CHAPTER 3

MATERIAL AND METHODS

The study was conducted in Doiwala Block, Dehradun in 4 months duration from March to June 2019. The study used both qualitative and quantitative approaches with two groups of participants i.e. ASHAs working in the block and postnatal mothers registered with these ASHAs.

3.1 Research Approach: The current study adopted Mixed Approach - Quantitative and Qualitative Approach.

3.2 Research Design: This study adopted a mixed-method design. It was carried out in two phases.

- Phase I - Qualitative approach
- Phase II - Quantitative approach

3.2.1 Phase I - Qualitative approach

Research design: The exploratory descriptive method was employed in this investigation.

Research setting: Based on the NMR of Uttarakhand, the worst-performing districts include Dehradun, Haridwar, and Nainital. Dehradun was chosen for the study by purposive sampling. There are six Community Health Centers (CHCs) in Dehradun out of which CHC Doiwala was sampled conveniently. In CHC Doiwala, there are five Primary Health Centers (PHCs) namely PHC Bhaniyawala, PHC Dudhli, PHC Raiwala,

PHC Balawala, and PHC Chhidarwala. The reliability testing and piloting were done in PHC Balawala and PHC Raiwala. So they were excluded from the study. The three PHCs and CHC Doiwala formed the sample universe of the study.

Population: All the ASHAs working in Doiwala Block, Dehradun were the population of the study.

Sample size: A total of 24 ASHAs from eight (8) areas were included in the study for Focus Group Discussion (FGD) (three ASHA representatives from each area).

Sampling technique: Overall eight areas were formed from CHC, PHCs, and Subcenters for Focus Group Discussion (FGD). They are CHC Doiwala, PHC Bhaniyawala, PHC Dudhli, PHC Chhidarwala, and four sub-centers namely sub-center Fatehpur, sub-center Bullawala, sub-center Gumaniwala, and sub-center Shyampur. A simple random sampling method i.e. lottery method was employed to choose three ASHA representatives from each area (A total of 24 ASHAs from 8 areas).

Data collection method: The technique of focus group discussion was employed for gathering the data in phase I.

Data collection tool: The open-ended questions on the HBNC program were employed for focus group discussion for ASHAs. This method allowed ASHAs to express freely about their experiences of the HBNC program.

Data analysis method: A content analysis was done with the gathered information. The data were further coded to develop themes and categories.

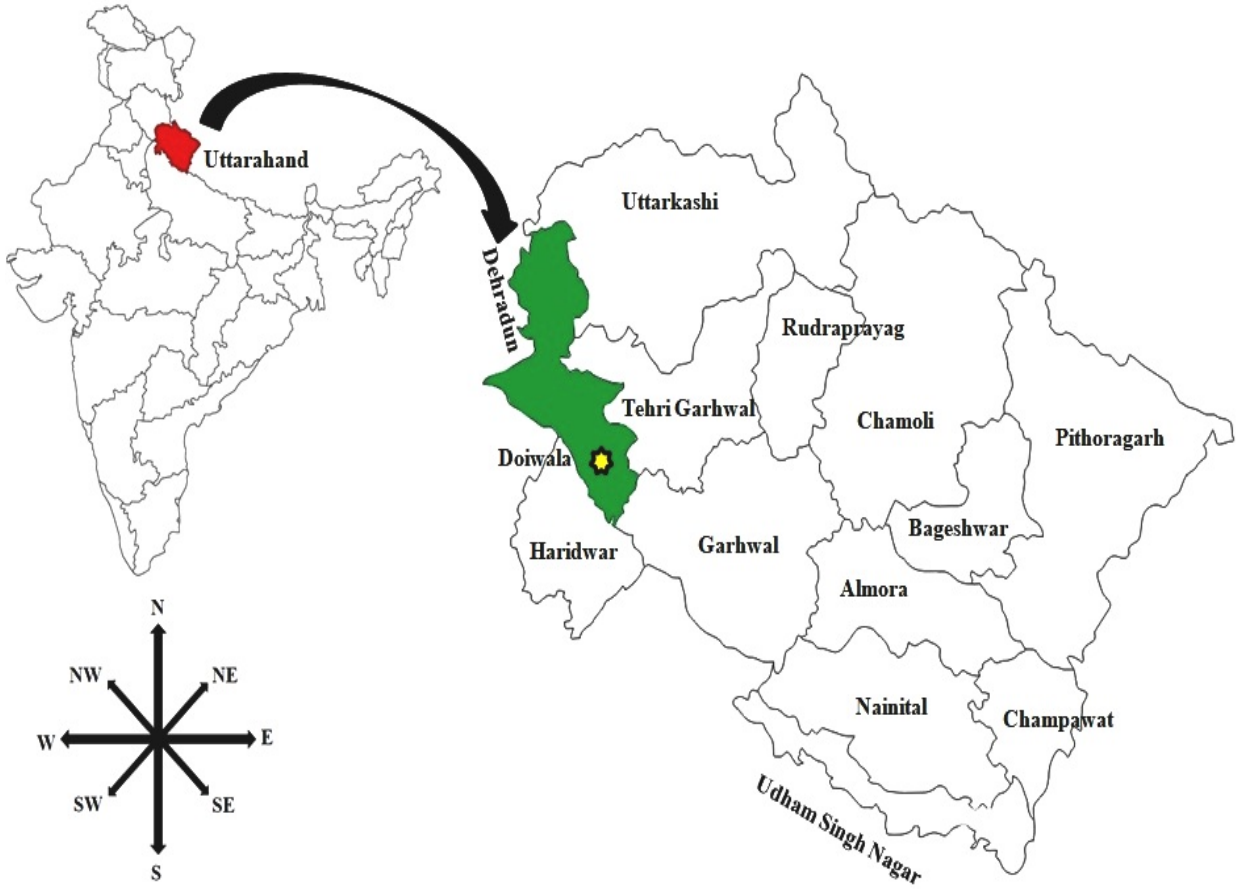

Figure 2: Study site – Doiwala, Dehradun, Uttarakhand

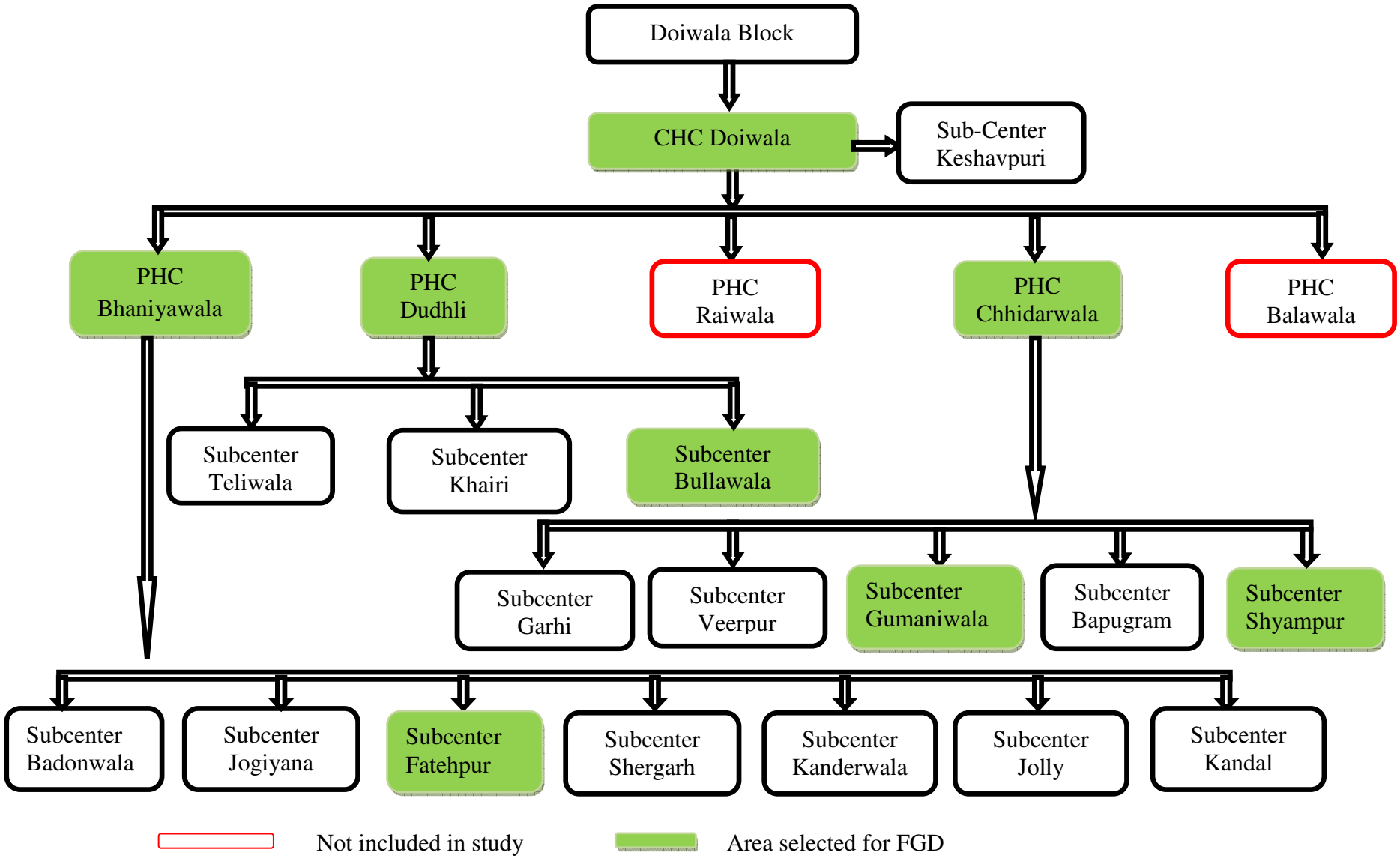

Figure 3: Schematic representation of sampling of ASHA in phase I

3.2.2 Phase II - Quantitative approach

Research design: The design employed in the second phase of the study was a quasi-experimental design with multiple observation method.

Group	Day 1 Pretest & Intervention	Day 30 Posttest & first reinforcement	Day 60 Posttest & second reinforcement	Day 90 Posttest & third reinforcement
ASHA workers working in Doiwala Block	O_1 X_1	O_2 X_2	O_3 X_3	O_4 X_4

Research setting: CHC Doiwala, PHC Bhaniyawala, PHC Dudhli, and PHC Chhidarwala were the setting of the study.

*** Mothers' data were collected from health centers.**

Population: All the ASHAs working in Doiwala Block and postnatal mothers within 42 days of delivery who are registered with these ASHA workers.

Sample size: The sample size was calculated by using the formula ($n=Z_{\alpha/2}^2 pq/I^2$) with a desired allowable error of 20% of 'p'. P = 50% for unknown effect of intervention, q=1- p (50) and I (allowable error) =20% of p (10).

$$\mathbf{n = \frac{Z_{\alpha/2}^2\, pq}{I^2}}$$

$$= \frac{(1.96)^2 x 0.5 x 0.5}{0.10^2}$$

$$= \frac{3.8416 x 0.25}{0.01}$$

$$\mathbf{n = 96.04}$$

Where, n = required sample size

$Z_{\alpha/2}$= 1.96 at 0.05 level of significance (95% of Confidence Interval)

p= population (0.50)

q= 1-P (0.50)

I = Relative error i.e. 20% of p (0.10)

A total of 110 ASHAs in Doiwala block of Dehradun considering the 10% sample mortality and postnatal mothers who were within 42 days of delivery and registered with these ASHAs were decided to enrol in the study.

Sampling technique:

The total 110 ASHAs were randomly selected from 124 ASHAs of Doiwala Block by using a computer-generated random table through MS excel 2010. Further, a total enumeration technique was adopted to select 205 postnatal mothers registered to these ASHAs for the study simultaneously from the health centres during immunization days.

Selection criteria of the participants:

The study participants were chosen considering the following criteria -

Inclusion criteria:

For the selection of subjects, the following criteria were considered -

- ASHAs working in selected Block who were HBNC trained.
- Postnatal mothers within 42 postnatal days and registered with these ASHAs.
- Postnatal mothers and ASHAs who were ready to take part in this research.

Exclusion criteria:

The following mothers were excluded from the study -

- Postnatal mothers with diagnosed postnatal psychosis

Variables of the study:

- Dependent variable – Knowledge, attitude and practices of ASHA
- Independent variable – Intervention package on HBNC through re-education and reinforcement
- Other variables – Practices and opinion of postnatal mothers

Tools and Techniques for Data Collection:

Below listed tools were developed based on HBNC ASHA training modules 6 &7 by NHM, Govt. of India.

1. **Tools used for assessment of ASHA** [Appendix 13]

   1.1 Baseline information of ASHA

   1.2 Structured knowledge questionnaire on HBNC

   1.3 Attitude assessment scale

   1.4 Self reported practices assessment scale on HBNC

   1.5 Focus group discussion on HBNC program

2. **Tools used for assessment Mothers** [Appendix 14]

   2.1 Profile of mothers and baby

   2.2 Self reported practices of newborn care by mothers

   2.3 Opinionnaire of mothers on newborn care practices provided by ASHA

Validity of the tools

The content validity of tools was approved by seven specialists from related disciplines - pediatric nursing, community health nursing, medical-surgical nursing, community medicine, and state ASHA trainer. Expert's suggestions were considered and integrated. No item was removed from the tools.

Description of the tools:

Section I -1.1- Baseline Information for ASHA

This section comprises baseline information of ASHA including age, highest academic qualification, marital status, type of family, number of children, area of residence, religion, work experience, and any training attended, related to HBNC in the last 6 months.

Section I-1.2- Structured knowledge questionnaire on HBNC for ASHA

A structured knowledge questionnaire was prepared based on HBNC ASHA training modules 6 & 7 by NHM, Govt. of India for assessing the knowledge of the ASHA. The major domains of the questionnaire were general information about High-risk newborns (GIHRN; 9 questions), Eye & Umbilical cord care (EUCC; 7 questions), Prevention of hypothermia (PH; 7 questions), Breastfeeding care (BFC; 8 questions), and Hygiene and prevention of infection (HPI; 5 questions). This tool consisted of multiple choice questions (MCQ) which were to be answered by ASHA.

Scoring and interpretation: Every right answer was assigned a score of '1' (one) whereas each wrong answer scored '0' (zero).

Reliability of questionnaire on HBNC knowledge of ASHA:

The reliability of this tool was carried out based on internal consistency and calculated by Cronbach's Alpha and split-half method using Spearman-Brown Prophecy Formula (0.77 and 0.82 respectively). Thus, the questionnaire was found to be reliable for assessing the knowledge of ASHA.

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

It is a self-reported questionnaire in the form of a Likert scale consisting of 30 statements to assess the attitude of ASHA about HBNC. This scale consisted of both negative (15) and positive (15) statements. Scoring interpretation for this scale depends upon the nature of the statement, which was as follows:

Positive statement scoring pattern –

Strongly Disagree	Disagree	Agree	Strongly Agree
1	**2**	**3**	**4**

Negative statement scoring pattern –

Strongly Disagree	Disagree	Agree	Strongly Agree
4	**3**	**2**	**1**

Reliability of scale on ASHA's attitude:

Internal consistency assessments by using Cronbach's Alpha and test-retest method calculated by Karl Pearson's correlation coefficient were 0.80 and 0.97 respectively. So, this scale was found reliable to assess the attitude of ASHA.

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

It is a self-reported questionnaire in the form of rating scale consisting of 30 statements to assess the HBNC practices of ASHA. The major domains of the questionnaire were general information about High risk newborn (GIHRN; 10 questions), Eye & Umbilical cord care (EUCC; 4 questions), Prevention of hypothermia (PH; 5 questions), Breastfeeding care (BFC; 5 questions) and Hygiene and prevention of infection (HPI; 6 questions). This scale consisted of scoring from 0 to 3. Interpretation of the scores for this scale is as follows:

Always	Often	Rarely	Never
3	2	1	0

Reliability of the self reported practices assessment scale for ASHA on HBNC

The reliability of this tool was assessed using internal consistency calculation by Cronbach's Alpha and the test-retest method calculated by Karl Pearson's correlation coefficient were 0.80 and 0.97. Therefore, the practice assessment scale was found to be reliable for assessment of the practice level of ASHA.

Section I-1.5 - Focus Group Discussion (FGD)

The FGD was carried out to get feedback from ASHA on the HBNC program and to identify the factors affecting the implementation of HBNC. This section comprises of four open-ended questions. The total discussion period for each FGD was 50 - 60 minutes. The FGD was structured as follows:

Stages	Task	Organization of FGD	Duration (min)
I	Initial briefing	Researcher (moderator) briefs the session	5-7
II	Initial question	Individual round	15-20
III	Group discussion	Moderator	15-20
IV	Final opinion	Individual round	2-3
V	Debriefing	Moderator	5-10

Section II-2.1- Profile of mother and baby

This section comprised of baseline information of mother and baby including age, educational status, occupation, religion, history of antenatal visits, history of visit to obstetrician, the dosage of TT injection, account of intake of iron, calcium supplements, and folic acid, place of delivery, receipt of any advice on newborn care, number of children, birth spacing, child's birth order, duration of post-delivery hospital stay, the maturity level of the baby at birth, birth weight of the baby, history of cry at birth, the immunization status of baby, history of any illness of baby, and any feeding problem.

Section II-2.2- Self-reported practices of newborn care by mothers

It is a self-reported questionnaire in the form of a dichotomous scale consisting of 21 statements for the assessment of newborn care practices of postnatal mothers. This scale consists of "Yes and No" answers and is followed by reasons. The scoring interpretation for this scale is as follows: score of '1' (one) for 'Yes' and '0' (zero) score for 'No'.

Reliability of the Self reported practices of newborn care by mothers

The reliability assessment of this questionnaire using internal consistency calculation by Cronbach's Alpha and the test-retest method calculated by Karl Pearson's correlation coefficient were 0.75 and 0.87. Therefore, this questionnaire was found to be reliable to check mothers' newborn care practices.

Section II-2.3 - Mothers' opinionnaire on HBNC provided by ASHA

It is a self-reported questionnaire in the form of a dichotomous scale consisting of 20 statements to understand the opinions of postnatal mothers about HBNC provided by ASHA. This scale consists of "Yes" and "No" answers and is followed by reasons. The scoring interpretation for this scale is as follows: score of "2" (two) for "Yes" and "1" (one) score for "No".

Reliability of the Opinionnaire for mothers

Assessment of reliability of this tool using internal consistency calculated by Cronbach's Alpha and the test-retest method calculated by Karl Pearson's correlation coefficient were 0.87 and 0.91. Therefore, this questionnaire was found to be reliable to obtain the opinions of mothers about ASHA HBNC practices.

Development of the intervention package on HBNC re-education program

The re-education plan was developed based on HBNC ASHA training modules 6 & 7 of the NHM revised in 2014 by the MoHFW, Govt. of India. It includes the following information about newborn care at home focused on HBNC:

1. Baby care during delivery
2. A schedule of home visits for newborn care
3. An examination of the newborn at birth

4. Breastfeeding and management of breastfeeding Issues
5. Keeping the newborn warm
6. Management of newborn fever
7. Immunization
8. High-risk screening and care of low birth weight or preterm newborns
9. Asphyxia - diagnosis and treatment
10. Neonatal sepsis **-** diagnosis and treatment

Implementation of Re-education on Home Based Newborn Care (HBNC)

The HBNC re-education program was delivered through interactive lectures and discussion. Multiple A.V. aids were incorporated in this program such as powerpoint presentation, video and demonstration on Kangaroo Mother Care (KMC), temperature monitoring using thermometer, and assessment of capillary refill time (CRT) of newborns (By gently pressing on the sternum for 3-5 seconds with tip of finger results in blanching of the skin, and noting how fast the colour returns to pink once the pressure is released. Normal CRT is <3 sec).[132] In the study, a total of 110 ASHAs were enrolled and the program was conducted in four different areas of the selected setting i.e. CHC Doiwala (30 ASHAs), PHC Bhaniyawala (25 ASHAs), PCH Chhidarwala (30 ASHAs) and sub-center Gumaniwala (25 ASHAs). The re-education program continued for about 3-4 hours. The hard copy of the educational content was provided to all ASHAs. Refreshments were given at the end of the program.

Pretesting of the Tools

All the measurement tools were administered to five ASHAs and five mothers to see the clarity and comprehensiveness of the tools. ASHA took 30-35 minutes and

mothers took 20-25 minutes to fill the questionnaires. The languages of the tools were clear and understandable.

Ethical consideration

1. Ethical permission was obtained from the institutional ethical committee, Swami Rama Himalayan University for conducting this research (SRHU/HIMS/ETHICS/2017/134) [Appendix 1].
2. The written consent was obtained from every participant before initiation of the study [Appendix 11].
3. The subjects were given assurance that the anonymity will be maintained for each participant.
4. The data were kept confidential.
5. The participants were allowed to discontinue from the study whenever they wanted and assured of no harm.

Administrative permission

Administrative permission was obtained from

1. The Chief Medical Superintendent, Doiwala Block for carrying out the study involving ASHAs and mothers. [Appendix 2].

Pilot testing

The pilot study was conducted on 10 ASHAs and 21 postnatal mothers, who fulfilled the inclusion criteria from 16 January 2019 to 26 January 2019. It was carried out to determine the feasibility, acceptability and to identify any problems in the research design. The study was found to be feasible and the tools were reliable.

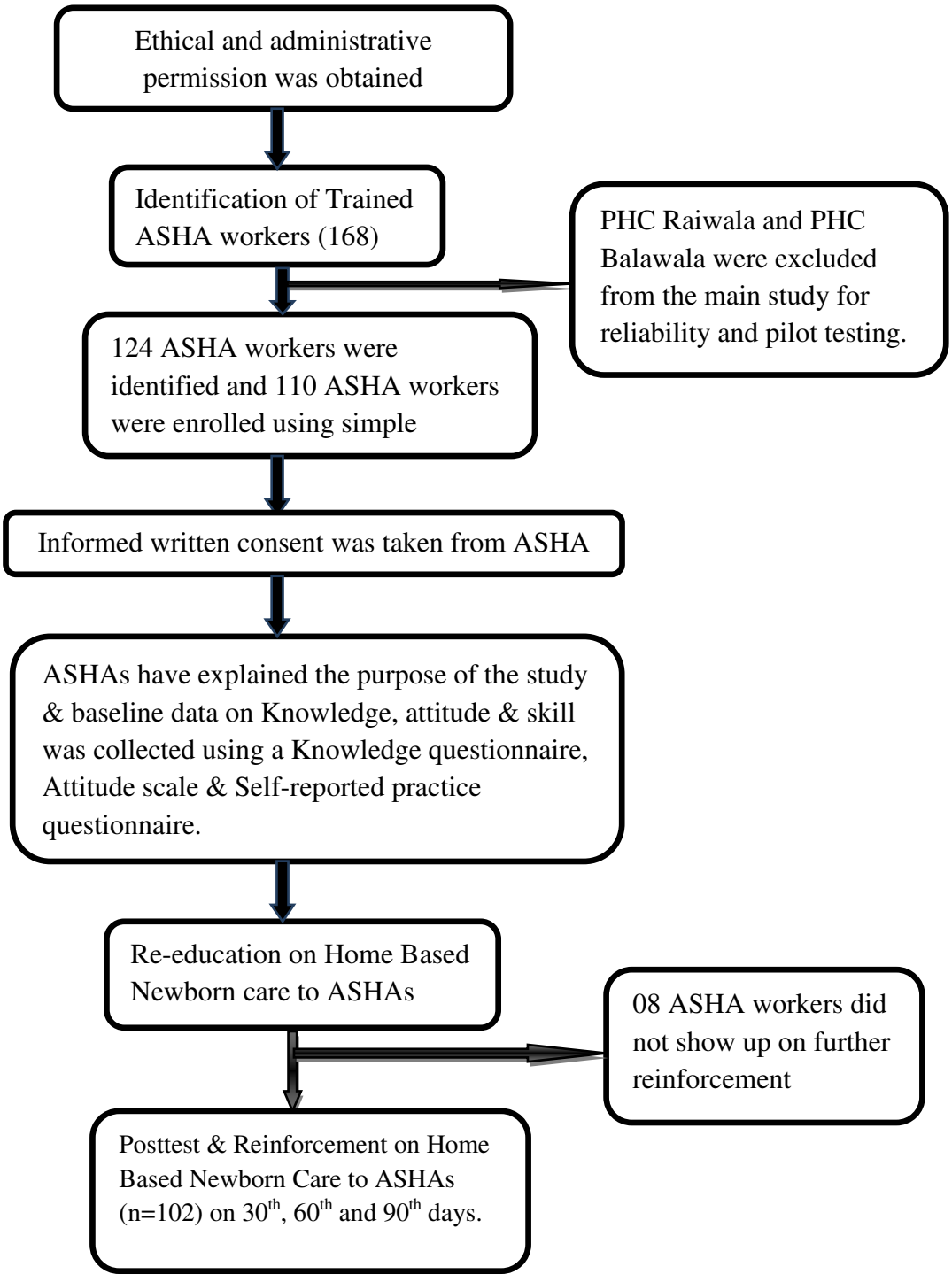

Figure 4: Data collection procedure for phase II

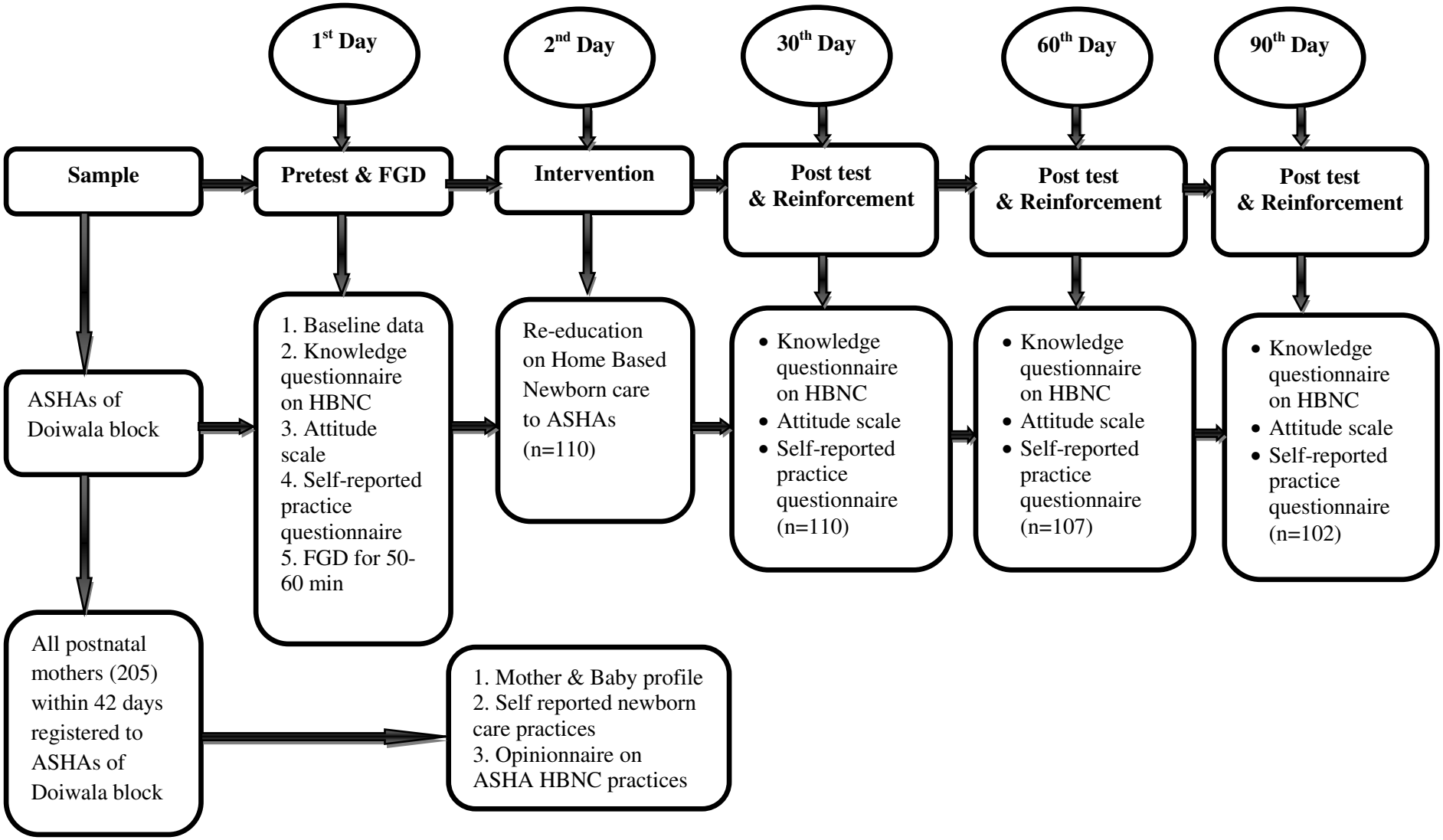

Figure 5: Schedule for data collection of the study

Analysis of data

The study adopted a mixed-method design, and two different data (qualitative and quantitative) were generated.

Phase I (Qualitative data) - The qualitative data were expressed by the content analysis method (descriptive approach and recorded verbatim statements from participants). The transcripts were further translated into themes and sub-themes/categories for a meaningful analysis.

Phase II (Quantitative data) - The analysis of the data was carried out by using statistical software SPSS (version 21). The Kolmogorov – Smirnov test was used to establish the normal distribution of data. Categorical data were reported in the form of frequency and percentage. Quantitative data are presented as mean, SD, range, and mean percent. Since the data did not follow a normal distribution, the Friedman test was used for comparison between the observations, while within the group effect was checked by using Bonferroni Post Hoc test and McNemar test. Relationships between the variables were examined by Chi-square test (Goodness of fit) / Yates's correction to determine the association of the baseline data with the dependent variables. Further, the correlation between the variables was calculated by using the two-tailed Spearman correlation formula.