



CODEN [USA]: IAJPBB

ISSN: 2349-7750

**INDO AMERICAN JOURNAL OF  
PHARMACEUTICAL SCIENCES**<http://doi.org/10.5281/zenodo.2589187>Available online at: <http://www.iajps.com>

Research Article

**A CROSS-SECTIONAL RESEARCH TO EVALUATE THE  
AWARENESS AND KNOWLEDGE OF LHV<sub>s</sub> ABOUT THE  
WORKING OF RESUSCITATION**<sup>1</sup>Dr Hafiz Arslan Ul Hassan, <sup>2</sup>Dr Hassan Akhtar, <sup>3</sup>Dr Arif Munir<sup>1</sup>House Officer, Jinnah Hospital, Lahore.

Article Received: December 2018

Accepted: February 2019

Published: March 2019

**Abstract:**

**Objective:** For evaluation of the midwives and lady health visitor's knowledge about neonatal resuscitation working at primary healthcare facilities.

**Methods:** In September – October 2018, a cross-sectional survey was carried out at Services Hospital, Lahore comprising on the midwives and lady health visitors at primary level healthcare facilities. The data was assembled by using a close-ended questionnaire.

**Results:** Out of 103 health workers interviewed, 49% were midwives and 54% were lady health visitors. Overall, 71% of health workers were trained for neonatal resuscitation, while 32% were not formally trained. Arrangements for basic neonatal resuscitative were available at all the 54 (100%) basic health units and 7 (100%) rural health centres. Basic neonatal care knowledge was found appropriate, but midwives have the poor knowledge on the subject as only 24 (49%) answered correctly.

**Conclusion:** Regular in-service training of midwives and lady health visitors is required concerning Basic Neonatal Resuscitation.

**Keywords:** Knowledge, Neonatal resuscitation, Primary healthcare, Health workers, Pakistan.

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Please cite this article in press Hafiz Arslan Ul Hassan et al., A Cross-Sectional Research To Evaluate The Awareness And Knowledge Of Lhvs About The Working Of Resuscitation., Indo Am. J. P. Sci, 2019; 06(03).

**INTRODUCTION:**

Birth is a physiological process that represents the start of life as a physically separate thing. It illustrates a transitional phase that every newborn experience, leaving the highly protected intrauterine environment to independent existence [1, 2]. The successful transformation from fetal to neonatal life consists of diverse physiological modifications. Before birth, the baby gets oxygen and eliminate carbon dioxide through the placenta, while after birth, lungs perform this function. The transformation from the placenta to lungs for gas exchange starts when the umbilical cord is gets cut and the baby takes its first breath [3]. Mostly, neonates adapt this process easier, while 5-10% of them require help for developing spontaneous respiration and wealthy cardiopulmonary alterations [4]. Neonatal resuscitation is the interventions carried out at the time of birth to help the newborn in establishing breathing and circulation. The steps in this process are crucial for minimizing the neonatal morbidity and mortality. Quite often it involves simple activities like regulation of body temperature, drying out the body of the neonate and opening the respiratory passages through suction. Although, less than 1% of neonates need specific medications and complex measures including chest compressions and endotracheal intubation [5, 6]. Many newborns need intensive care which is not available in poor country settings [7]. Approximately 4 million infants die in the neonatal period Worldwide. In Pakistan, the neonatal death rate is around 41 deaths per 1000 live births; due to lack of proper resuscitative facilities [8, 9]. It is now widely accepted that resuscitation given to neonates instantly after birth by trained birth attendants (TBAs) can remarkably minimize the mortality rate [10, 11]. In Pakistan's healthcare system the community midwives are now playing a vital role, but if they are a deficit in the required knowledge and skills, then there will be no influence on maternal and newborn mortality and morbidity. The present study was carried out to analyze the knowledge of lady health visitors (LHVs) and midwives working at primary healthcare facilities concerning neonatal resuscitation. Moreover, the presence of equipment and arrangements regarding neonatal resuscitation were also considered.

**SUBJECTS AND METHODS:**

In September – October 2018, a cross-sectional survey was carried out at Services Hospital, Lahore

comprising on the midwives and lady health visitors at primary level healthcare facilities. The number of LHVs and midwives working for a specific health facility fluctuate across the district. As such, "universal sampling strategy" was commissioned; and all LHVs and midwives who were on duty at the time of the survey were added. The ones on leave were eliminated.

After receiving approval from the ethical committee of the Health Services Academy, Islamabad, permission from the in-charge of specific primary healthcare facility, and written, informed consent from the respondents, data was collected using a close-ended questionnaire which was constructed to approach the knowledge and proper training of healthcare providers about neonatal resuscitation.

The self-build structured questionnaire consists of two parts. The first part had questions regarding demographic details of the respondents, concerning their basic training on neonatal resuscitation, and accessibility of arrangements and related equipment at the health facility. A question on the accessibility of standard guidelines at the health facility regarding neonatal resuscitation was also involved in the first part. The second part consists of 13 questions that focused on determining the knowledge of LHVs and midwives regarding basic neonatal resuscitation.

The questionnaire was built after an immense literature search and context analysis. Face and content validity was held through conversation among the researchers, maternal and child health experts and paediatricians.

The questionnaire was directly managed to the subjects and responses were recorded. Appropriate time was given to each respondent for completing the questionnaire. The questionnaire was translated into Urdu where required. The data was then digitally recorded and deposited in a safe place. Raw data was also deposited in a locked place. Only the researchers had an approach to the data.

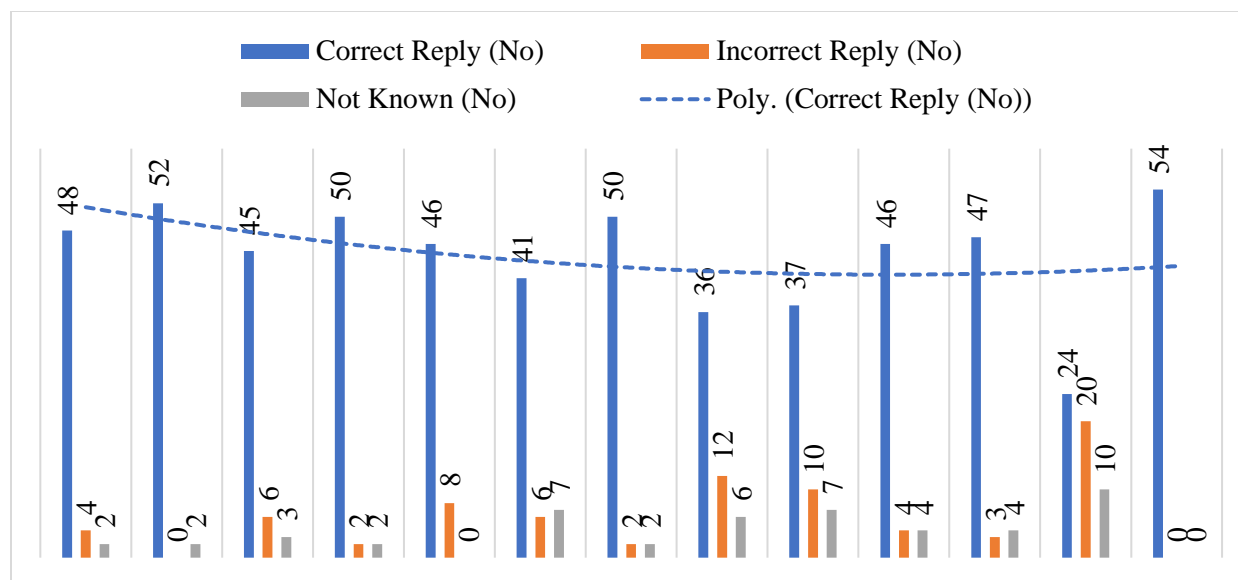
The filled questionnaires were gathered, and desk editing was performed. SPSS was used to conduct statistical analysis.

**RESULTS:**

An analysis of the research outcomes is as under:

**Table – I:** LHV's responses to an individual statement on newborn resuscitation (54) NB: Newborn

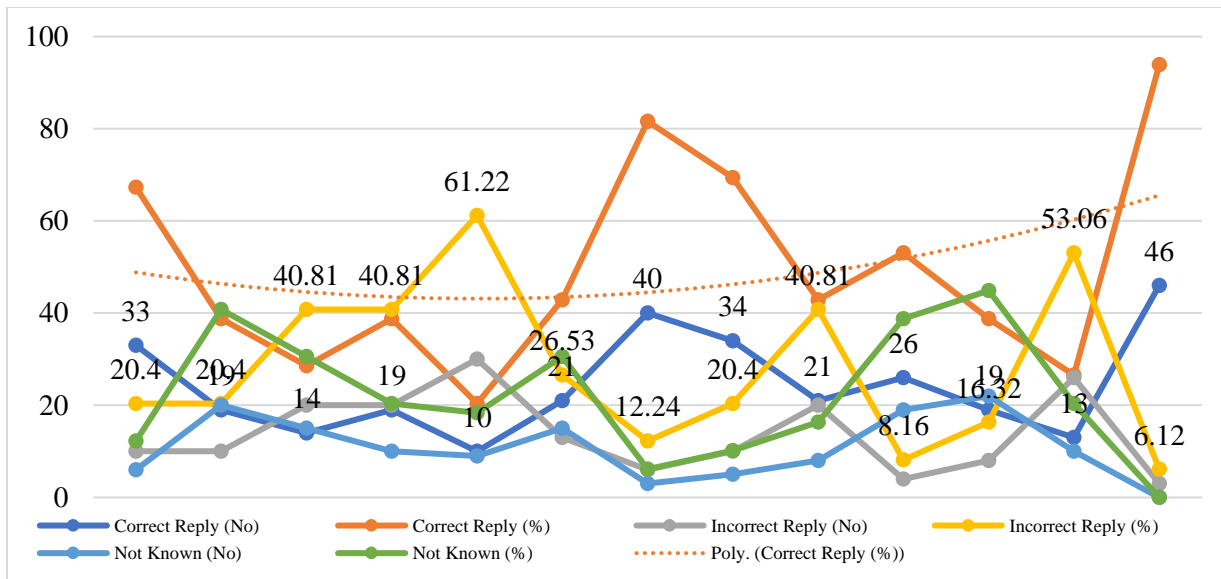
Statement	Correct Reply (No)	Correct Reply (%)	Incorrect Reply (No)	Incorrect Reply (%)	Not Known (No)	Not Known (%)
Bulb sucker and infant bag are always required in the delivery/labour room.	48	88.9	4	7.4	2	3.7
The respiratory effort, colour and heart rate are used to determine if N.B needs resuscitation.	52	96.3	0	0	2	3.7
After delivery, it is important to determine that the heart rate is above 100 per minute.	45	83.3	6	11.1	3	5.56
Cyanosis and heart rate less than 100/min are risk signs in N.B.	50	92.6	2	3.7	2	3.7
During stimulation of N.B, slapping back and holding N.B head down is not suggested.	46	85.2	8	14.8	0	0
The exact order of initial resuscitation care of N.B includes keeping warm, sucking, head positioning, drying and stimulation.	41	75.9	6	11.1	7	13
The first step in resuscitation is keeping the baby warm.	50	92.6	2	3.7	2	3.7
Mouth of N.B should be suctioned before nose.	36	66.7	12	22.2	6	11.1
Ambu-bag, the mask should cover nose, mouth and chin perfectly.	37	68.5	10	18.5	7	13
When conducting N.B resuscitation with Ambu-bag and mask, it is important to check that seal between N.B mouth, nose and mask is complete.	46	85.2	4	7.4	4	7.4
Best way to judge the success of ventilation with Ambu-bag is to observe the rise and fall of the chest wall.	47	87	3	5.55	4	7.4
During ventilation with Ambu-bag and mask, breathing should be provided at a rate of 40 breaths per minute.	24	44.4	20	37	10	18.5
Breastfeeding should start in the first hour after birth.	54	100	0	0	0	0



**Table – II:** Midwives responses to individual statements on newborn resuscitation (49)

Statement	Correct Reply (No)	Correct Reply (%)	Incorrect Reply (No)	Incorrect Reply (%)	Not Known (No)	Not Known (%)
Bulb sucker and infant bag are always required in the delivery/labour room.	33	67.3	10	20.4	6	12.2
The respiratory effort, colour and heart rate are used to determine if N.B needs resuscitation.	19	38.8	10	20.4	20	40.8
After delivery, it is important to determine that the heart rate is above 100 per minute.	14	28.6	20	40.81	15	30.6
Cyanosis and heart rate less than 100/min are risk signs in N.B.	19	38.8	20	40.81	10	20.4
During stimulation of N.B, slapping back and holding N.B head down is not suggested.	10	20.4	30	61.22	9	18.4
The exact order of initial resuscitation care of N.B includes keeping warm, sucking, head positioning, drying and stimulation.	21	42.9	13	26.53	15	30.6
The first step in the initial resuscitation is keeping the baby warm.	40	81.6	6	12.24	3	6.12
Mouth of N.B should be suctioned before nose.	34	69.4	10	20.4	5	10.2
Ambu-bag, the mask should cover nose, mouth and chin perfectly.	21	42.9	20	40.81	8	16.3

When conducting N.B resuscitation with Ambu-bag and mask, it is important to check that seal between N.B mouth, nose and mask is complete.	26	53.1	4	8.16	19	38.8
Best way to judge the success of ventilation with Ambu-bag is to observe the rise and fall of the chest wall.	19	38.8	8	16.32	22	44.9
During ventilation with Ambu-bag and mask, breathing should be provided at a rate of 40 breaths per minute.	13	26.5	26	53.06	10	20.4
Breastfeeding should start in the first hour after birth.	46	93.9	3	6.12	0	0



Out of the 103 respondents, 54% were LHVs and 49% were midwives. Generally, 65% of respondents had more than 5 years of experience; 72% had training on neonatal resuscitation; while 31% did not have any training. Among the workers who had training, 45 (62.5%) had pre-service training, 09 (12.5%) had in-service training and 18 (25%) had both. The training period was mostly for one week.

Basic neonatal resuscitative arrangements were accessible at 54 BHUs and 7 RHCs. All the 7 (100%) RHCs contain good facilities for neonatal resuscitation, consisting of newborn resuscitation table, warmth source, bulb sucker, stethoscope, infant Ambu-bag and mask. Besides, BHUs (0%) had no appropriate equipment for neonatal resuscitation. Instructions on newborn resuscitation care were not provided at any single health facility (0%).

Appropriate record and documentation regarding basic neonatal resuscitation were not found in any of the RHCs and BHUs. Moreover, on investigating the staff, it was found that 3067 deliveries had been performed at 54 BHUs of the district in the preceding 6 months.

Out of them, 242 (7.8%) babies got basic neonatal resuscitation. At the 7 RHCs, 662 deliveries occurred and of the 55 (8.3%) newborns need neonatal resuscitation. Due to lack of data availability, the figures could not be verified and recorded as verbally told by facility staff. Moreover, it was found that trained birth attendants were available round-the-clock in RHCs compared to BHUs, where this facility was only available for daytime.

The questionnaire comprised of 13 questions that were solved by each participant and answers were recorded as "Yes", "No" or "Don't know". In the case of LHVs, 46 (85%) solved the questions accurately. The questionnaire comprised of few technical questions regarding advanced resuscitation and suction. The answers of LHVs regarding these questions were diverse: 41 (75.92%) were familiar with initial resuscitation or care of the newborn; 37 (68.51%) replied accurately that Ambu-bag and mask should cover nose, mouth and chin perfectly; 24 (44.44%) were familiar that rate of breathing through Ambu-bag and mask should be 40 breaths per minute; and all 54

(100%) midwives and LHVs replied accurately that breastfeeding should start in less than an hour of birth (Table – I & II).

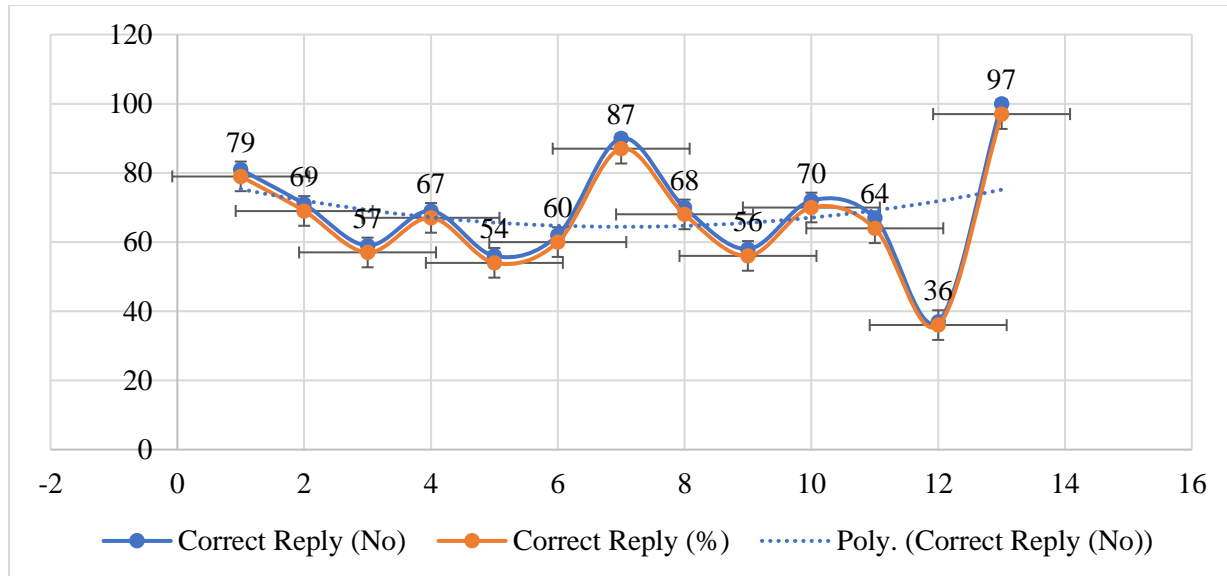
In comparison, only 24 (49%) replied accurately to the questions asked. Only 21 (42.85%) midwives were familiar with the initial resuscitation care of newborn; 21 (42.85%) were aware that Ambu-bag and mask

should cover nose, mouth and chin perfectly; and 13 (26.53%) midwives were familiar that breathing should be delivered at a rate of 40 breaths per minute during ventilation using Ambu-bag and mask.

It was obvious that the knowledge of LHVs concerning neonatal resuscitation was far higher and improved as compared to the midwives.

**Table – III:** Accurate Response Stratification

Statement	Correct Reply (No)	Correct Reply (%)
Bulb sucker and infant bag are always required in the delivery/labour room.	81	79
The respiratory effort, colour and heart rate are used to determine if N.B needs resuscitation.	71	69
After delivery, it is important to determine that the heart rate is above 100 per minute.	59	57
Cyanosis and heart rate less than 100/min are risk signs in N.B.	69	67
During stimulation of N.B, slapping back and holding N.B head down is not suggested.	56	54
The exact order of initial resuscitation care of N.B includes keeping warm, sucking, head positioning, drying and stimulation.	62	60
The first step in resuscitation is keeping the baby warm.	90	87
The mouth of N.B should be suctioned before nose.	70	68
Ambu-bag, the mask should cover nose, mouth and chin perfectly.	58	56
When conducting N.B resuscitation with Ambu-bag and mask, it is important to check that seal between N.B mouth, nose and mask is complete.	72	70
Best way to judge the success of ventilation with Ambu-bag is to observe the rise and fall of the chest wall.	67	64
During ventilation with Ambu-bag and mask, breathing should be provided at a rate of 40 breaths per minute.	37	36
Breastfeeding should start in the first hour after birth.	100	97



### DISCUSSION:

The significance of accessibility of newborn resuscitation equipment at the health facilities cannot be ignored. The United Nations Commission on Life-saving Commodities concerning Women and Children has incorporated a bag-and-mask device regarding newborn resuscitation on its list of 13 reasonable, functional, but under civilized life-saving commodities [10]. In many underdeveloped countries, scarcity of these important supplies poses a major hurdle to carry out productive newborn resuscitation. Approximately all the essential healthcare facilities, study site, distributing child health and maternal services had sufficient supplies of mask and bag devices used for ventilation as well as basic equipment regarding neonatal resuscitation.

Enhancement and maintenance of neonatal care demand active participation of all the workers in a healthcare system. In Pakistan, midwives and LHVs are regarded as crucial members of the healthcare system, supplying maternal and child health (MCH) services at RHCs and BHUs. Their capacity-building and proper training are significant to minimize newborn and maternal mortality and morbidity. The pre-service training of LHVs and midwives is comprised of three stages of labour, difficulties regarding labour and neonatal resuscitation. Both cadres share the same training; practical as well as theoretical part, although LHV training covers a more theoretical portion in comparison to the midwives. LHV training takes a duration of 24 months while that of midwives which takes about 18 months. These training enable health workers to face real-life situations at villages which lack insufficient primary facilities for neonatal resuscitation. These training

help LHVs to solve problems in the villages of Pakistan. The result of this study emphasized that LHVs receive better knowledge about basic neonatal resuscitation as compared to midwives. The reason is that only the LHVs having 14 years of education could be enrolled for LHV course of 2 years duration, as compared to midwives having eight years of education before getting the training. The fact that midwives have insufficient knowledge could be associated with their education level. The considerations of the current study focus on the overall bad performance of the midwives sampled regarding neonatal resuscitation. Neonatal resuscitation, is a tremendous challenge in developing countries showed similar results [12]. Ignoring the average work experience of 5 years, a questionnaire was developed to determine basic knowledge, only 24 (49%) midwives replied the questions correctly. This shows a serious lack of knowledge regarding basic neonatal care.

It is interesting that the primary healthcare facilities had pre-service trained workers regarding neonatal resuscitation which do not have much practical exposure. This fact emphasized on the need for systematic in-service training and refresher courses. It is proved from studies that knowledge and skills of healthcare providers enhance remarkably after having training concerning neonatal resuscitation [13–15]. In Pakistan, another consideration made is the unavailability of proper documentation and record-keeping system regarding neonatal resuscitation services. The healthcare record is of more importance to the progression of care. Insufficient or poor documentation has an adverse effect on patient care as well as outcomes. Documentation is a necessary and helpful tool, as it connects critical care physicians with

primary care physicians and permits the exchange of life-saving information [16]. Because of the appropriate record keeping system, good quality data will be accessible by planners, policy-makers and health managers for decision making based on evidence. Through precise data management, funding and regional planning improve leading to fair resource allocation [16]. Moreover, there is a need for further evaluation in other districts to know the procedure of data recording and documentation regarding neonatal resuscitation.

### CONCLUSION:

The midwives and LHV's should be trained on a regular basis for neonatal resuscitation at healthcare centres in the country. The training should be made mandatory to get a job. During training, more focus will be on practical work. Neonatal resuscitation guidelines based on evidence should be accessible at all healthcare centres. The neonatal resuscitation given to a newborn should be registered along with its consequences. There should be a revision of the syllabus for midwives and LHV's and the section regarding neonatal resuscitation should not be neglected.

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