by IgG immunoglobulin, primarily IgG1 subclass, because of its high affinity with the antigen. The protection persists for 1-3 years or more after receiving two doses of the TT vaccination (Kroon et al., 1999; Verma et al., 2016). Even though TT immunizations have been the most effective way for deterring tetanus, it also encounters challenges in many rural areas of India due to socio-economic and cultural disparity. In our study 93.66% of the participants received two doses of TT vaccination during pregnancy. The history of immunizations were available in 96.59% of the babies, with 47.40% of them vaccinated with BCG, OPV and HEP-B and only 3.40% were immunized with BCG and Penta I (Table 1).

Moreover, the health of neonates is determined by the health of the mother as babies acquire nutrition and immunity from their mothers directly through the placenta when inside the womb and through breast

Table 2

Newborn care practices of the mothers (n = 205).

Sl No.	Newborn Care Practices	Frequency (f)	Percentage (%)
Breast Feeding Practices			
	Initiation of breast feeding		
a.	Within the first hour of delivery	160	78.05
b.	After first hour	45	21.95
	Reasons for delayed initiation of breastfeeding (n = 45)		
	LSCS delivery	19	42.22
	Baby on machine	04	8.89
	First feed given by grandmother/paternal aunt	03	6.67
	Delay in milk production	01	2.22
	Not responded	18	40
	Wash and clean the breast before feeding		
	Yes	192	93.66
	No	13	6.34
	Reasons for not practicing (n = 13)		
	Did not feel it necessary	04	30.77
	Not responded	09	69.23
	Exclusive breastfeeding to the newborns		
	Yes	181	88.29
	No	24	11.71
	Given water/gripe water/ghutti to newborn baby		
	Yes	24	11.71
	No	181	88.29
	If yes, reasons for giving water/gripe water/ghutti to newborns (n = 24)		
	Cultural Practices	03	12.50
	Relieved abdominal cramps	21	87.50
	Fed colostrum to the newborn baby		
	Yes	193	94.15
	No	12	5.85
	Reasons for not feeding colostrum (n = 12)		
	LSCS delivery	09	75
	Baby on machine	03	25
	Feed the baby whenever cries or 7–8 times in a day		
	Yes	201	98.05
	No	4	1.95
	Changes clothes every day after taking bath		
	Yes	200	97.56
	No	5	2.44
	Reasons for not practicing (n = 5)		
	Did not feel it necessary	03	60
	Not responded	02	40
Hypothermia Prevention			
	Wrap the baby in multilayer of clothes		
	Yes	202	98.54
	No	3	1.46
	First bath of newborns		
	Delay bath till 48 h after birth	149	72.68
	Bath before completion of 48 h after birth	56	27.32
	Reasons for bathing within 48 h of delivery (n = 56)		
	Cultural Practice	24	42.86
	Not responded	32	57.14
	Practiced the kangaroo mother care method		
	Yes	153	74.63
	No	52	25.37
	Reasons for not practicing (n = 52)		
	No knowledge	52	100
	Cover the baby's head and whole body to prevent low body temperature		
	Yes	203	99.02
	No	2	0.98
Cord and eye care practices			
	Avoid applying anything on the cord stump		
	Yes	192	93.66
	No	13	6.34
	Reasons for applying local application (n = 13)		
	Turmeric powder and ghee helps in healing	08	61.54
	Not responded	05	38.46
	Keep the umbilical cord stump dry		
	Yes	202	98.54
	No	3	1.46
	Clean the umbilical stump first followed by base of the umbilicus		
	Yes	167	81.46
	No	38	18.54
	Reasons for not practicing (n = 38)		

Table 2 (continued)

Sl No.	Newborn Care Practices	Frequency (f)	Percentage (%)
	Do not know correct technique	16	42.11
	Not responded	22	57.89
	Keep the baby's eyes clean		
	Yes	201	98.05
	No	4	1.95
	Clean the eyes with clean cloth and warm water		
	Yes	193	94.15
	No	12	5.85
	Reasons for not practicing (n = 12)		
	Do not know correct technique of cleaning	05	41.67
	Not responded	07	58.33
	Wash hands using soap every time before handling the newborn		
	Yes	193	94.15
	No	12	5.85
	Baby has been taken to hospital for routine immunization		
	Yes	198	96.59
	No	7	3.41
	Change newborn diaper whenever it is wet & soiled		
	Yes	202	98.54
	No	3	1.46
	Used pacifier to comfort the baby		
	Yes	26	12.68
	No	179	87.32
	If Yes, Reasons for giving pacifier (n = 26)		
	To calm the child & cultural practice	05	19.23
	Not responded	21	80.77

Table 3

Opinion of mothers on HBNC practices provided by ASHA (n = 205).

ASHA related HBNC practices		Yes		No	
		(f)	(%)	(f)	(%)
Do you feel ASHA's visit to your home is useful?		204	99.51	1	0.49
Do you feel ASHA's regular advice to you is helpful?		204	99.51	1	0.49
Do you feel ASHA's advice regarding newborn care is appropriate for your child?		198	96.59	7	3.41
Do you get ASHA's advice regarding hand hygiene during baby care?		202	98.54	3	1.46
Do you get ASHA's advice regarding newborn eye care practices?		198	96.59	7	3.41
Do you get ASHA's advice regarding exclusive breastfeeding and colostrum feeding of the newborn?		204	99.51	1	0.49
Do you get ASHA's advice regarding breast feeding techniques?		204	99.51	1	0.49
Have you been informed regarding breast feeding problems and necessary care by ASHA?		197	96.10	8	3.90
Do you get ASHA's advice when the child is sick?		202	98.54	3	1.46
Do you get ASHA's advice on care of newborn diaper and diaper rash?		197	96.10	8	3.90
Do you get ASHA's advice regarding the need of routine immunization of the newborn?		202	98.54	3	1.46
Do you get ASHA's advice regarding the symptoms after immunization of the newborn?		197	96.10	8	3.90
Do you get ASHA's advice regarding proper covering of the child to prevent low body temperature?		198	96.59	7	3.41
Do you get ASHA's advice regarding kangaroo mother care?		194	94.63	11	5.37
Do you get ASHA's advice regarding 48 h delay of bath after delivery?		177	86.34	28	13.66
Do you get ASHA's advice regarding family planning?		195	95.12	10	4.88
Do you get ASHA's advice regarding growth and development of newborns?		198	96.59	7	3.41
Do you get ASHA's advice regarding weaning diet of newborns?		195	95.12	10	4.88
Do you get ASHA's advice regarding prevention of infection?		196	95.61	9	4.39
Do you get ASHA's advice regarding prevention of possible home accidents?		194	94.63	11	5.37

milk after delivery. Hence, factors necessary for the good health of mothers and neonates are appropriate maternal diets, nutrient elements (iron, calcium, zinc etc.), vitamins, immunizations, antenatal steroids for the prevention of preterm delivery, all of which need to be provided. Supplementation of folic acid (vitamin B9) and iron during the periconceptional period significantly reduces the chances of maternal anaemia, puerperal sepsis, neural tube defects and preterm birth, while calcium supplementation prevents the incidence of eclampsia (Darmstadt et al., 2005).

Assessment of safe neonatal care practices provided by the mothers revealed that 93.66% of them cleaned or washed their breasts before feeding (Table 2). Initiation of newborn breastfeeding within the first hour of delivery has been recommended per guidelines of Infant and Young Child Feeding (IYCF), UNICEF/WHO (UNICEF/WHO, 2003; WHO, 2013). However, 21.95% of the participants delayed breastfeeding of their babies due to LSCS delivery, delayed or low milk production, babies on machines or supports, etc. Prelacteal feeds (honey, water, rose water, ghutti and gripe water) were given to the babies as a part of their customs by 11.71% of the mothers. Some of the mothers also reported feeding their newborn animal milk, particularly diluted cow milk, as prelacteal feedings. Newborns were typically fed Ghutti and gripe water because mothers perceived these to be beneficial as a laxative and also to reduce newborn colic. They supported the notion that these traditional feedings helped them to relieve abdominal cramps, clear their stomachs, and to pass stools smoothly. The administration of these customary feedings may act as a potential source of infection to babies and may also affect proper maternal lactation. Therefore, exclusive breastfeeding of newborns for at least the first 6 months of a newborn's life has been recommended by the UNICEF/WHO (UNICEF/WHO, 2003; WHO, 2013). The government of India, under the Ministry of Health and Family Welfare, has launched a program called Mothers' Absolute Affection (MAA) in 2016, with a motive to promote and ensure awareness among people, particularly mothers, regarding the significance of breastfeeding (National Health Mission, 2016). Moreover, breastfeeding lowers the risk of breast cancer and prevents over 20,000 annual maternal deaths worldwide from breast cancer (WHO, 2017).

Mothers' colostrum is considered ideal for the proper nourishment of neonates, since it contains enriched carbohydrates, proteins, glycoproteins, cholesterol, lipids, minerals (Iron, zinc, calcium, sodium, potassium, magnesium, phosphorus, etc.), vitamins (A, B, C, E and K), β -carotene, growth factors, enzymes, hormones, leukocytes and immunoglobulins (IgA). It is estimated that 100 ml of colostrum consists of about 50–60 kcal of energy. Leukocytes, microRNAs, lactoferrin, α -lactalbumin and antibodies present in colostrum helps in protecting newborns from various diseases, allergies, and infections, particularly in the throat, intestine, respiratory, and urinary tracts (Kim and Yi, 2020; Ladomenou et al., 2010). β -carotene and vitamins (A, C and E) that are present in breast milk have antioxidant defense properties against reactive oxygen or nitrogen species that are produced as by-products of metabolism and stress (Alberti-Fidanza et al., 2002). Colostrum feeding have also been known to help in expelling meconium in newborns. In this study, 5.85% of mothers refrained from giving colostrum to their baby for several reasons, including LSCS deliveries or babies on machines or other supports, customs, and beliefs. About 98% of the mothers felt it necessary to provide breast milk as much as 7–8 times a day or whenever their baby cried. Earlier studies have reported associations between the reduction of neonatal morbidity and mortality with early breastfeeding and exclusive breastfeeding of the neonates for at least the first 6 months after delivery (Debes et al., 2013; Khan et al., 2015). Mullany et al. (2008) reported a substantial reduction of infection-related neonatal mortality with the provision of colostrum feeding and exclusive breastfeeding. Similarly, Victoria et al. (1989) reported a 5–7 fold increase in the risk of neonatal death due to diarrhea and pneumonia when infants are not exclusively breastfed. In spite of the credible evidence regarding nutritional and other health benefits of early and exclusive breastfeeding, many people, particularly in rural

areas of India, continue to still be unaware and naive regarding the benefits.

One of the major challenges for newborns is the adaptation from intrauterine life to extrauterine environmental conditions. As the temperature inside the womb is moderately high, neonates tend to lose heat by about 2 °C immediately after delivery in a variety of ways, such as evaporation, conduction, convection and radiation to the environment, primarily via the newborn's head, which accounts for a large proportion of the body surface area (WHO, 1993). Therefore, newborns must be clothed in multiple layers to prevent hypothermia and to keep their body warm. KMC has also been appreciated as an effective and reliable intervention for newborn care that can be practiced in any setting without any cost in both developing and industrialized nations. Previous studies have reported the benefits KMC has on physiological, psychological, behavioral, stress, and pain management for both mothers and their babies (Conde-Agudelo and Diaz-Rossello, 2016; El-Naggar et al., 2013). KMC also helps in maintaining thermal, cardio-respiratory stability, oxygen saturation, weight gain, neurological, social and cognitive development of the infant. KMC also increases prolactin production in mothers which enhances bonding and attachment between the mother and child. Furthermore, KMC has been shown to significantly decrease infections and sepsis which causes high mortality in newborns (Hunt, 2008; Nirmala et al., 2006). WHO has incorporated KMC as a fundamental component of the newborn action plan. However, 25.37% of mothers in this study did not practice KMC due to a lack of knowledge regarding KMC and its benefits.

Although the umbilical cord stump needs to be kept clean and dry for proper healing, about 18.54% of mothers in this study were not acquainted with the right technique of cleaning the umbilical cord (cleaning of umbilical stump followed by its base). Some mothers (6.34%) reported practicing the conventional method of applying turmeric powder and ghee to the umbilical cord in line with the traditional concepts of enhanced healing. Most mothers (94.15%) were aware of hand hygiene and also used clean cloths and warm water to wash their baby's eyes. Thorough assessment of HBNC practices of the mothers enabled us to identify some major challenges to that included bathing babies before 48 h post-delivery, delaying the initiation of breast feeding, inappropriate umbilical cord care, avoidance of KMC, use of pacifiers, and giving pre-lacteal feeds to newborns (Fig. 2). Mothers felt that regular ASHA visits along with their advice regarding newborn care practices to be beneficial. They recognized the importance of exclusive breast feeding and appreciated the guidance about correct breast feeding strategies. Mothers also supported ASHA's education on how to improve hygiene, eye care practices, regular changing of diapers, compulsory immunizations, as well as the prevention of infections. Important factors that may be responsible for deterring the implementation of HBNC, particularly in rural areas, include socioeconomic conditions, traditional beliefs, cultural values, poor literacy, lack of knowledge and understanding, lack of awareness, inaccurate perceptions, practices, and behaviors. Education about neonatal care practices and an increased awareness about evidence-based care practices further empowers mothers and strengthens our endeavour toward reducing infant morbidity and mortality. It is imperative for all relevant agencies, including government health departments, private health sectors, and civil society organizations to come together and provide genuine and collaborative services.

5. Conclusions

The mothers in rural areas of Uttarakhand, India were mostly counseled by ASHA. In the present study most mothers were observed possessing the adequate knowledge and awareness of information related to a variety of aspects of newborn care practices, such as the maintenance of hygiene, thermal protection, eye care and cord care of their baby. Moreover, this study helped to identify some major challenges that mothers of newborns had which include early bathing of the



Fig. 2. Major unsafe newborn care practices of the mothers.

newborns, delayed initiation of breast feeding, avoidance of KMC, umbilical cord care, use of pacifiers, and providing pre-lacteal feedings to their newborns. Further implementation of state and country-wide HBNC practices, with a focus on knowledge gaps will help to decrease morbidity and improve survival of newborns in the Doiwala, Uttarakhand region of India.

Declaration of competing interest

The authors declare no conflict of interest.

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Annexure 16

Blueprint for Structured knowledge questionnaire on HBNC for ASHA

Sl. No.	Area of HBNC	Recall	Comprehensive	Application	No. of Question	Percentage (%)
		Item no.	Item no.	Item no.		
1.	General information about High-risk newborns (GIHRN)	Nil	1, 4, 7, 8, 9	2, 3, 5, 6	9	25%
2.	Eye & Umbilical cord care (EUCC)	Nil	13, 14, 16	10, 11, 12, 15	7	19.45%
3.	Prevention of hypothermia (PH)	Nil	17, 21, 22, 23	18, 19, 20	7	19.44%
4.	Breastfeeding care (BFC)	Nil	26, 28, 30, 31	24, 25, 27, 29	8	22.22%
5.	Hygiene and prevention of infection (HPI)	Nil	32, 35, 36	33, 34	5	13.89%
Total		Nil	19 (52.78%)	17 (47.22%)	36	100%

Blueprint for Self Reported Practices assessment scale for ASHA on HBNC

Sl. No.	Area of HBNC Practices	Recall	Comprehensive	Application	No. of Question	Percentage (%)
		Item no.	Item no.	Item no.		
1.	General information about high risk newborns and ASHA activities related to HBNC	Nil	24	3, 4, 5, 6, 7, 8, 23, 29, 30	10	33.33%
2.	Eye & Umbilical cord care (EUCC)	Nil	16	17, 18, 19	4	13.33%
3.	Prevention of hypothermia (PH)	Nil	15	20, 21, 22, 26	5	16.67%
4.	Breastfeeding care (BFC)	Nil	9, 10	11, 12, 13	5	16.67%
5.	Hygiene and prevention of infection (HPI)	Nil	0	1, 2, 14, 25, 27, 28	6	20%
Total		Nil	5 (16.7%)	25 (83.3%)	30	100%

Annexure 17

Blueprint for Attitude assessment scale of ASHAs on HBNC

Sl. No.	Area of HBNC	ITEM		Total Item	Percentage (%)
		Positive	Negative		
1.	General information about High-risk newborns and ASHA activities	5, 17, 20	1, 18, 24	6	20%
2.	Eye & Umbilical cord care (EUCC)	19, 26	2	3	10%
3.	Prevention of hypothermia (PH)	3, 8, 10	4, 6, 7, 9	7	23.33%
4.	Breastfeeding care (BFC)	11, 15, 16, 29	13, 14, 21, 22, 27	9	30%
5.	Hygiene and prevention of infection (HPI)	12, 25, 30	23, 28	5	16.67%
Total		15	15	30	100%

Blueprint for assessment scale of Self Reported Practices of newborn care by mothers

Sl. No.	Area of newborn care Practices	Recall	Comprehensive	Application	No. of Question	Percentage (%)
		Item no.	Item no.	Item no.		
1.	Eye & Umbilical cord care (EUCC)	-	5	12, 13, 14, 15	5	23.81%
2.	Prevention of hypothermia (PH)	9	-	8, 10, 11	4	19.05%
3.	Breastfeeding care (BFC)	1, 5	-	3,6,7,20,21	7	33.33%
4.	Hygiene and prevention of infection (HPI)	-	-	2, 4, 17, 18, 19	5	23.81%
Total		3(14.29)	1 (4.76%)	17 (80.95%)	21	100%

Annexure 18



Annexure 19



Certificate of Participation



State Council for Science
and Technology, Dehradun

This is to certify that

Rajkumari Sylvia Devi

has actively participated in

14th Uttarakhand State Science and Technology Congress 2019-2020

27th - 29th February, 2020

presented a research paper (Oral/Poster) entitled

"Regular training on home based newborn care improves

efficiency of the Asha working in rural areas of U.K."

under the discipline

Medical science including pharmaceutical science

at Uttarakhand Council for Science and Technology, Vigyan Dham, Dehradun.

Dr Ashutosh Mishra

Organizing Secretary

14th USSTC

Council for Science and Technology

Uttarakhand

Dr Rajendra Dobhal FNASc

Chairman - 14th USSTC

Director General

Council for Science and Technology

Uttarakhand