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Training institutions for community midwives in Pakistan: An initial assessment

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Table of Contents

List of Table

List of Figures

Abbreviations

BHU	Basic Health Unit
CMW	Community Midwife
DEC	District Evaluation Committee
DHQ	District Headquarters Hospital
EmONC	Emergency Obstetric and Neonatal Care
FIGO	International Federation of Gynecology and Obstetrics -
GoP	Government of Pakistan
ICM	International Confederation of Midwives
LHV	Lady Health Visitor
LHW	Lady Health Worker
MCH	Maternal and Child Health
MDG	Millennium Development Goals
MNCH	Maternal, Neonatal and Child Health
MNH	Maternal and Newborn Health
NMNCH	National Program on Maternal, Neonatal and Child Health
OB/GYN	Obstetrics and Gynecology
PAIMAN	Pakistan Initiative for Mothers and Newborns
PNC	Pakistan Nursing Council
RHC	Rural Health Center
SBA	Skilled Birth Attendant
THQ	Tehsil Headquarters Hospital
USAID	United States Agency for International Development
WMO	Woman Medical Officer

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We hope that this report will provide useful information about the training of community midwives in Pakistan and will be helpful in designing and implementing future policies and programs for the training of community midwives.

[1] Names of data collection team are given in Appendix 1

Chapter 1: Introduction

Background

Globally, more than 98 percent of maternal deaths and 99 percent of neonatal deaths occur in developing countries. Pakistan's maternal mortality ratio (MMR) is relatively high, though by no means the highest in the region, at 276 per 100,000 live births; the neonatal mortality rate is about 54 per 1,000 live births. Findings of the 2007 Pakistan Demographic and Health Survey show that only 39 percent of the deliveries in Pakistan were attended by skilled birth attendants: 34 percent of these were facility deliveries, but only 5 percent were home births (NIPS, 2007). For a country like Pakistan, where around 60 percent of the population resides in rural areas with poor healthcare infrastructure, broad availability of skilled birth attendants would appear to be a crucial next step in improving maternal and neonatal outcomes.

The concept of providing community maternal and child healthcare is not new in Pakistan. The country's first Maternal and Child Health (MCH) Program was initiated in 1955, introducing a cadre of lady health visitors (LHVs). From their base in static facilities, LHVs provide important community services, such as health education, motivating women to get antenatal check-ups from trained providers, recording the history of pregnant women and assessing the severity of pregnancy complications so timely referrals can be made to appropriate facilities. As of 2005, there were 6,741 registered LHVs spread across the country, an indication that there were too few LHVs to adequately cover the population (Federal Bureau of Statistics, 2005). Many LHVs prefer to work in the private sector, which reduces MNH coverage even more, particularly in rural areas (Bhutta, Jafarey and Bergstrom, 2004).

Currently, *dais (*traditional birth attendants [TBAs]) are the primary group providing midwifery services to rural women in Pakistan, with many also working in urban or semi-urban areas. Because TBAs are local residents with a long history in their communities, they tend to be well respected and trusted. However, TBAs have a low level of education and are not formally trained in midwifery, having learned their skills from older women or other TBAs in their communities or families. Programs to upgrade the basic knowledge and skills of TBAs have been conducted with some success; however, those who have not been exposed to had such training do not know about basic safe delivery practices (for example, proper hygiene during delivery and recognition of danger signs in pregnancy, delivery and the postpartum period in order to make timely referrals).

In the publicity surrounding the United Nation's Millennium Development Goals (MDGs), particularly MDGs 4 and 5, which address maternal and neonatal mortality, attention has focused on the importance of skilled birth attendance in meeting MDGs. MDG 5 calls for meeting the challenge of reducing maternal and neonatal mortality, with a goal of ensuring that a skilled birth attendant is present at 85 percent of all births worldwide. In a 2004 joint statement (with ICM and FIGO), the World Health Organization defined a skilled birth attendant as someone who: "…is an accredited health professional -- such as a midwife, doctor or nurse -- who has been educated and trained to proficiency in the skills needed to manage normal (uncomplicated) pregnancies, childbirth and the immediate postnatal period, and in the identification, management and referral of complications in women and newborns" (WHO, 2004).

There is a growing list of countries that have improved maternal and neonatal health largely due to training and deploying of skilled birth attendants; the list includes many countries in Asia that have recently taken up the community midwife model (Hatt et al., 2007). Cuba, China, Jordan, Malaysia, Sri Lanka and Tunisia have significantly reduced maternal deaths by investing in training, recruiting and retaining midwives, as well as in emergency obstetric care (UNFPA, nd).

In keeping with the MDG goals set to be achieved by 2015, the Government of Pakistan (GoP), in recognition of the need to enhance coverage of MNH services, made the decision to introduce the new cadre of community midwives (CMWs). The CMW concept, supported by the national and international studies that show that increasing skilled birth attendance is the most important requirement for lowering maternal mortality, quickly took shape.

PAIMAN project and skilled birth attendance

The Pakistan Initiative for Mothers and Newborns (PAIMAN) project, funded by the United States Agency for International Development (USAID), assisted the Government of Pakistan to employ the full range of interventions necessary to address mother and newborn health. One of the project's objectives was to increase community-based access to MNH services through training and placement of community midwives (CMWs) as a key activity in PAIMAN's long-term goal of reducing the incidence of maternal and newborn mortality. PAIMAN was active in drafting, advocating, finalizing and putting into operation the National Skilled Birth Attendant (SBA) strategy, which has become an integral part of the National Program on Maternal, Newborn and Child Health (NMNCH).

An early first step in establishing this new cadre was to ensure that appropriate facilities were available for training. Training institutions and allied hospitals, where CMWs would gain hands-on experience in maternal care, needed to be identified, and upgraded or built. Initially, it was thought that 97 new CMW training schools would need to be established nationwide. The PAIMAN project immediately tackled upgrading training schools and allied hospitals in the districts in which the project operated, as well as training of trainers, in cooperation with the NMNCH program and the Pakistan Nursing Council (PNC). The project also worked on upgrading tutors and supervisors for CMW training so that they had the competency required to carry out the training of CMWs.

The PAIMAN project worked with the NMNCH program, the PNC and all other important stakeholders to strategize how the CMW program should work and to create a CMW curriculum. Under the PAIMAN project, 29 training schools and 89 allied hospitals were upgraded in PAIMAN districts.

The goal of the present study, which was funded by USAID through the PAIMAN project, was to focus on the training (classroom and hands-on) of CMWs, not necessarily measuring their knowledge or competency while they were still undergoing training, but to specifically look at the institutions providing CMW training to see what resources (both physical and human resources) they had available for CMW training and how these resources were being utilized. To some extent, information regarding the competency of the trainers and supervisors and their attitudes regarding the training was obtained. This study served as an early evaluation of the trainings and upgradation PAIMAN conducted for CMW trainings, to assess how their interventions fared. This study provides documentation for future decisions regarding the management, training and practice of community midwives (CMWs) in Pakistan. Results from this study can be used to further improve the training of CMWs as this much-needed cadre assumes the role of primary provider of skilled maternal and neonatal healthcare in the home. As Pakistan transitions from a country with a high level of home births to a country where most births take place in institutional settings, trained CMWs can ease that transition, saving the lives of mothers and newborns as the transition unfolds.

CMW program in Pakistan

Tackling the problem of training community midwives

In 2003, Imtiaz Kamal, often referred to as the grandmother of midwifery in Pakistan, and President of the Midwifery Association of Pakistan, was quoted as saying that unless the quality of training improves, Pakistan will find it difficult to prepare competent midwives capable of making an impact on the maternal mortality rate (Ebrahim, 2003). This is as true in 2010 as it was in 2003.

When the CMW program was conceived, a curriculum needed to be developed that fit the role CMWs were to perform in the rural communities of Pakistan. It was understood that there needed to be a strong hands-on component, so that the community midwives would be well prepared to handle deliveries on their own in a home setting. There also needed to be a strong community-based component to the training so that community midwives were already being transitioned from training into their communities in a way that allowed them to begin to develop liaisons with facility-based maternal and newborn healthcare professionals right from the start of their deployment.

Early plans and assessments (going back to at least 2005) for the training of CMWs recognized the need to identify existing midwifery training units as well as to look at sites that needed to be expanded or built to create adequate numbers of training units. Whatever the status of training institutions and district and tehsil-level hospitals, it was clear from the initiation of the CMW program that they would all need to be improved in order to ensure a high quality of training and hands-on experience. This included the addition or upgradation of a range of items, from adding teaching aids/equipment, furniture, library facilities and dormitories to ensuring that facilities that CMWs would be referring patients with complications to would be providing 24/7 emergency obstetric care (with adequate facilities and competent personnel) to treat those referrals. Part of this activity would require identifying sites that would be used for training the tutors and acquiring appropriate teaching materials for this purpose as well. The PAIMAN project, with national and international partners and support, set out to do just that in the PAIMAN districts.

Guidelines for CMWs (selection/training/placement)

The guidelines for CMWs are presented here (taken from National MNCH program and the PNC).

The selection of CMWs is based on the following criteria:

- One CMW for 5000- 10,000 population
- Female, preferably married
- Aged 18-40 years
- Permanent resident of the area from which she is applying
- Minimum qualification should be at least metric
- At least 40 percent marks in science subjects
- Experience of working in the community

Each CMW should possess at least a minimum level of skills for conducting deliveries. To achieve the prescribed level of expertise, the Pakistan Nursing Council recommends that each community midwife have done the following (PNC, 2005):

- Observe 5 normal deliveries
- Assist at 5 normal deliveries
- Conduct 5 normal deliveries under supervision
- Conduct 10 normal deliveries independently

They should maintain a record in the prescribed practical books, duly signed by the supervisor after each entry and countersigned by the head of the institution, prior to their examinations. Each logbook should have the following minimum recorded events:

- 25 antenatal records in their log book
- 25 deliveries in midwifery journal (as per above requirements)
- Follow-up of the 25 deliveries
- Report in the form of a casebook or project report on a health issue faced by the community (e.g., collection of data for surveys; report on hygiene and sanitation issues; nutritional status of the community; etc.)

CMWs are supposed to be provided with an honorarium of Rs. 2,000 per month, along with a training allowance of Rs. 1,500 during institutional (course work) and practical training. To support them during the initial period after training, an amount of Rs. 2,000 per month is to be paid while they are practicing in their communities, and this sum is in addition to any fees that they charge for their services (estimated at Rs. 150 per delivery).

According to the Community Midwifery Curriculum set by the Pakistan Nursing Council, the primary goal for training CMWs is to reduce the high maternal mortality and infant mortality rates in the country. To do this, the objectives of the CMW program are to make safe delivery possible for women in their homes and in their communities. In carrying out these objectives, community midwives will need to act in many capacities to ensure the successful execution of these roles; it is essential that the training curriculum of CMWs be exhaustive.

Stages of training

Steps 1-4 show the timing of CMW training, from beginning coursework to deployment. The training program for CMWs lasts for 18 months, which is broken down into three blocks of time (Steps 1-3, as described below). During the training CMWs must be given free boarding accommodations. Each student must have attended a minimum of 85 percent of the interactive discussions and 85 percent of the practical on-the-job training; attendance is to be supported by a certificate from the head of the institution prior to the CMW taking the examinations.

The CMW curriculum was written by the PNC along with national and international partners. The curriculum is divided into nine units that cover: foundation studies; introduction to maternal and newborn health in Pakistan; pregnancy and antenatal care; labor and childbirth; postnatal; infant and child health; complications of pregnancy and childbirth; complications of neonates; and preparing for professional practice. Of these, the first unit, on foundation studies, is taught in the first three months at the CMW training school. The other topics are covered during the attachment with the allied hospital.

Step 1: First three months at CMW training schools

During the first three months, CMWs undergo classroom-based study. At the end of these first three months, CMW students are given examinations, which include 60 percent subjective and 40 percent objective questions. A minimum score of 50 percent is required to pass this examination.

Step 2: Twelve months of hands-on training at an allied hospital

CMWs next undergo 12 months of training in the hospital allied with the training school where they did their first three months of training. In these 12 months, 75 percent of the students' time is spent in the hospital gaining hands-on experience and 25 percent is spent in classroom lectures. Over these twelve months, the remaining eight units are taught to the CMW trainees during the daily classroom lecture at the training school. As part of these 12 months, students spend three months in each of the following areas/wards: 1) gynecology and obstetrics, 2) gynecology and obstetrics operating and delivery rooms, 3) newborn nursery ward, and 4) labor room.

The work of a CMW is supposed to be supervised according to the given checklist by the head nurse of each department. Each student is also supposed to maintain their own log book in which they record the practical work they have done. Class teachers and the principal of the school of nursing (or other training institution) are supposed to supervise the CMW candidates on a daily basis.

Step 3: Three months practical training at peripheral facilities

When the 12 months of hospital practice are completed, the CMWs are sent to their respective communities where they should each be linked to their local RHC or THQ for the final 3 months of the 18-month training period, so that they gain experience working in cooperation with the LHWs, LHS, LHVs, WMOs and MSs before they begin to fully function on their own conducting home deliveries (or CMW health-home deliveries). During this period, CMWs are supervised by the LHV or woman medical officer (WMO) present in the attached health facility. During these three months, each CMW should maintain a log book that is checked by the WMO, principal of the school of nursing (or other training institution) and their tutors according to a given checklist.

One of the main purposes for the training of CMWs at RHCs and THQs nearest to their homes is to help them transition into their communities and to establish their linkages with LHWs and TBAs, so that their work within their community, especially in regard to the referral mechanisms, are strong from the outset. During the training period the following steps have been proposed to establish these linkages: (1) organizing meetings at the facility with all staff, including healthcare personnel attached to the facility and TBAs of the area, to be sure they are aware of the role and importance of community midwives; (2) arranging for every student to have 2-3 community visits per week (e.g., if 6 students are placed at the facility, 2 students should stay at the facility and the rest should go to community for household visits); (3) CMWs should participate in the monthly meetings of LHWs at the health facilities; and (4) the roles of LHWs and TBAs, as friends of future CMWs' midwifery homes, should be highlighted and clearly defined, so community participation and support in making linkages can be ensured.

Step 4: Examinations

At the end of the initial ten weeks that a CMW spends at the training school, an internal examination is arranged by the school of nursing. If a candidate is unsuccessful, re-examination is arranged after 4 weeks. If unable to clear the exam on the second attempt, the student is excluded from the course. Once a CMW has completed her community work at the RHC/THQ, she sits for the nursing examination board. Exams are of two types: one is based on midwifery skills/knowledge and the other is based on obstetrics skills/knowledge. CMW students must pass both written tests and a practical exam; CMWs must achieve a mark of at least 50 percent to pass each exam. CMWs who fail to pass the examination are allowed to retake the exam two times. A CMW who fails the

examination, but plans to take it again, will be provided only half of the stipend during the time before she retakes the exam.

CMWs who have completed training but experience a gap before taking the exam are to be placed at the THQ/RHC where they did their practical training until they are able to take and pass the examination.

Placement

Once CMWs have completed their training and successfully passed the examinations, they receive a license from the PNC (registration). At that point, the CMW is provided with the required supplies/logistics to establish her midwifery house and posted at her union council of residence by the DEC (District Evaluation Committee). The planned coverage for each CMW in her designated community/union council is a population of 5,000.

Institutional standards/requirements

Training schools

According to PNC, in general, institutional requirements are similar for the nursing schools and for the midwifery schools

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After community midwives complete their training, each should be able to:

- Define her role in provision of care to woman during their maternity cycle
- Differentiate the roles of a TBA, LHW, LHV, midwife, and obstetrician
- Recognize the signs of pregnancy
- Identify pregnant women in the community and persuade them to undergo antenatal registration
- Examine woman and determine the progress of their pregnancy
- Advise pregnant women regarding care during pregnancy (so that they seek registration at a health facility for antenatal care and immunization)
- Manage minor discomforts of pregnancy
- Explain to women what to eat and why, during pregnancy and lactation; help pregnant and lactating women deal with nutritional problems
- Recognize common danger signs during pregnancy that require timely or immediate referral for medical attention
- Assess risk conditions and manage these according to the level of risk involved
- Advise women and the family about the possible dangers involved in home delivery when contraindicated and advise delivery in a hospital/health facility capable of coping with complications
- Initiate discussions during the antenatal period and provide guidance about breastfeeding and postponing the next pregnancy
- Advise pregnant women and their families about collecting and preparing things for the delivery for herself and the newborn two months before her due date, including money for emergencies
- Determine when women are in true labor
- Prepare the environment/materials needed for delivery (for CMW and for pregnant woman) to ensure clean and safe delivery
- Recognize how labor is progressing through regular monitoring and use of a partograph
- Provide supportive care to pregnant women throughout labor and delivery
- Manage all stages of normal labor to ensure safe delivery
- Recognize, manage, and refer complications arising in the first, second or third stage of labor to the appropriate health facility
- Recognize, manage and refer complications arising in the first six hours after delivery
- Recognize, manage and refer complications arising in the first six weeks after delivery
- Recognize presentations other than the vertex and refer women to a hospital
- Provide essential care to the neonate
- Ensure clean cutting of the cord and provide and instruct the mother to practice clean-cord care
- Recognize a baby who is not crying or breathing or breathing poorly and provide breathing support
- Encourage early initiation of breastfeeding with colostrums
- Assist and support the mother in establishing exclusive breastfeeding
- Identify newborn babies requiring special care and refer them to appropriate health facility
- Advise the mother about proper diet, hygiene, rest and mobility during the postnatal period
- Recognize early signs of complications during the postnatal period
- Discuss family planning, explaining options available and guide mothers to the source of services
- Recognize and advise how to manage sexually transmitted diseases and refer to proper facilities
- Advise women/mothers and families about basic health messages
- Participate in immunization campaigns
- Maintain accurate and up-to-date records and submit reports as instructed
- Recognize the need for additional knowledge/skills to fulfill role and obligations; request supervisors to arrange in-service training
- Use protocols provided by PNC

(Community Midwifery Curriculum, Pakistan Nursing Council)

Personnel

A set of minimum requirements for training schools were developed by PAIMAN along with government health officials and major stakeholders. It was decided that training schools needed to each have three tutors for the CMWs, and training of these tutors was to begin immediately. Lectures in obstetrics must be delivered by a registered obstetrician and midwifery lectures by qualified tutors.

Faculty includes the following positions: principal; nursing superintendent; midwifery tutors; midwifery supervisors; and guest lecturers.

Physical facilities

Table 1.1: Capacity and size of training school spaces

Space	Capacity	Size	Total size
Auditorium (x1)	300 capacity	10 sq.ft./person	3,000 sq.ft.
Lecturer hall (x3)	100 capacity	10 sq.ft./person	3,000 sq.ft.
Library (1)	100 capacity	20 sq.ft./person	2,000 sq.ft.
Common room for women		1,000 sq.ft. total	1,000 sq.ft.
Cafeteria		1,000 sq.ft. total	1,000 sq.ft.
Tutorial (x4)	25 capacity	10 sq.ft./person	1,000 sq.ft.
Labs (x6)	25 capacity	20 sq.ft./person	3,000 sq.ft.
Offices (x7)	500 sq.ft.	Each department	3,500 sq.ft.
Miscellaneous space (administration)		2,000 sq.ft. total	2,000 sq.ft.
Circulation and other space (33%)		10,000 sq.ft. total	10,000 sq.ft.
TOTAL			**29,500 sq.ft.**

Other facility details

- The library must be well-stocked with at least 20 copies of each textbook and 10 sets of at least five reference books on each subject.
- The institute must have the availability of internet connectivity and at least one computer per 10 students enrolled.

Minimum requirements for training hospitals

a. Number of beds

No hospital shall be allowed to train midwives unless it has 50 occupied beds and an admission of at least 1,000 midwifery cases in a year. The distribution of maternity beds shall be as under:

- Antenatal beds 8
- Lying in beds 30
- Labor beds 4
- Emergency beds 4
- Septic beds 4
- **TOTAL -** **50**

b. Rules (inspection/fees/etc.)

All institutions recognized for the training of midwives will be subject to the rules in respect of periodical inspection, annual returns and payment of affiliation fees as applicable to training schools of nursing.

c. Strength of staff of maternity unit

Table 1.2: Staff requirements for maternity units of training hospitals

Staff	Remarks
Medical staff	There shall be a Resident Medical Officer who preferably is an obstetrician or under special circumstances a Medical Officer with at least 3 years experience in obstetrics, who should deliver interactive lectures.
Nursing staff for ward	
Nursing sister	3 for 24 hours
Charge nurse	6 for 24 hours
Nursing staff for labor room	
Nursing sister	2 (one for morning and one for evening)
Charge nurse	6 for 24 hours
Nursing staff for operating theatre	
Charge nurses	2 for one operating theatre

Domiciliary midwifery

Each training institution must arrange to provide domiciliary midwifery experience to the students under training for 10 weeks. Where this is not possible for the institution, they must affiliate with the nearest MCH center or public health nursing school

Current study: assessing CMW training institutions

The goal of this study was to assess the current status of selected training institutions regarding equipment and personnel for training CMWs. The study gathered information from 22 training institutions and 25 allied hospitals where CMWs received their classroom and hands-on training. Quantitative assessment methods were used to carry out this assessment. The general scope of the study was designed to capture information through interviews and observations about the institutions and through interviews and observations of teachers and supervisors.

In Chapter 4, seven training schools and allied hospitals are analyzed further. These institutions were the training schools and their allied hospitals where CMWs who had been part of an operations research study of the knowledge and skills of newly graduated CMWs had graduated. This OR study was conducted by the Population Council under the PAIMAN project (Wajid, Rashid and Mir, 2010).

Questionnaires

Six research tools were developed in an attempt to gain the best possible insights into the training capacity of the institutions, ranging from their facilities and teaching aids, their teaching personnel and the CMWs attending the institutions. The following tools were developed by the Population Council staff and then administered in the field:

1. Inventory of training school

Twenty-two training schools completed this questionnaire; these questionnaires were to be completed by the principal or in-charge of the training school, or someone designated by them for the interview.

2. Inventory of allied hospital

Twenty-five allied hospitals completed this questionnaire; the medical superintendent and in-charge obstetrics/gynecology or someone designated by them answered the questions.

3. Teachers/tutors at the training schools questionnaire

Fifty-four teachers and tutors at the 22 training schools were interviewed on this questionnaire.

4. Clinical supervisors at the allied hospitals questionnaire

Sixty-three clinical supervisors at the hospitals completed this questionnaire. Because CMW students had different supervisors in different areas during hands-on training, there were more opportunities for observations by different clinical supervisors (e.g., newborn nursery, obstetrics ward, etc.).

5. Observation checklist of training schools

The observation checklists were completed for 18 CMW training schools. In some cases, it was not possible to complete the observation checklist because there were no classes or no students enrolled at the time of the field team's visit. A checklist was filled out during the training session in the classroom; this checklist mainly captures the way a tutor was imparting the training to the CMW students.

6. Observation checklist of allied hospitals

Seventeen observation checklists were completed for the allied hospitals. The allied hospital observation checklists were completed for different areas where CMWs were deputed at the time of the field team's visit. The checklist was filled out by the female observer when the clinical supervisor was supervising her CMW student(s) in the supervisor's area (e.g., labor room, ward, etc.).

Study universe

All of the midwifery training schools and their allied hospitals from which CMWs belonging to the original 10 PAIMAN districts graduated were selected. Table 1.3 shows the sample size of the study:

Table 1.3: Study universe by region

Sample	N. Punjab	S. Punjab	Sindh	KPK	Total
Training schools	7	4	7	4	**22**
Allied hospitals	7	4	8	6	**25**
Tutors at training schools	19	12	15	8	**54**
Clinical supervisors at allied hospitals	21	8	20	14	**63**
Total	**54**	**28**	**50**	**32**	**164**

Interviewers and fieldwork

There were a total of 15 interviewers, divided almost evenly between those with social science backgrounds and those with medical backgrounds. They were trained by three individuals: two Population Council staff members (the study supervisor, who is a medical doctor/public health specialist, and a social scientist; both have extensive experience in study design and execution) and a trained and experienced nurse, who was a tutor at a training school. Each interviewer was trained to handle the interviews, observations and inventory tools of the study. The

interviewers were trained over 6 days in July 2010 in Islamabad. The training included sessions on the research protocol, ethics, obtaining informed consent, maintaining privacy during the interview process, sampling methodology, interviewing techniques and practical skills. Numerous role-play sessions were conducted as part of the training. The training stressed the importance of respecting respondents and adopting a non-judgmental attitude throughout the interview. One day of pretesting in the field was included and allowed for individual feedback for each interviewer. The interviewers were informed about zero tolerance for any moral or ethical dishonesty and the importance of maintaining confidentiality of the information they obtained.

Fieldwork was conducted during August 2010. Prior correspondence was done with concerned quarters for implementation of field data collection. Each of the institutions was visited one time and interviews were carried out with the management, tutors and supervisors who were present. The institutions included in the study were divided into 4 geographical regions: 1) North Punjab, 2) South Punjab, 3) Sindh, and 4) Khyber Pakhtunkhwa.

There were four female interviewers for each region, two with a background in social sciences and two with medical backgrounds (doctor, LHV or nurse). At the end of the training, one interviewer among the four in each of the regional teams was designated as the team leader. Each team visited their planned institutions on the morning of the designated date and divided themselves into two teams, one for the hospital and one for the training school. They were divided in a way that each sub-team consisted of one social scientist and one medical interviewer. All of the teams were supervised during the fieldwork by supervisors from the Population Council. The field data collection was completed in 3 weeks.

Quality control and data management

To ensure that the highest standards were maintained in both data collection and data analysis, a number of measures were instituted. Interview teams were clearly explained their roles and responsibilities regarding completion of the study questionnaires. Each team was supervised in the field. The principal investigator and study coordinator were also available through telephone calls to guide the teams working in the four regions. Any problems with the study questionnaires were readily addressed and communicated to the members of other teams.

Completed questionnaires/observations/inventories were sent to the Population Council office in Islamabad. The data were coded and entered into the computer using CSPro (version 4.1). SPSS (version 16.0) was used for quantitative data analysis. All study data and forms were stored in locked cabinets at the Population Council office in Islamabad.

Final status of data collection

The total number of interviews, observations and inventories conducted at each school and hospital is shown, by region, in Table 1.4.

Table 1.4: Number of data collection instruments completed, by region

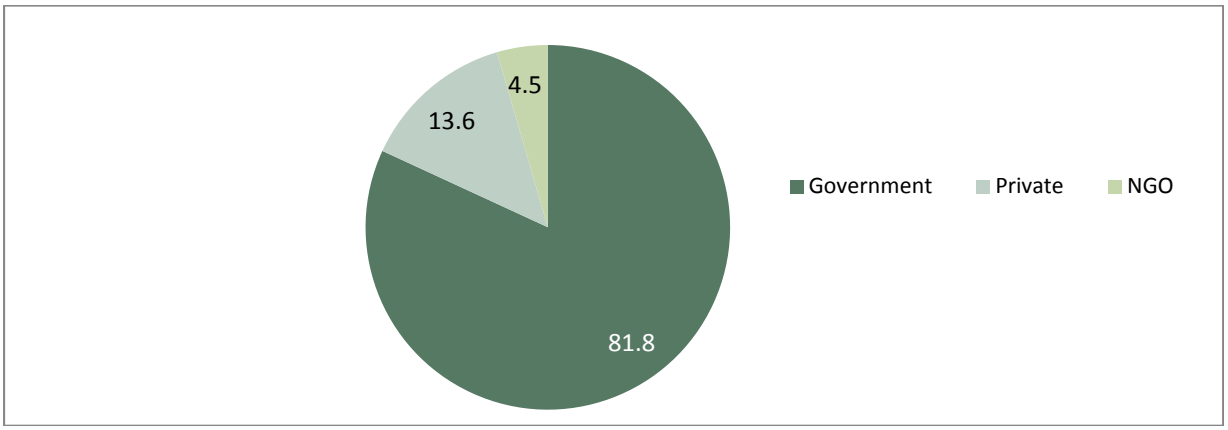
Instrument	North Punjab	South Punjab	Sindh	KPK	Total
Inventories: CMW training schools	7	4	7	4	**22**
Inventories: allied hospitals	7	4	8	6	**25**
Questionnaires: tutors, CMW training schools	19	12	15	8	**54**
Questionnaires: clinical supervisors, allied hospitals	21	8	20	14	**63**
Observation checklist: tutors, CMW training schools	5	4	6	3	**18**
Observation checklist: clinical supervisors, allied hospitals	5	4	4	4	**17**
Total	**64**	**36**	**60**	**39**	**199**

Chapter 2. Characteristics of CMW Training Schools and Allied Hospitals[2]

General characteristics of training schools

Among the CMW training schools, a majority (82 percent) belonged to the public sector, while the remaining 18 percent belonged either to the private sector or to NGOs. Among all of the training schools, 77 percent were recognized by the Pakistan Nursing Council (PNC), while 23 percent were not, even though it is essential that all training schools be recognized by the PNC. (Figure 2.1)

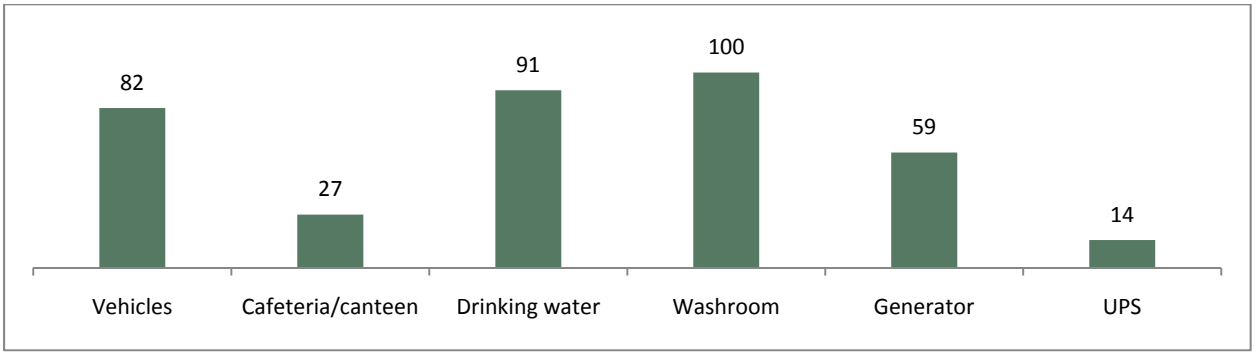
Figure 2.1: Percentage distribution of CMW training schools, by sector (N=22)



Physical facilities and basic infrastructure

At a majority of the training schools, selected amenities were available; these included drinking water, washroom, vehicle and back-up generator. However, only slightly more than a quarter of the schools had a cafeteria/canteen available. (Figure 2.2)

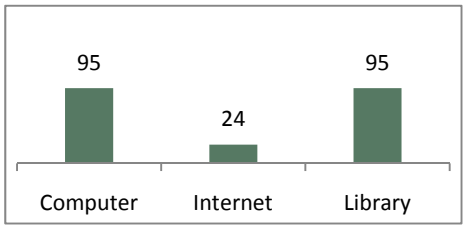
Figure 2.2: Percentage of CMW training schools, by availability of basic amenities (N=22)



[2] See Appendixes 2 and 3 for a complete list of the percentage of training schools and allied hospitals by training materials and aids they had.

Almost all of the CMW training schools had a computer and a library, while only a quarter of them had internet service (Figure 2.3). Interestingly, at very few schools were CMW students allowed to use these computers because they were used only by the administrators.

Figure 2.3: Percentage of CMW training schools, by availability of specific educational amenities (N=22)

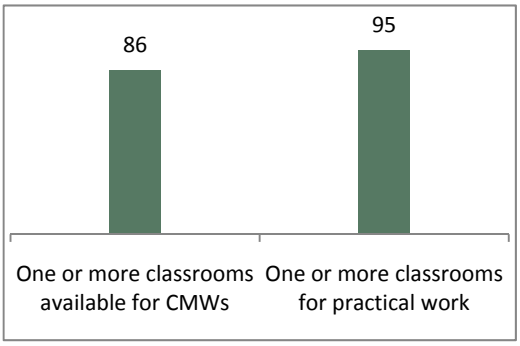


Training facilities

Classroom

An overwhelming majority of the training schools had at least one room available as a classroom and for conducting practical work. (Figure 2.4)

Figure 2.4: Percentage of CMW training schools, by availability of training rooms (N=22)



Most of the CMW training schools had standard amenities in their classrooms and were spacious enough to accommodate all of the students. (Figure 2.5)

Training material and aids

Figure 2.6 shows the number of training schools according to what percentage of different types of training materials they had.

Figure 2.5: Percentage of CMW training schools, by availability of standard classroom amenities (N=22)

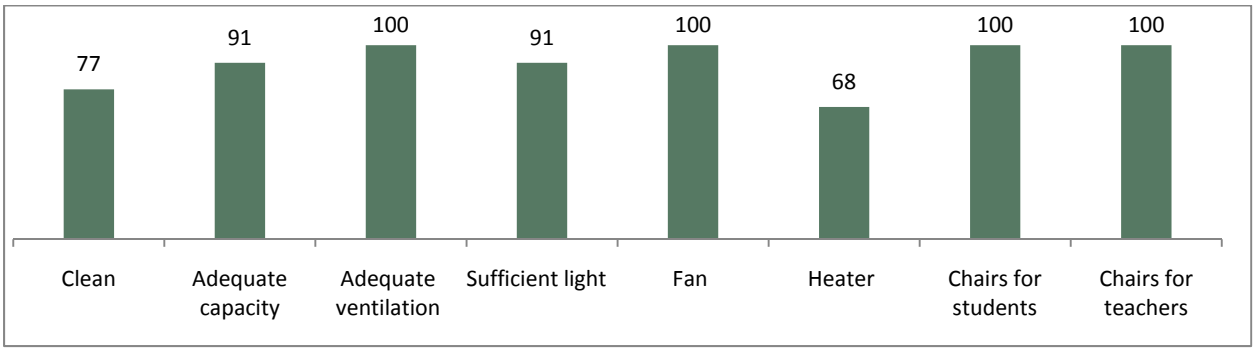
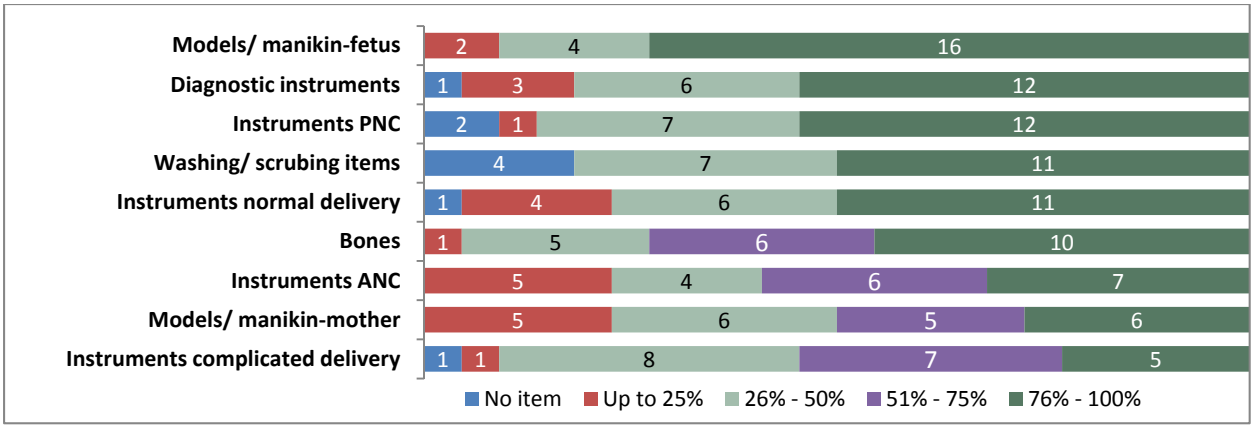
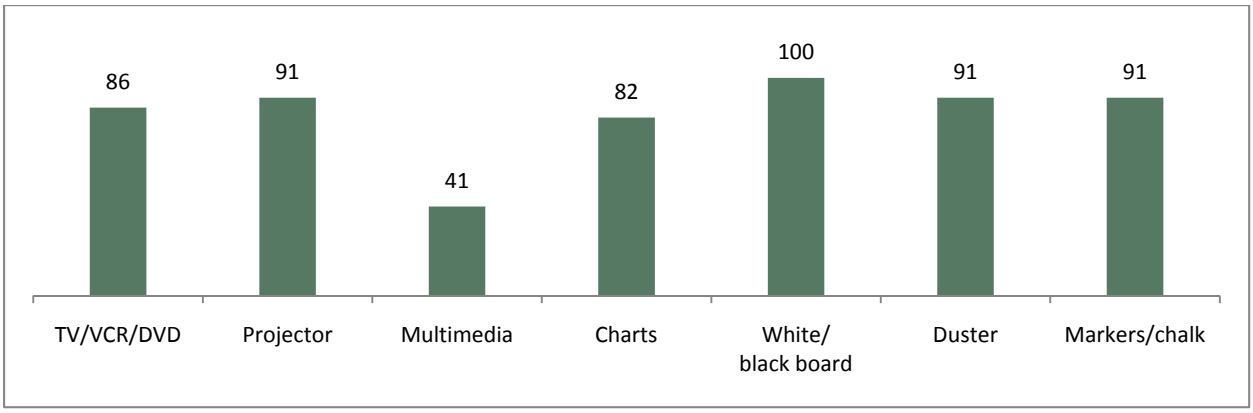


Figure 2.6: Number of CMW schools, by availability of training materials (N=22)



Most of the training aids were available in the majority of the CMW training schools. Multimedia aids were also available at 41 percent of the schools. (Figure 2.7)

Figure 2.7: Percentage of CMW training schools, by availability of training aids (N=22)

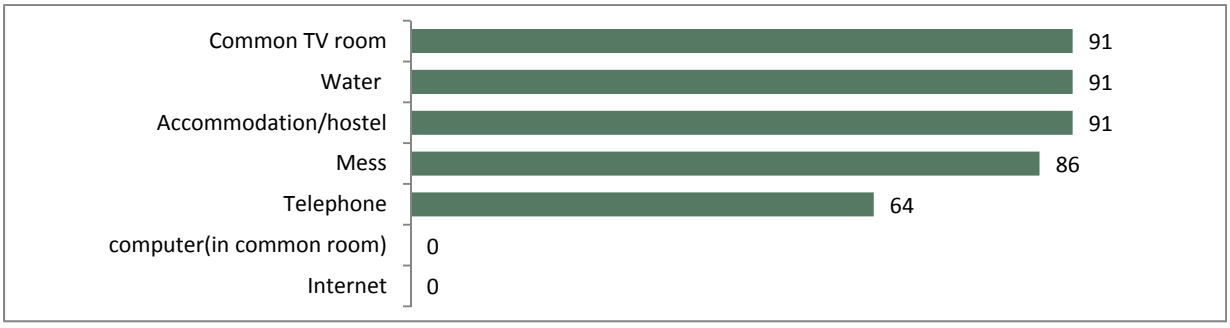


Accommodation for CMWs

Accommodation facilities for the students were available at 91 percent of the training schools; however, facilities that would accommodate all of the CMW students were available at 73 percent of the schools. According to the inventory of the training schools, 95 percent of all accommodation facilities were within the premises of the training school, while the rest were within a 2 km. radius of the training school. Additionally, 70 percent of the CMW schools and the attached allied hospitals were within the same premises. On average, 16 CMWs were staying in the hostel of each training school and the mean number of CMW students per room was four.

The data show that an overwhelming number of hostels had televisions, water and a mess for eating. Telephones were available at 64 percent of the hostels, whereas none had a computer available. (Figure 2.8)

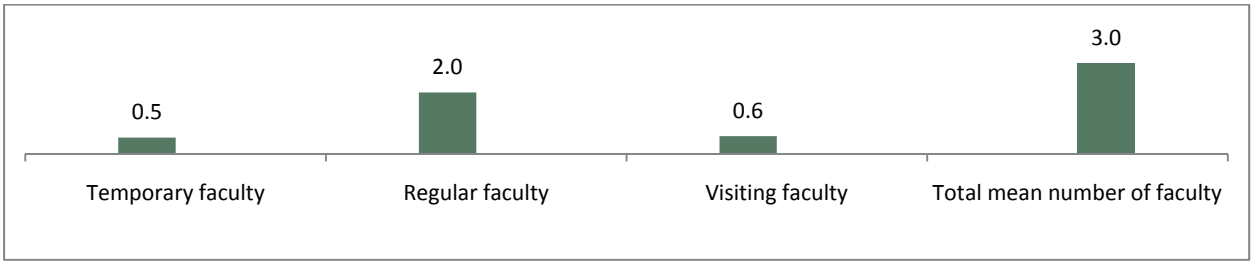
Figure 2.8: Percentage of CMW training schools, by availability of hostel amenities (N=22)



Faculty

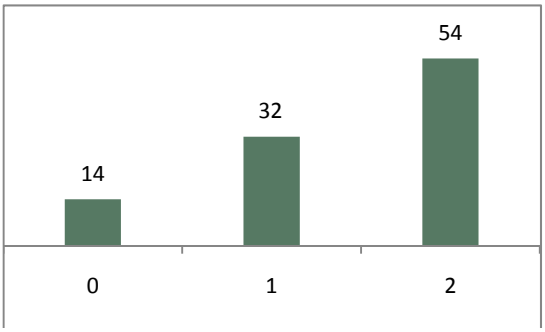
Most of the visited schools were providing two types of courses: nursing and CMW or LHV and CMW. Obviously, separate tutors are needed for both types of classes. On average, each of the visited schools had three tutors. The mean number of tutors working on a regular basis was two per school, whereas, on average, there was one temporary tutor and one designated as visiting faculty. (Figure 2.9)

Figure 2.9: Mean number of tutors at CMW training schools, by type of tutor (N=22)



At a majority (54 percent) of the visited schools, there were currently two batches of CMW students under training, while at a quarter of the schools there was only one batch under training. At 14 percent of the visited schools, there was no current batch of CMWs under training. (Figure 2.10)

Figure 2.10: Percentage distribution of CMW training schools, by number of CMW batches currently enrolled (N= 22)

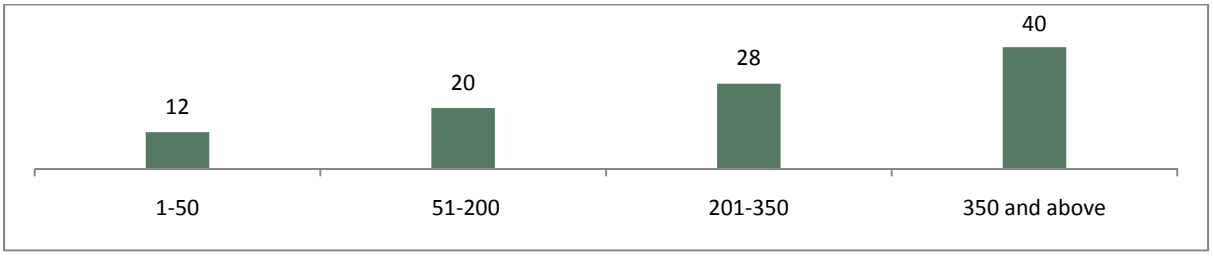


General characteristics of allied hospitals

Basic infrastructure

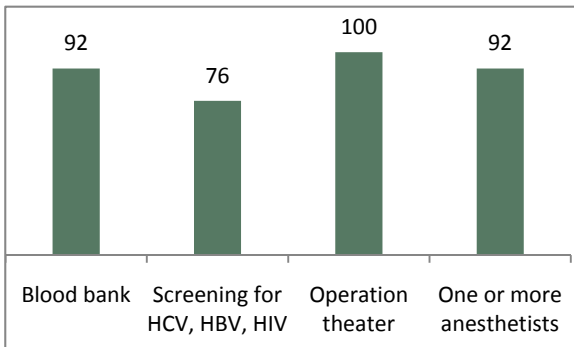
Of the visited hospitals, 40 percent had 350 or more beds for inpatients, while more than a quarter could accommodation 201 to 350 patients. Another 20 percent of the allied hospitals had 51 to 200 beds available. Twelve percent of the hospitals had less than 50 beds. (Figure 2.11)

Figure 2.11: Percentage distribution of allied hospitals, by number of beds (N=25)



A majority of the allied hospital had the mandatory facilities for providing EmONC services. (Figure 2.12)

Figure 2.12: Percentage of allied hospitals, by availability of EmONC services (N=25)

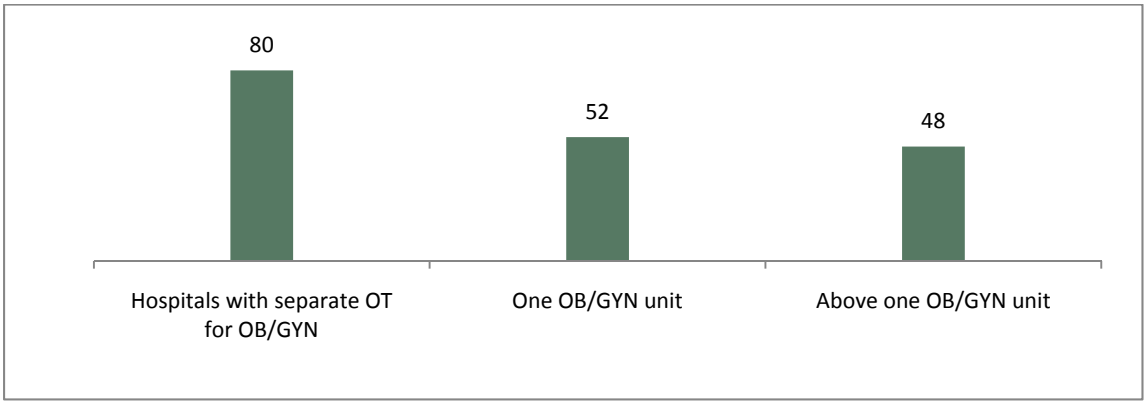


Departments of gynecology and obstetrics

Infrastructure

Almost half of the visited allied hospital had a single unit for gynecology and obstetrics, while the remaining half had more than one unit. A majority (80 percent) of the hospitals had a separate operating theatre for OB/GYN department. (Figure 2.13)

Figure 2.13: Percentage of allied hospitals, by obstetric and gynecology facilities (N=25)



A majority (56 percent) of the allied hospitals had less than 50 beds in the OB/GYN department, which is contrary to the standards set by PNC. (Figure 2.14)

A majority of the OB/GYN departments fulfill the criteria for the minimum number of labor room beds, antenatal beds and septic beds, but 60 percent do not comply with the minimum standards of lying-in beds (in wards other than antenatal). (Table 2.1)

Figure 2.14: Percentage distribution of allied hospitals, by number of beds for obstetrics and gynecology (N=25)

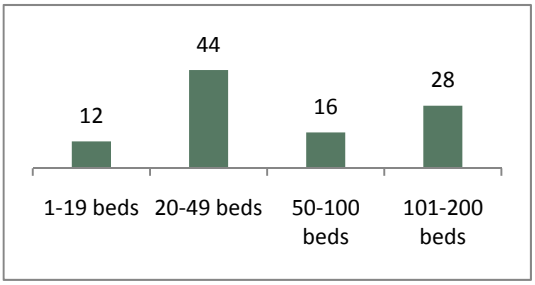
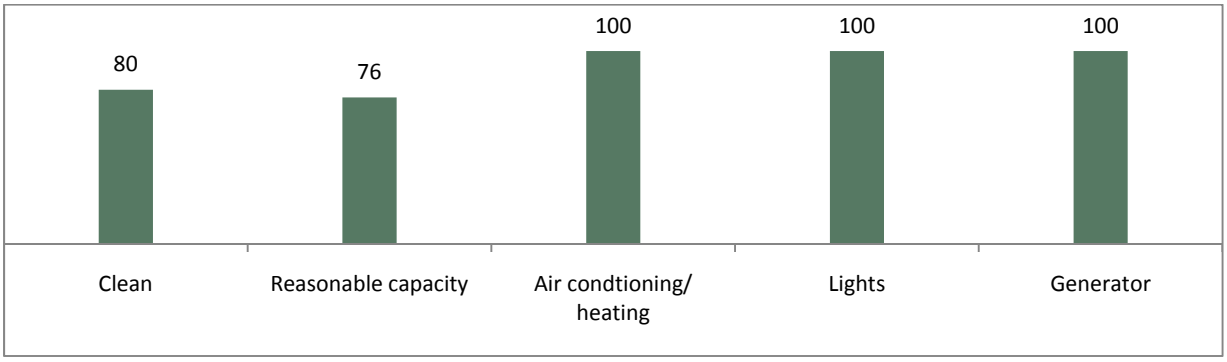


Table 2.1: Percentage distribution of allied hospitals, by number and type of beds in departments of obstetrics and gynecology (N=25)

Department	Number of beds	Percent availability
Antenatal beds	≤ 7	32
	≥ 8	68
Lying in beds (non-antenatal)	None	20
	≤ 29	40
	≥ 30	40
Labor room beds	None	8
	≤ 3	12
	≥ 4	80
Emergency beds for obstetrics and gynecology	≤ 3	27
	≥ 4	73
Septic beds	≤ 3	22
	≥ 4	78

Labor rooms of almost all of the visited hospitals were equipped with basic amenities, while around three-quarters had reasonable capacity and were clean. (Figure 2.15)

Figure 2.15: Percentage of allied hospitals, by availability of standard labor room amenities (N=25)



Staff

In every allied hospital, a mean number of two clinical supervisors were assigned in each labor room and obstetrics ward to supervise the CMW students. Looking at the mean number of CMWs enrolled at each school (16), this seems a low number because staff work in the hospital in three shifts, meaning that at any given time there would be an inadequate number of supervisors available to supervise all of the CMWs. (Figure 2.16)

Figure 2.16: Mean number of clinical supervisors for CMWs in labor rooms and wards (N=25)

Services

Records were obtained from the visited OB/GYN departments regarding the number of clients/services during the month of June 2010. Slightly less than half of the hospitals (48 percent) reported more than 500 deliveries in one month (June 2010), and a little more than one-third of the hospitals reported 1 to 200 deliveries during the same period. A majority (60 percent) of the hospitals reported more than 500 total obstetric cases during one month. (Table 2.2)

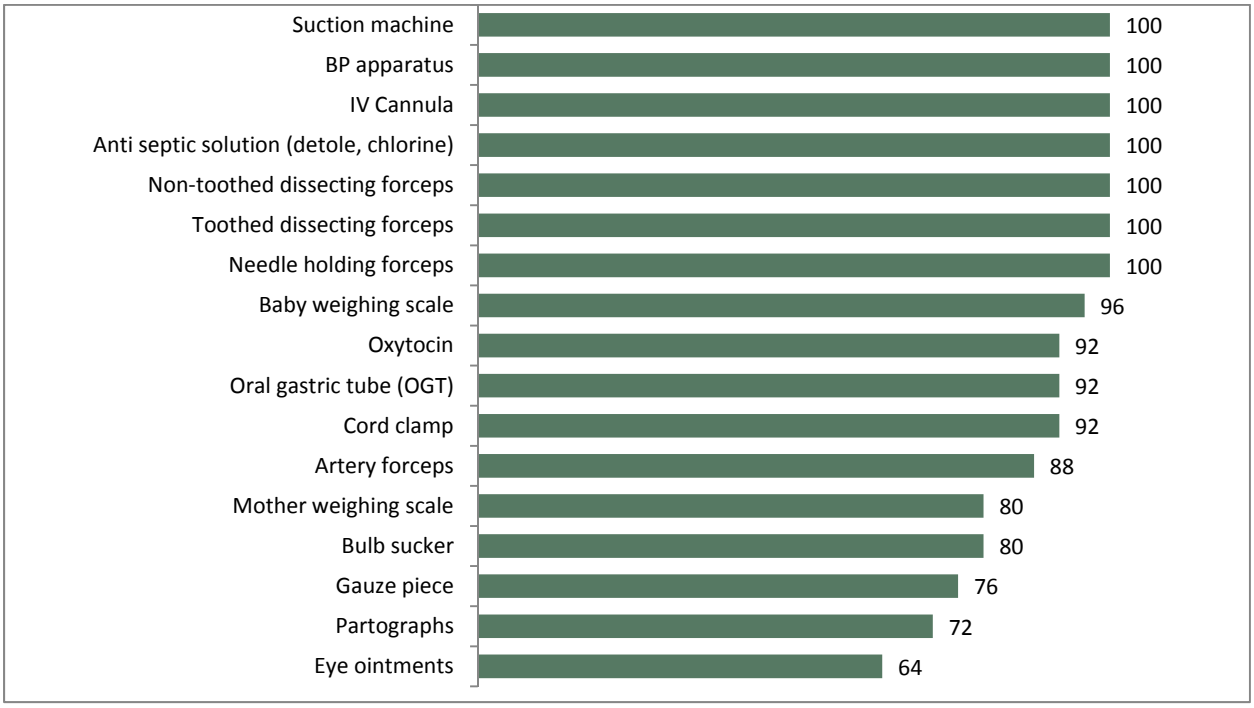
Table 2.2: Percentage distribution of allied hospitals, by type of obstetric cases in June 2010, according to total number of deliveries (N=25)

	Number of deliveries in June 2010		
Delivery status	**≤ 200**	**201-500**	**> 500**
Deliveries	36	16	48
Live births	36	20	44
C-sections	72	24	4
Normal vaginal deliveries	40	40	20
All obstetric cases	24	16	60

Training facilities

Majority of the hospitals had the necessary training material in the labor rooms of the hospitals as shown in the following figure.

Figure 2.17: Percentage of allied hospitals, by availability of training materials/aids (N=25)



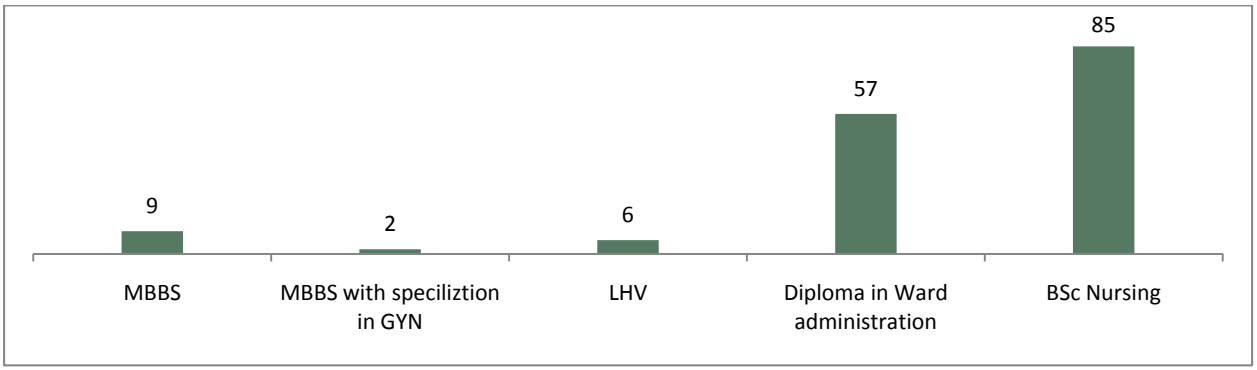
Chapter 3: Tutors and Supervisors

Background characteristics

Tutors

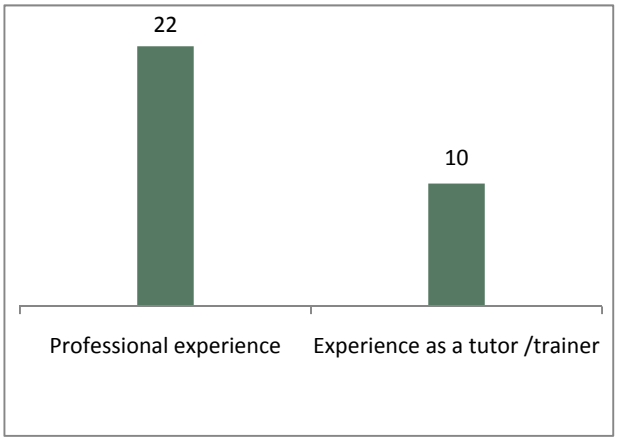
As for their highest degrees, a majority of the tutors have a BSc. nursing degree, followed by those with a diploma in ward administration. The criteria to be a tutor is a diploma in ward administration after basic nursing graduation. Therefore, a large number of the tutors have not obtained the diploma in ward administration. Interestingly, 11 percent of the tutors had an MBBS degree (with or without specialization in OB/GYN), whereas 6 percent posses LHV diploma. (Figure 3.1)

Figure 3.1: Percentage of tutors at CMW training schools, by highest degrees/diplomas attained (N=54)



Tutors were asked for their total years of professional experience, on average, the tutors had the teaching experience of 10 years and overall professional experience of 22 years. (Figure 3.2)

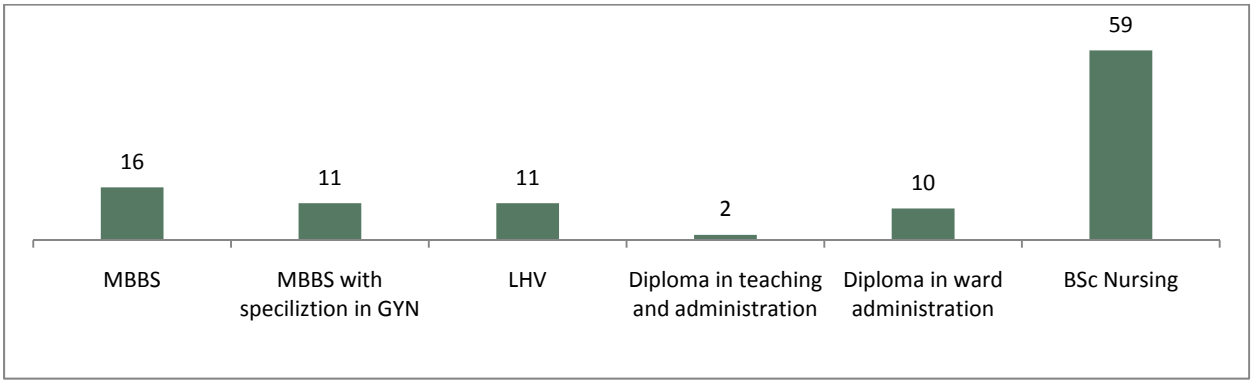
Figure 3.2: Mean years of professional experience of tutors at CMW training schools (N=54)



Clinical supervisors

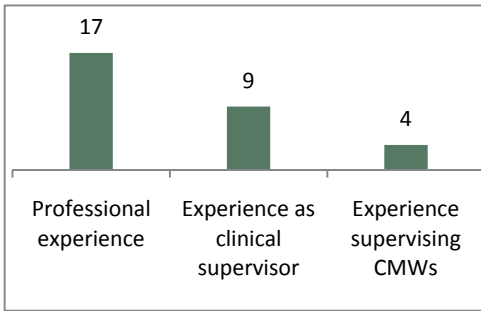
Most of the clinical supervisors had basic graduation in nursing, whereas slightly more than a quarter had MBBS degrees (with or without specialization in OB/GYN). Only 10 percent obtained a diploma in ward administration, which is a teaching diploma. A small percentage (11 percent) reported LHV diplomas as their highest qualification. (Figure 3.3)

Figure 3.3: Percentage of clinical supervisors at allied hospitals, by degrees/diplomas obtained (N=63)



Supervisors were asked about their work experience, especially their work experience related to supervising CMW students. The supervisors had a mean of 17 years of professional work experience, out of which they had been clinical supervisors for a mean of 9 years. The supervisors reported having supervised CMW students for an average of 4 years. (Figure 3.4)

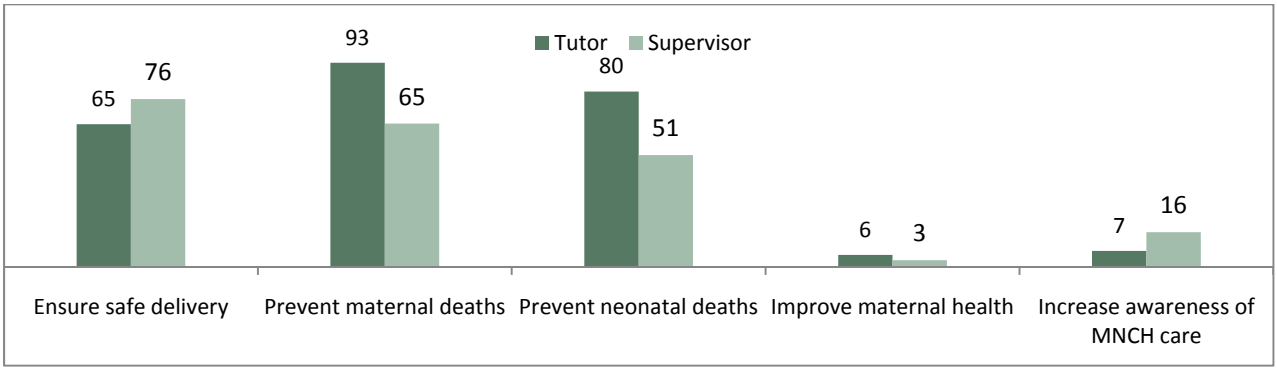
Figure 3.4: Mean years of professional experience of clinical supervisors (N= 63)



Orientation to the CMW program

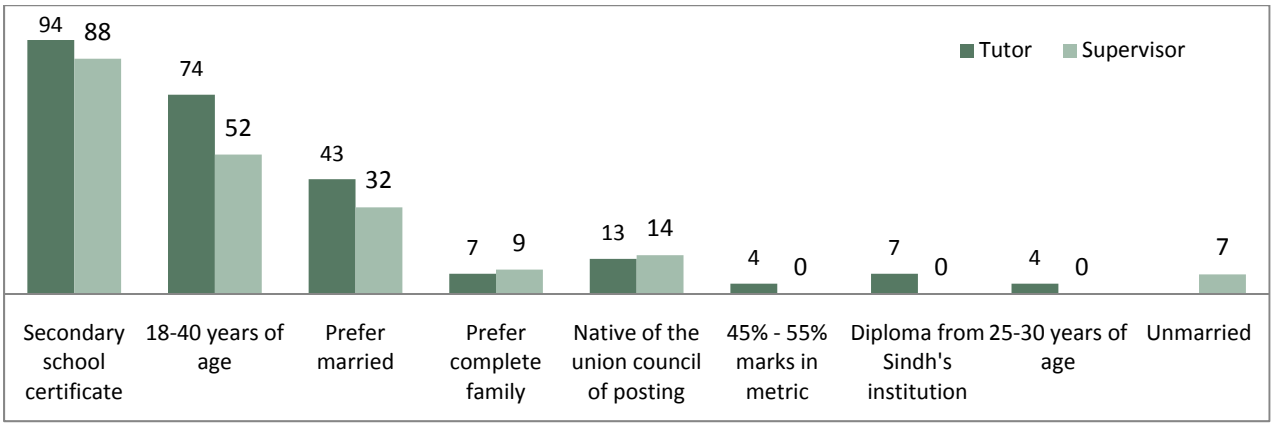
A large number of tutors and supervisors indicated that the importance of training CMWs was to improve mother and newborn health, thereby preventing maternal and neonatal deaths. They further reported that a CMW program was important to train CMWs to be skilled birth attendants who could ensure safe deliveries and increase awareness about MNCH issues at the community level. (Figure 3.5)

Figure 3.5: Percentage of tutors and clinical supervisors, by knowledge about the objectives of the CMW program (N = 54 tutors; 63 supervisors)



Tutors and clinical supervisors were asked about their knowledge of the selection criteria for CMWs. Ninety-four percent of the tutors and 88 percent of the clinical supervisors indicated that holding a secondary school certificate was a prerequisite for CMW candidates to join the training program. Furthermore, three-quarters of the tutors, in contrast to just half of the supervisors, reported that CMW trainees must be within the age range of 18-40 years. Other selection criteria were also expressed, albeit at very low frequencies. On the whole, tutors had better knowledge of the selection criteria for CMWs than clinical supervisors. (Figure 3.6)

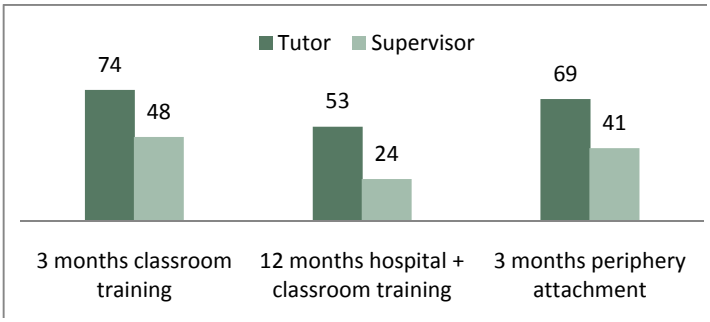
Figure 3.6: Percentage of tutors and clinical supervisors, by knowledge about the selection criteria for CMWs (N = 54 tutors; 63 supervisors)



NOTE: The standard for pass marks for selection has been changed to a minimum of 40 percent.

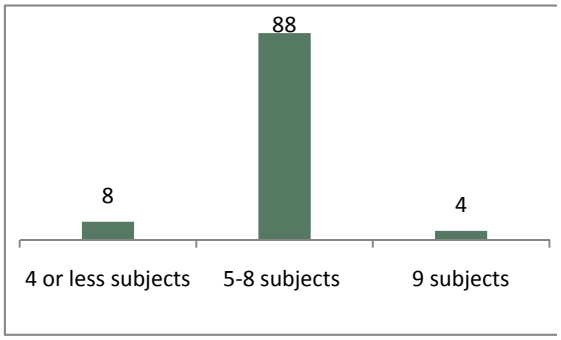
When asked about their knowledge of the total duration of the CMW training program, 100 percent of the tutors gave the correct answer of eighteen months, while 76 percent of the supervisors gave the correct answer. Knowledge of tutors and supervisors was tested on the distribution of the training program into different components. Three-quarters of the tutors and about half of the supervisors correctly stated the initial three months of classroom training at the training schools. The correct responses for the 12 months of training at the allied hospitals were lower: 53 percent and 24 percent by tutors and supervisors respectively. Reponses for the three months of periphery attachment were higher among tutors (69 percent) than supervisors (41 percent). Overall, the orientation (based on knowledge) of tutors to the CMW training program was higher than for clinical supervisors. (Figure 3.7)

Figure 3.7: Percentage of tutors and clinical supervisors, by knowledge about the distribution of the CMW training program (N = 54 tutors; 63 supervisors)



Even though the total number of subjects specified in the curriculum is nine, a negligible number of tutors reported that number. An overwhelming number of tutors reported that 5-8 subjects were being taught to CMW students. (Figure 3.8)

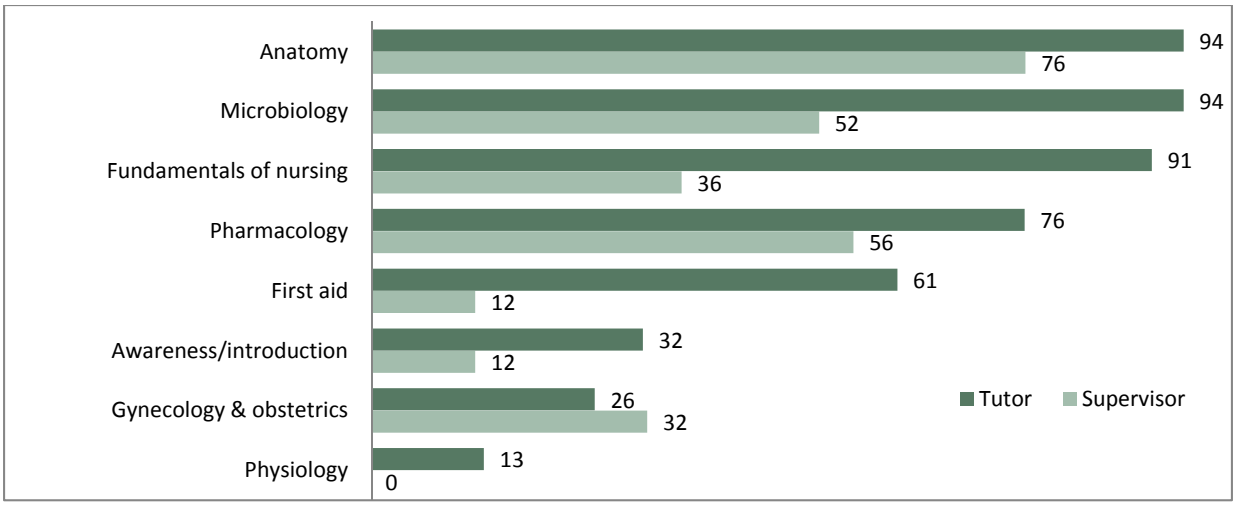
Figure 3.8: Percentage distribution of tutors at CMW training schools, by knowledge of the number of subjects taught to CMW students (N=54)



There was some variation in the responses of the clinical supervisors and tutors about the subjects taught to CMW students; however, microbiology and anatomy were the most often reported. A large proportion of tutors also

reported teaching fundamentals of nursing, pharmacology and first aid, whereas one-third of the clinical supervisors and a quarter of the tutors mentioned gynecology and obstetrics as a subject taught to the CMWs. (Figure 3.9)

Figure 3.9: Percentage of tutors and clinical supervisors, by knowledge of subjects taught to CMW students (N= 54 tutors; 63 supervisors)



When supervisors were asked about the standard number of deliveries a CMW student was supposed to observe, assist and perform by the end of their training program at the allied hospital, only 9 percent correctly stated that five deliveries were to be observed and assisted, while only 16 percent correctly answered that 5 deliveries had to be conducted under their supervision. Only 8 percent of supervisors stated that 10 independent deliveries was the standard set for CMW training. (Table 3.1)

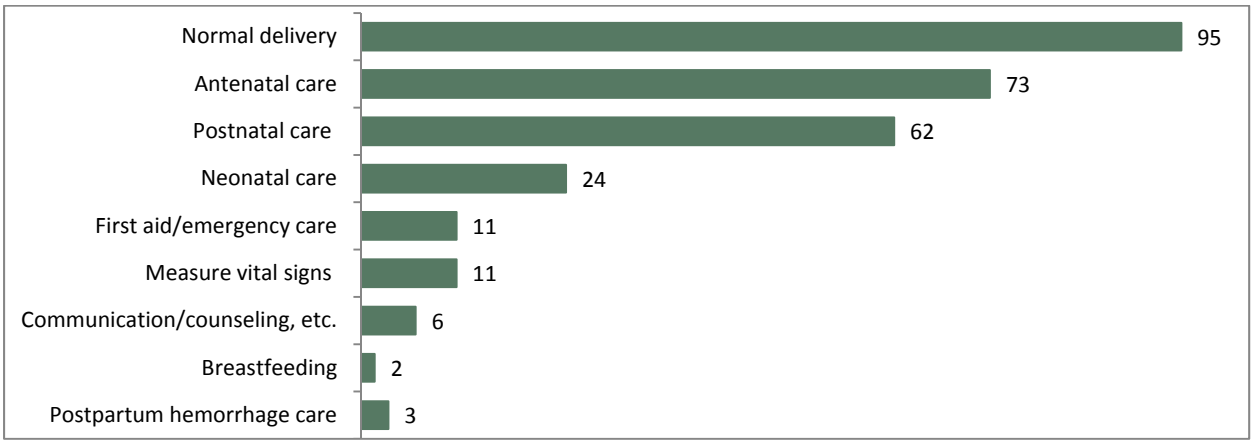
Table 3.1: Percentage distribution of clinical supervisors, by knowledge of how many normal delivery cases a CMW student is supposed to observe, assist and perform (N=63)

Variable	Number of deliveries	Percent
Observe	< 5	10
	> 5	75
	5	15
Assist	< 5	10
	> 5	75
	5	15
Under supervision	< 5	5
	> 5	63
	5	32
Independent deliveries	< 10	50
	> 10	31
	10	19

Clinical supervisors were asked about the essential skills that CMWs must acquire before graduating from the training program. An overwhelming majority (95 percent) of the supervisors stated that learning how to conduct a normal delivery was essential, followed by antenatal care (73 percent) and postnatal care (62 percent). A lower

percentage (24 percent) thought that neonatal care as an important skill for CMWs to learn before graduation. (Figure 3.10)

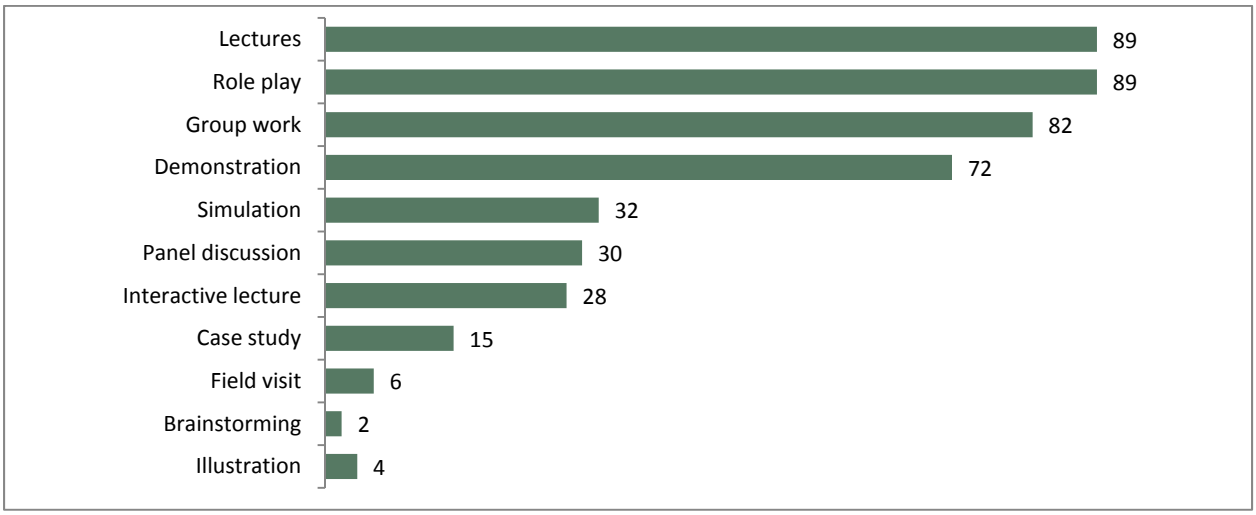
Figure 3.10: Percentage of clinical supervisors, by knowledge about skills CMWs should acquire by the end of the training program (N=63)



Training

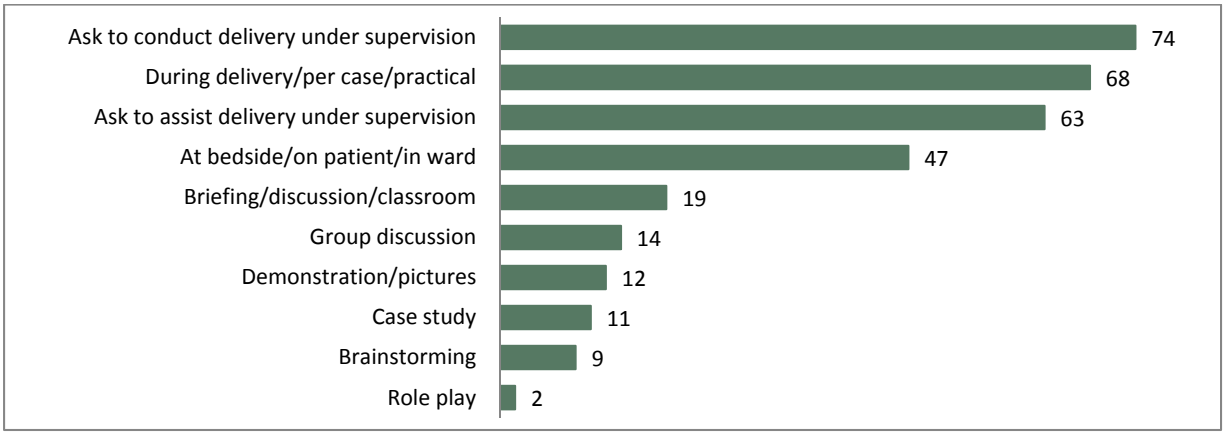
Tutors were asked about the training methodologies used in training schools. The most widely stated methods were lectures, role play, group work and demonstrations. Very few mentioned case studies, brainstorming or field visit. (Figure 3.11)

Figure 3.11: Percentage of tutors, by knowledge about training methodology used to train CMWs (N=54)



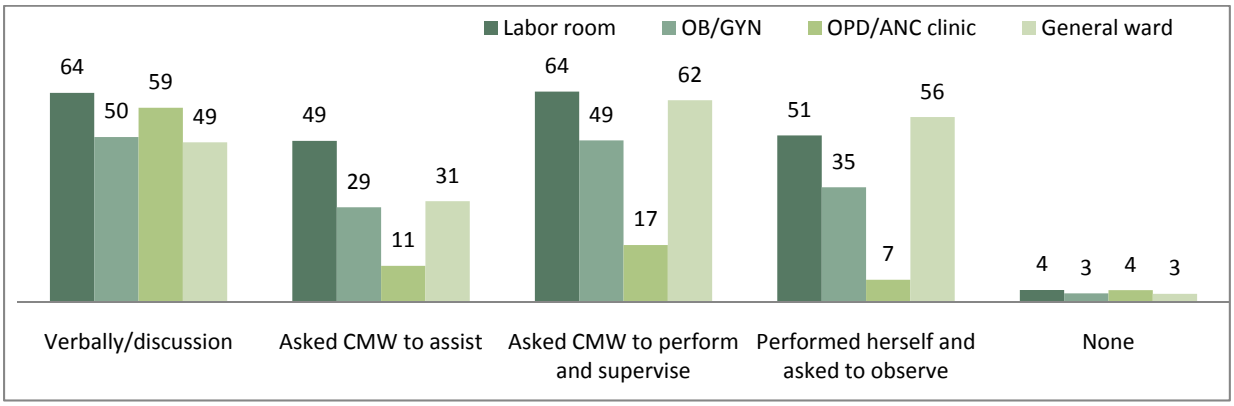
When clinical supervisors were probed about the training methodologies used to train CMW students, they indicated asking them to conduct deliveries under supervision (74 percent) as the most common method for teaching, followed by training during delivery (68 percent) and asking the CMWs to assist during delivery (63 percent). Below are the results of the training methods adopted by labor room, operating theatre, general ward, etc. (Figure 3.12)

Figure 3.12: Percentage of clinical supervisors, by knowledge of methodologies used to train CMWs (N=63)



The most frequent training methodologies used by the clinical supervisors to train the CMWs in newborn nurseries were recordkeeping and discussing neonatal care. A majority of the labor room supervisors used discussions or ask the CMW to observe, assist or perform under supervision. In contrast to the methodologies used in newborn nurseries and labor rooms, the main methodology employed in the OPD/ANC clinics was verbal dicussion rather than practical methodologies. (Figure 3.13)

Figure 3.13: Percentage of clinical supervisors, by methodologies used to train CMWs, according to hospital department (N=63)



Manikin, bones and articles/instruments were the highest reported training aid used according to tutors. Almost half of the supervisors reported not using any training aids, while only 36 percent stated using articles and instruments. It is apparent that far fewer clinical supervisors were using training aids compared to the tutors.

Figure 3.14: Percentage of clinical supervisors, by knowledge of methodologies used to train CMWs in newborn nurseries (N=63)

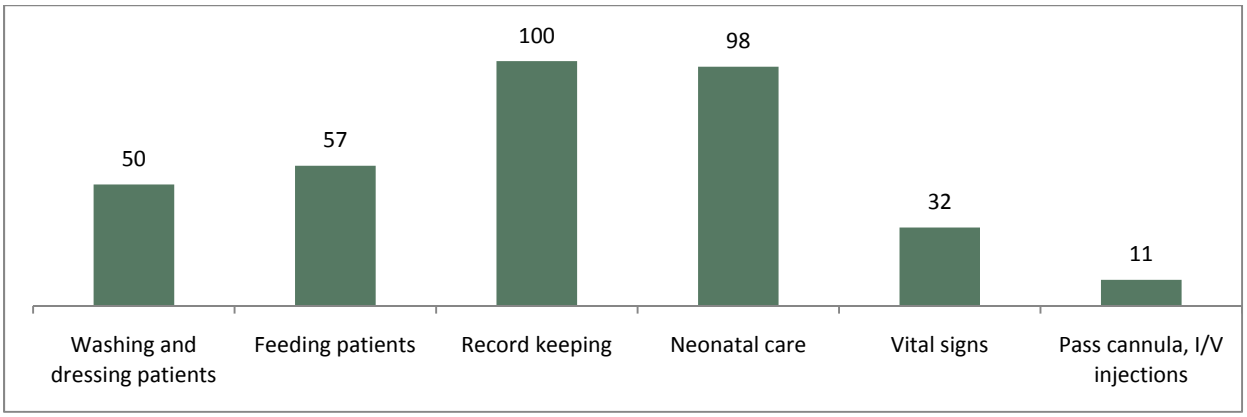
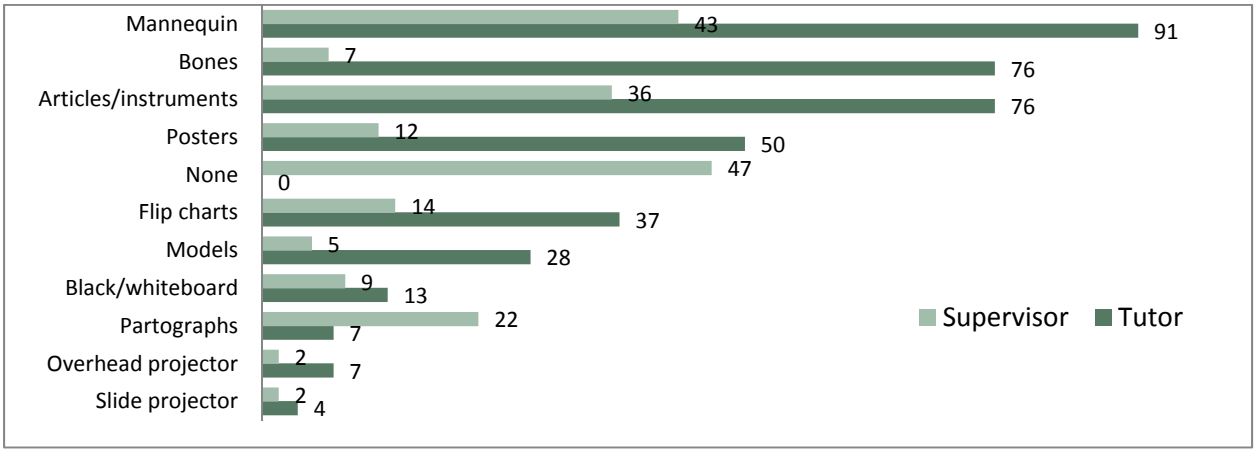
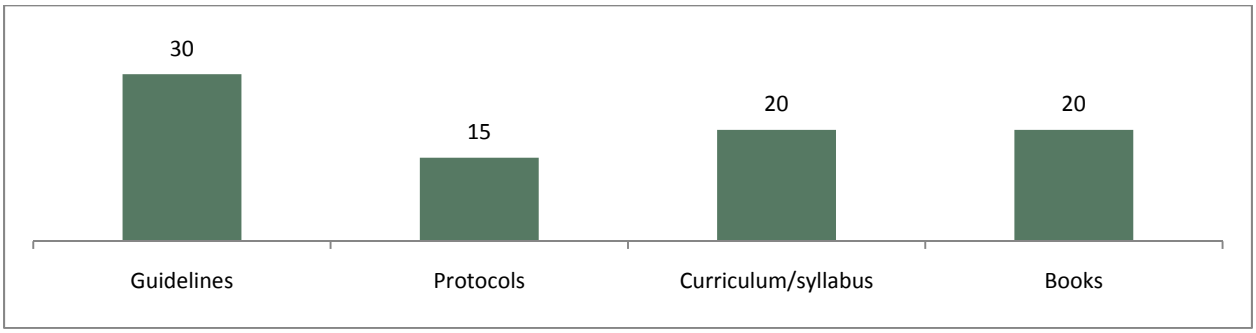


Figure 3.15: Percentage of tutors and clinical supervisors, by knowledge about the training aids used to train CMWs (N = 54 tutors; 63 supervisors)



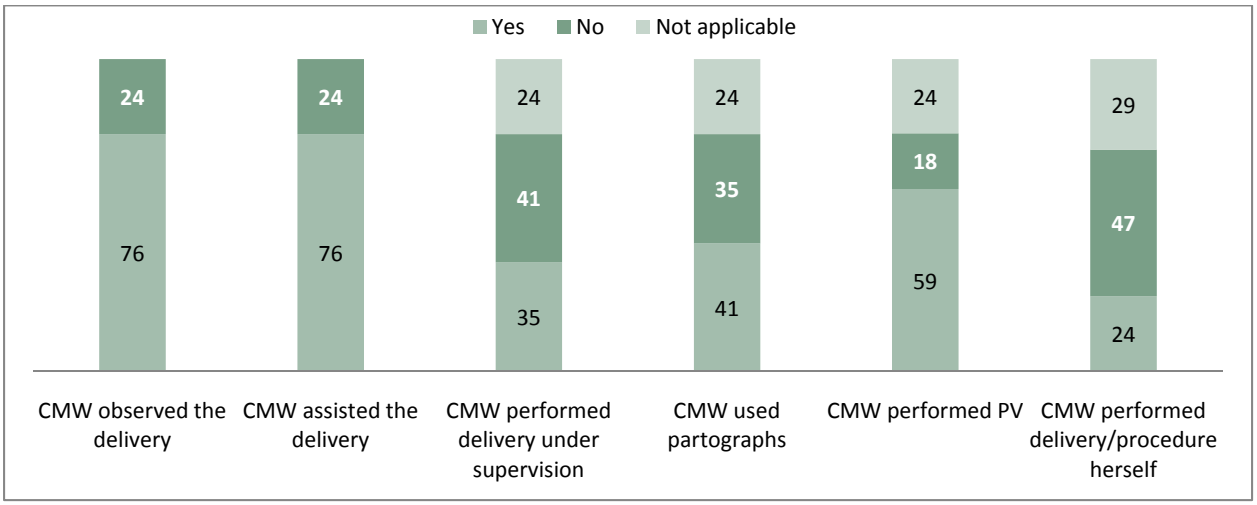
An overwhelming number of supervisors (66 percent) reported that they were not given any training guidelines according to which CMWs could be trained and supervised. Only 35 percent of supervisors replied with an affirmative answer. Of those who had been given training guidelines/materials, the figure shows the type of training manuals provided. (Figure 3.16)

Figure 3.16: Percentage of clinical supervisors who were given training manuals and guidelines for CMW training, by type of material they received (N=20)



Teaching methods of clinical supervisors were assessed while they were conducting deliveries. In 77 percent of the observed deliveries, the supervisor asked the CMW to observe or assist during the delivery. However, in 41 percent of the deliveries the supervisor did not ask the CMW to perform the delivery under her supervision, compared to 35 percent of deliveries where she asked the CMW to conduct the delivery. Only a quarter of the observed supervisors let the CMW perform a delivery or a procedure completely by herself. In many observations (35 percent), a partograph was not used during the delivery.

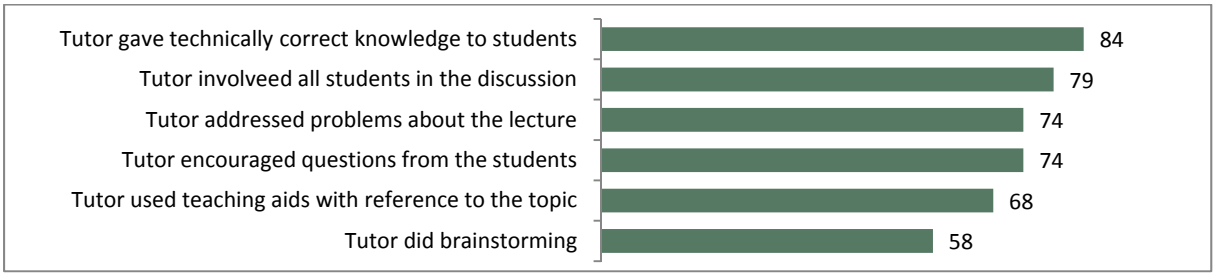
Figure 3.17: Percentage distribution of observations of clinical supervisors during deliveries at allied hospitals, by teaching methods used (N=17)



*Not applicable refers to those instances where a delivery was not being conducted, hence no teaching methods were observed.

The classroom observations of tutors showed that they predominantly engaged in lectures with the CMW students, with a high percentage of tutors involving all students in the discussions, encouraging their questions and responding to those questions with technically correct responses. (Figure 3.18)

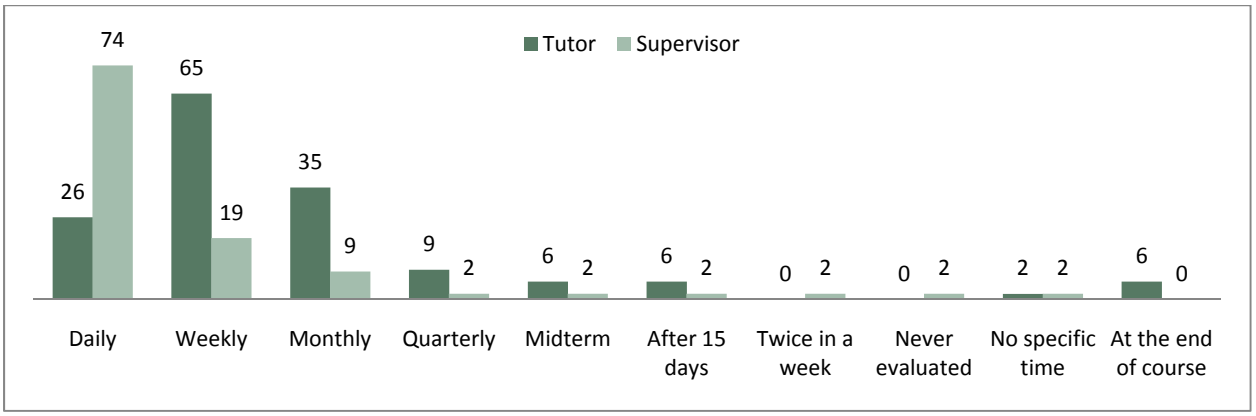
Figure 3.18: Percentage of tutors at CMW training schools, by teaching methods they used during classroom observations (N=18)



Monitoring and evaluation of CMW students

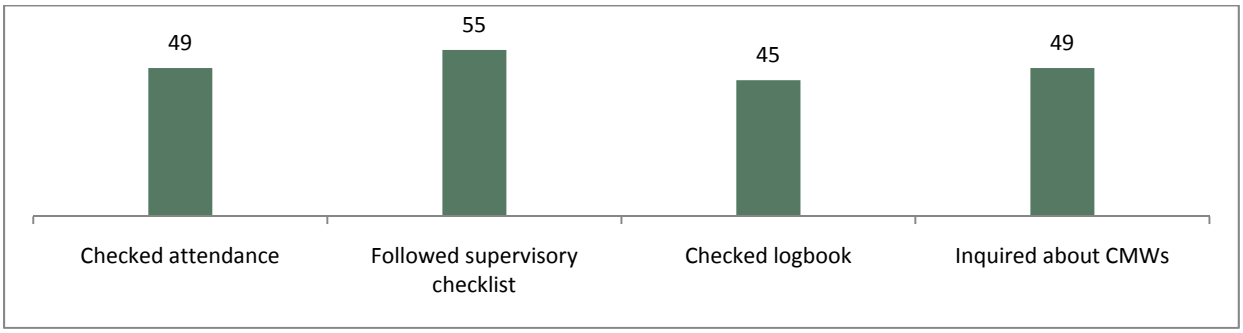
Tutors were asked whether they monitor the CMW trainees during their attachment to the allied hospitals. Ninety-three percent of the tutors responded that they did monitor the trainees. Slightly less than two-thirds of the tutors reported that CMWs were evaluated on a weekly basis, while three-quarters of the supervisors reported that CMWs were evaluated on a daily basis. This could indicate that evaluations at allied hospitals were conducted daily, while at training schools, tutors tested the CMWs on a weekly basis. (Figure 3.19)

Figure 3.19: Percentage of tutors and clinical supervisors, by how often they evaluate CMWs (N = 54 tutors; 63 supervisors)



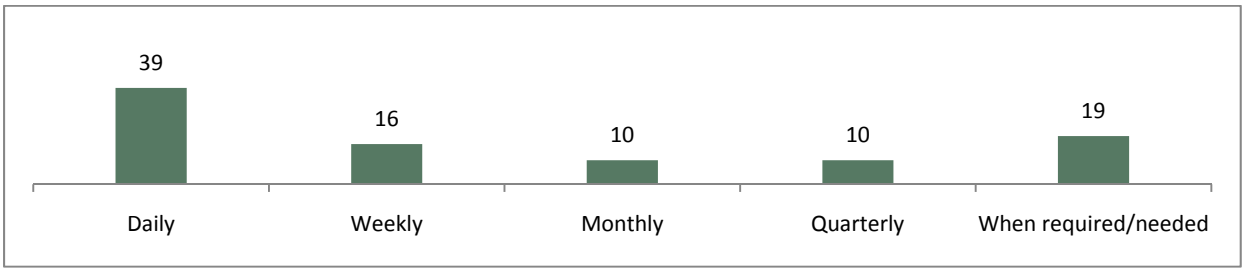
Almost half of the tutors reported checking roll (attendance), log books and following the supervisory checklists on their monitoring visits at the allied hospitals. (Figure 3.20)

Figure 3.20: Percentage of tutors at CMW training schools, by procedures they perform during their monitoring visits to allied hospitals (N=54)



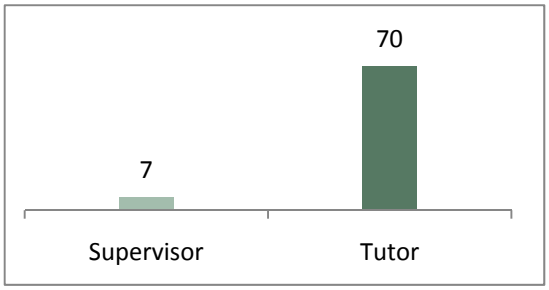
Clinical supervisors were also asked whether they communicate with tutors and/or the training schools. Over half (59 percent) of the supervisors responded that they do communicate at some stage with the tutors and/or training schools. Of the supervisors who replied that they did communicate with the tutors/schools, the figure shows their responses regarding the frequency of their communication. Almost one-fifth of the clinical supervisors said they communicate whenever it is required, while 39 percent reported that they communicate daily and more than a third report communicating weekly or less frequently. (Figure 3.21)

Figure 3.21: Percentage of clinical supervisors, by frequency of communication with tutors/training schools (N=32)



Clinical supervisors and tutors were asked whether they conducted field visits to monitor the performance of CMWs who had graduated from their training school and allied hospitals. The majority (70 percent) of the tutors replied that they did conduct such visits, while only a small percent (7 percent) of the clinical supervisors made such visits. (Figure 3.22)

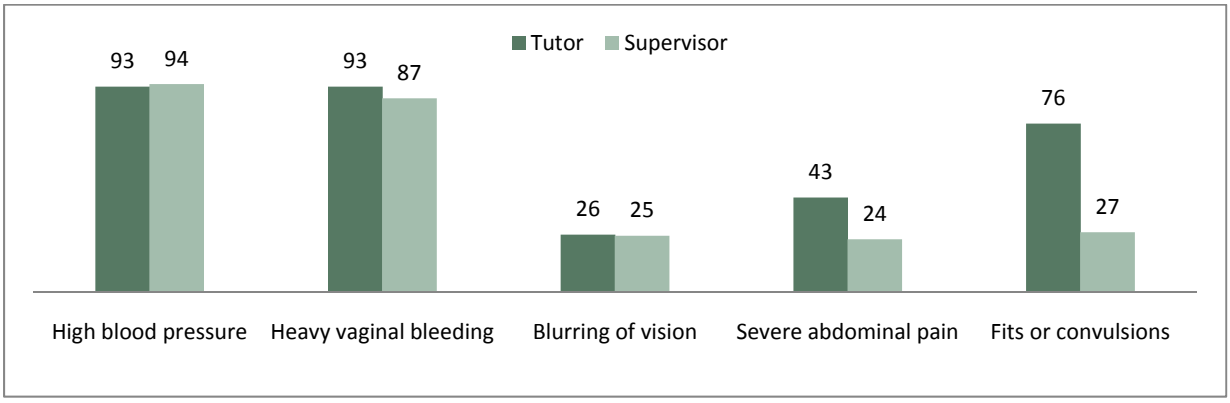
Figure 3.22: Percentage of tutors and supervisors who reported that they conducted field visits for monitoring CMWs (N = 54 tutors; 63 supervisors)



Technical knowledge

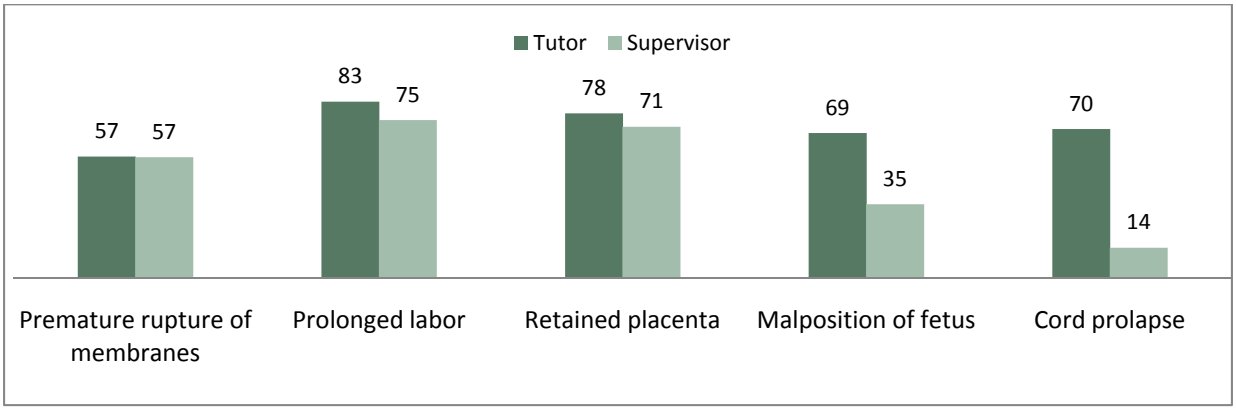
Knowledge levels of the tutors and supervisors tended to vary according to category. However, a high percentage of both tutors and supervisors stated high blood pressure and heavy vaginal bleeding as the most severe complications during pregnancy. Knowledge of tutors was better than the clinical supervisors for most of the complications. (Figure 3.23)

Figure 3.23: Percentage of tutors and supervisors, by knowledge regarding the five most severe/dangerous complications during pregnancy (N = 54 tutors; 63 supervisors)



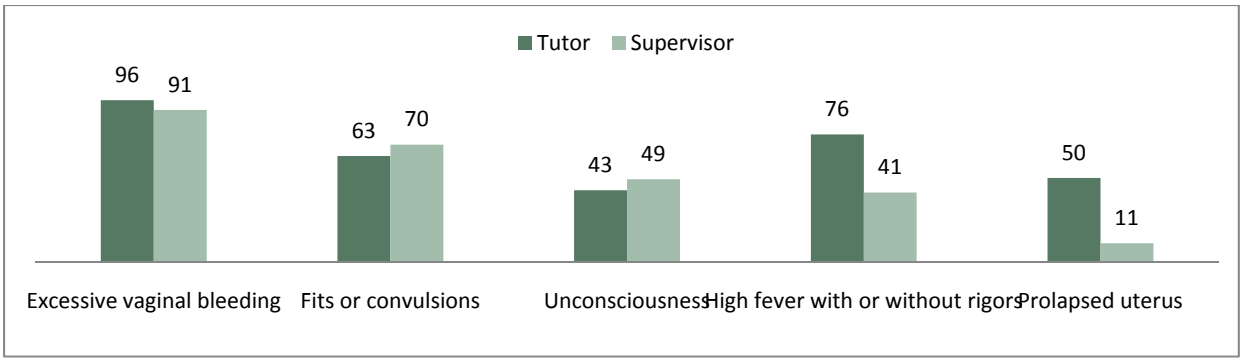
The knowledge of tutors about a number of complications during delivery was high; however, the knowledge of supervisors varied. In all categories, the knowledge of supervisors was lower than that of tutors, with the greatest difference being about knowledge of cord prolapse. (Figure 3.24)

Figure 3.24: Percentage of tutors and supervisors, by knowledge of the five most severe/dangerous complications during delivery (N = 54 tutors; 63 supervisors)



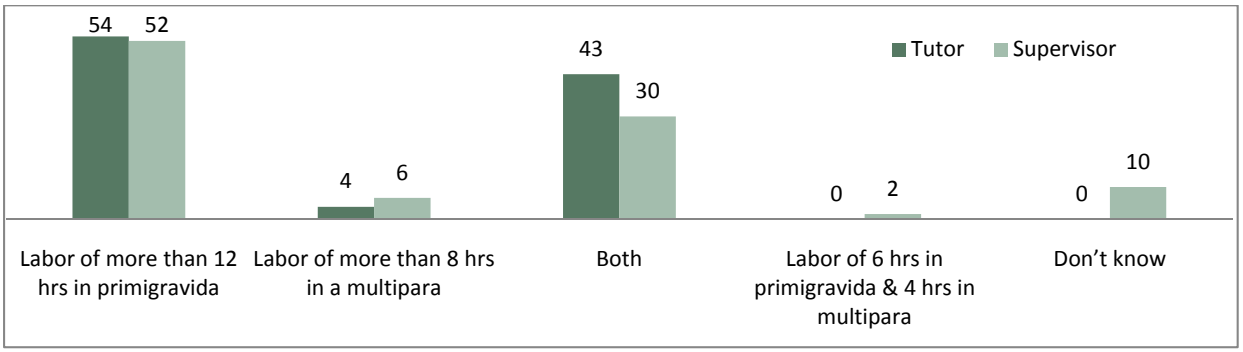
Knowledge about complications during the postpartum period was better for tutors; however, for two events, fits or convulsions and unconsciousness, the knowledge of supervisors was slightly better than that for tutors. (Figure 3.25)

Figure 3.25: Percentage of tutors and clinical supervisors, by knowledge of the five most severe/dangerous complications during postpartum period (N = 54 tutors; 63 supervisors)



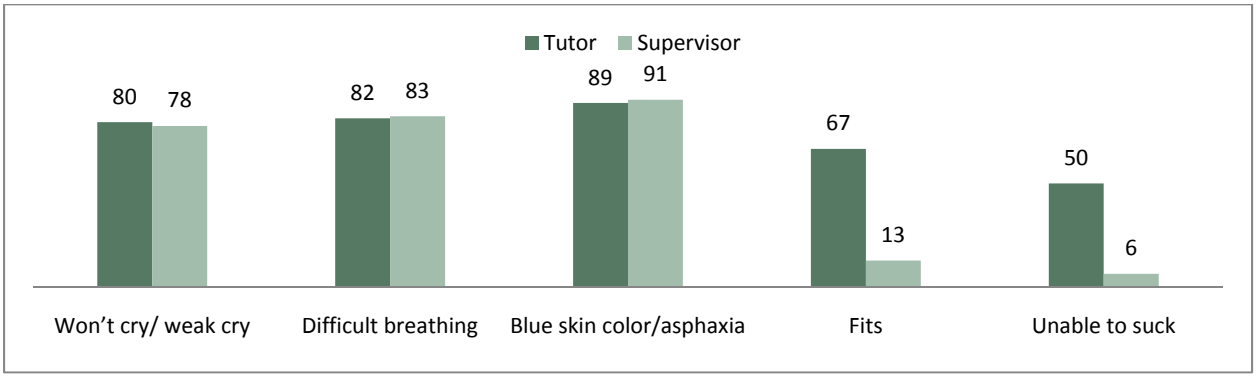
The knowledge of tutors and clinical supervisors about prolonged labor was similar; however, the knowledge levels for either group were not very high, at around 50 percent or less.

Figure 3.26: Percentage of tutors and clinical supervisors, by knowledge about prolonged labor (N = 54 tutors; 63 supervisors)



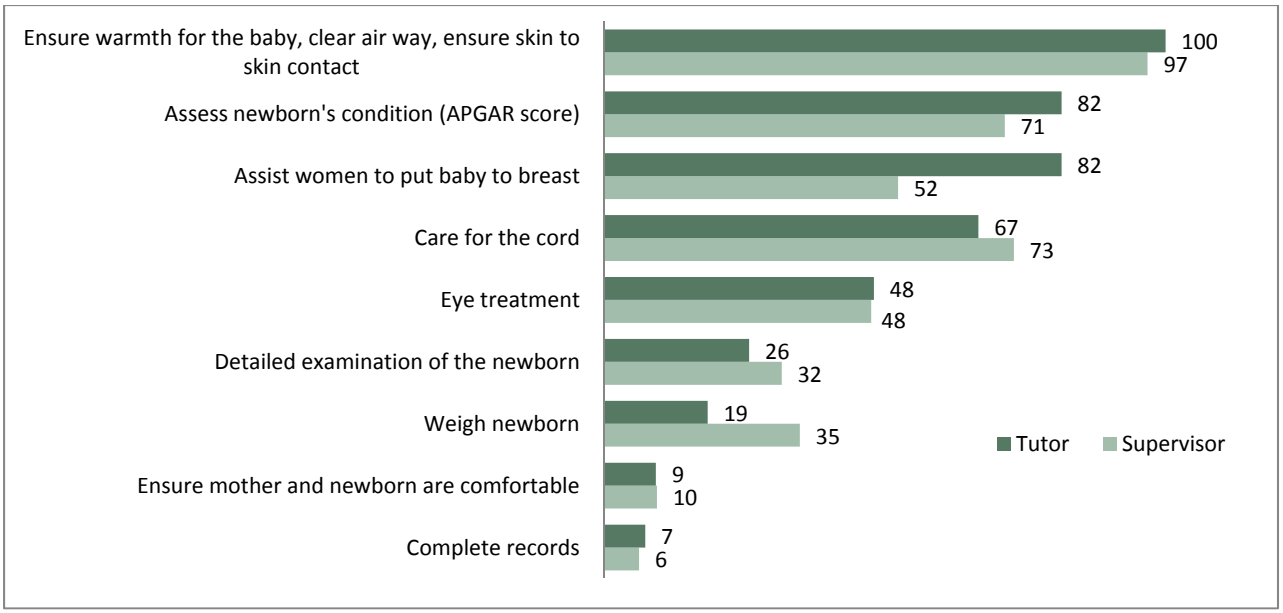
Knowledge of three of the five most severe complications in newborns immediately after birth was almost identical for tutors and clinical supervisors, ranging between 80 and 90 percent. (Figure 3.27)

Figure 3.27: Percentage of tutors and supervisors, by knowledge of the five most severe/dangerous complications of a newborn immediately after birth (N = 54 tutors; 63 supervisors)



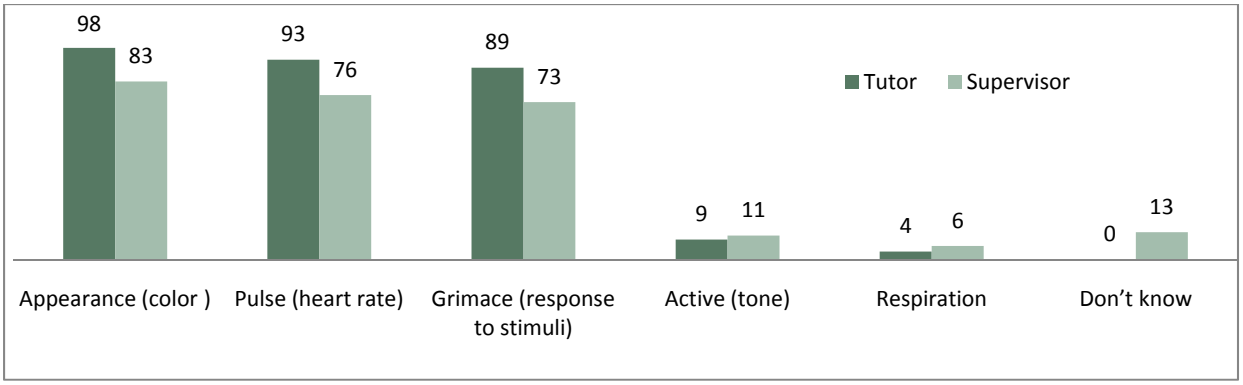
Knowledge about the steps of newborn care was generally good. Knowledge was high for both supervisors and tutors, especially about ensuring warmth for the newborn, clearing airways and ensuring skin-to-skin contact between mother and newborn. (Figure 3.28)

Figure 3.28: Percentage of tutors and supervisors, by knowledge of steps of newborn care immediately after birth (N = 54 tutors; 63 supervisors)



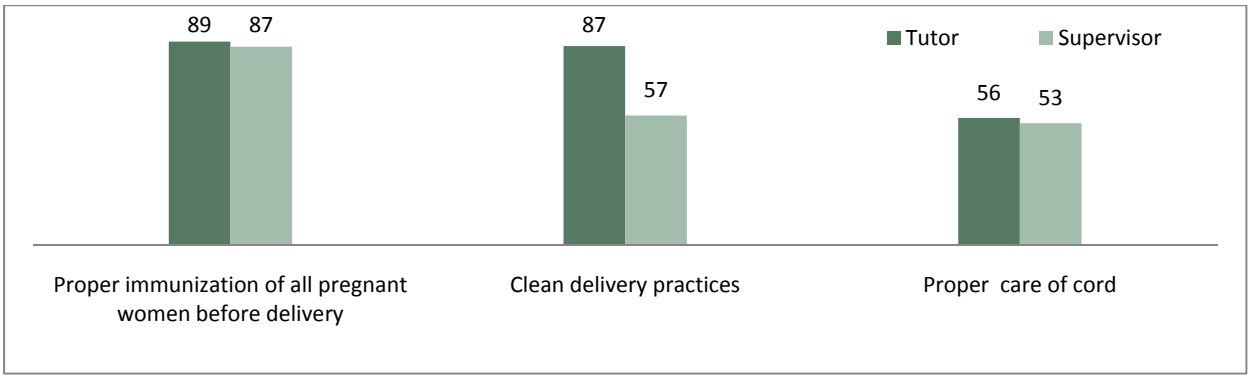
The Apgar score is a method used to quickly assess the health of a newborn immediately after birth. The knowledge of tutors about the steps that are included in an Apgar score was better than the knowledge of supervisors. (Figure 3.29)

Figure 3.29: Percentage of tutors and clinical supervisors, by knowledge about the components of an Apgar score (N = 43 tutors; 63 supervisors)



Knowledge of how to prevent neonatal tetanus was high among both tutors and supervisors. (Figure 3.30)

Figure 3.30: Percentage of tutors and clinical supervisors, by knowledge of how to prevent neonatal tetanus (N = 54 tutors; 63 supervisors)



Chapter 4: Institutional Factors in Knowledge and Skills of Community Midwives

Background

As mentioned in Chapter 1, under the PAIMAN project, the Population Council conducted operations research (OR) studies of the new cadre of community midwives. One of these studies revealed variable levels of knowledge and skills of CMWs who had recently graduated from CMW training programs (Wajid, Rashid and Mir, 2010). These results led to questions about what institutional factors might play a role in the variations in knowledge and skills displayed by these CMWs. The current assessment of CMW training institutions was an effort to examine some of the questions about institutional factors in the variations in the skills and knowledge of the CMW training school graduates who participated in the operations research study.

In the earlier OR study, data from 106 CMWs who had graduated from 8 CMW training institutions in Punjab and Sindh provinces were analyzed. Seven of these institutions were visited during the current assessment. Ninety (out of 106) of the CMWs who had been included in the original OR study had graduated from these seven institutions. The table provides the distribution of the 90 CMWs across the seven training schools they attended.

Table 4.1: Distribution of 90 CMW graduates, by training school and allied hospital where they were trained

District	Name of training school	Name of allied hospital	Number of CMWs
Rawalpindi	School of Nursing, Benazir Bhutto Hospital	Benazir Bhutto Hospital	10
	School of Nursing, Holy Family Hospital	Holy Family Hospital	9
Jhelum	SOWN	District Headquarter Hospital	10
Multan	Public Health Nursing School	Nishtar Hospital	17
DG Khan	Public Health Nursing School	District Headquarters Hospital	14
Hyderabad	Public Health Nursing School	1) Bhitai Hospital 2) Liaquat Medical University	23
Mitiari	HANDS Midwifery School, Hala	Taluka Hospital, Hala	7
Total			**90**

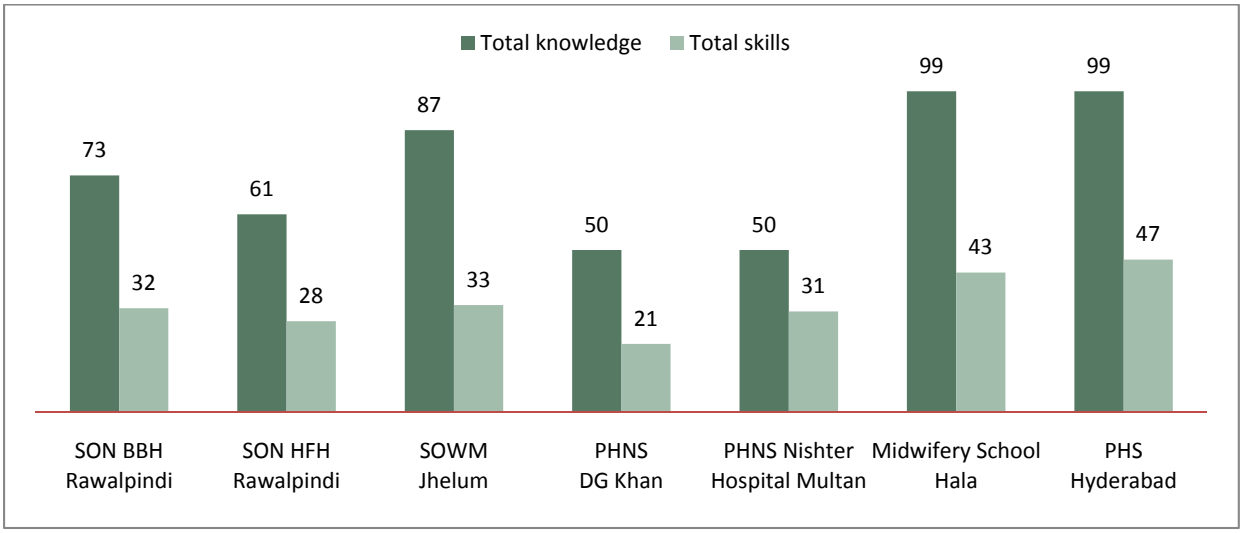
Methodology for scoring CMW training schools

There were 17 questions on knowledge, 12 of these were on maternal health and five were on neonatal health. Similarly, there were seven observations to assess the skills; five on maternal health and two on neonatal health. The seven CMW training schools were graded (ranked) according to the proportion of respective CMWs responding successfully to the questions/assessments. For example, if the highest proportion of successfully answering CMWs belonged to School X, it was assigned number 1 for that particular question, and so forth up to 7. In this way, schools were scored for all questions/assessments. The last step was to simply add (sum) the scores obtained by each institution for each question against knowledge and skills. Subsequently, we can add the two (knowledge and skills) final scores to get the final combined score of the schools for knowledge and skills. (See Appendix 4, Scoring Matrix.) By this calculation, the lower the aggregate score obtained by a school, the higher is its ranking as compared to other schools.

Knowledge and skills of CMWs

The analysis of the knowledge and skills on maternal and neonatal healthcare of the 90 CMWs who were assessed during the OR study and who were graduates of the seven training institutions revealed the following findings (Figure 4.1):

Figure 4.1: Scoring for knowledge and skills of CMWs regarding maternal and newborn health



CMWs belonging to the Public Health Nursing School, Hyderabad, scored maximum for knowledge as well as for skills in maternal and newborn care. The CMWs from Hands Midwifery School, Hala, also shared the maximum scores for knowledge, with PHS, Hyderabad, but they stood second for skills in maternal and newborn healthcare. For knowledge, next to the schools in Hyderabad and Hala, CMWs from schools of nursing from Jhelum; Benazir Bhutto Hospital, Rawalpindi; Holy Family Hospital, Rawalpindi; Nishtar Hospital, Multan; and PHNS, DG Khan scored in descending order respectively. Similar scoring was observed for skills and the combined knowledge plus skills. The two schools from Sindh province scored the maximum, followed by three schools situated in northern Punjab, whereas the two schools in southern Punjab scored the least.

Table 4.2: Ranking of training schools by knowledge and skills of CMWs on maternal and newborn health

Variable	SON BBH, Rawalpindi	SON HFH, Rawalpindi	SOWM, Jhelum	PHNS DG Khan	PHNS Nishtar Hospital Multan	Midwifery School, Hala	PHS Hyderabad
Knowledge	3	4	2	5	5	1	1
Skills	4	6	3	7	5	2	1
Overall standing for knowledge & skills	4	5	3	7	6	2	1

Analysis of institutional factors

Different background variables related to infrastructure, tutors and clinical supervisors of the CMW training schools and allied hospitals from where these CMWs received training were analyzed. The following factors were related to better knowledge of these graduated CMWs.

Training schools

Visit by Pakistan Nursing Council

The schools that were recently visited by the Pakistan Nursing Council (within the last 2 years) scored high compared to those that were visited by PNC more than two years ago.

Table 4.3: CMW training schools by year of last PNC visit

Training school:	PHNS, Multan	SOWM, Jhelum	SON HFH, Rawalpindi; PHNS, DG Khan	SON BBH, Rawalpindi	Midwifery school, Hala	PHS, Hyderabad
Year of last visit:	2002	2004	2007	2008	2009	2010

Physical facilities

Among the physical features available at training schools, the availability of a computer, drinking water and an electric water cooler for classrooms appeared to be the only differentials related to basic physical facilities/infrastructure of the training school and the performance of the CMWs. In general, the physical infrastructure was not related to the knowledge and skills of the CMWs. Interestingly, availability of training material/aids was not a variable, as most training materials were available across the seven schools under consideration.

Table 4.4: Basic facilities at CMW training schools

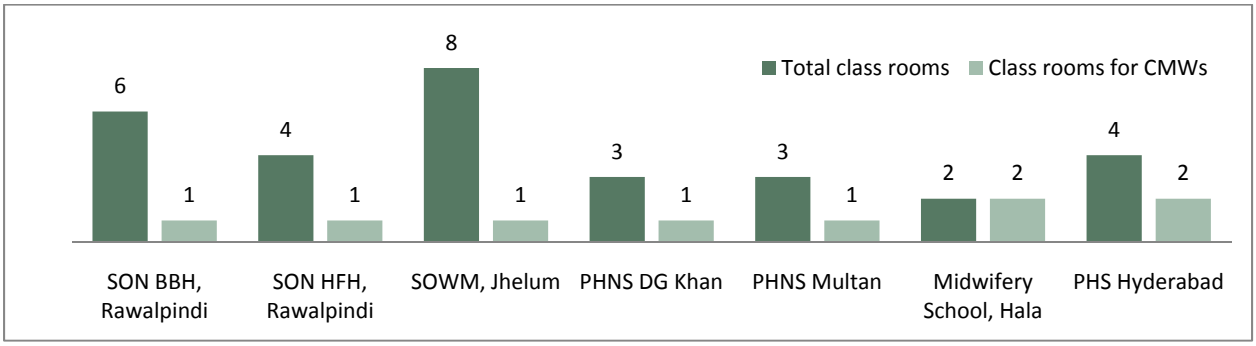
Facility	SON BBH, Rawalpindi	SON HFH, Rawalpindi	SOWM, Jhelum	PHNS DG Khan	PHNS Multan	Midwifery School, Hala	PHS Hyderabad
Computer	■	■	■	■	□	■	■
Computer for teachers	■	□	■	□	□	■	□
Drinking water in school	■	■	■	□	□	■	■
Electric water cooler	■	■	■	□	□	□	■
Accommodation for all CMWs	■	■	■	□	■	■	■
Drinking water in hostel	■	■	■	□	■	■	■
Telephone	■	■	□	□	□	■	■

■ Available □ Not available

Classrooms

The CMW training schools where two classrooms were available exclusively for the CMWs scored best compared to those that had only one classroom for CMWs. On the other hand, the total number of classrooms available in the schools was not related to the rating of the schools.

Figure 4.2: Number of classrooms available at CMW training schools



Accommodation/hostel for CMWs

Although accommodations for the CMWs were available at all of the seven schools, it was not available for all of the CMWs at PHNS DG Khan (Table 4.4). Availability of clean drinking water and telephones were important differentials among the seven schools.

Administrative staff

For most of the schools, the number of administrative/support staff in the school had an inverse relationship with the knowledge/skills rating of the schools, i.e., the greater the administrative/support staff in a school, the lower the rating of that school.

Teaching staff

Although the total number of teachers appointed for all students or for the CMWs did not appear to be an important variable, the number of teachers/tutors for CMWs who were appointed on a regular basis seemed to affect the rating of a school. There was only one CMW tutor available at PHNS DG Khan on regular basis compared to other schools.

The total professional experience of all of the tutors appointed at PHNS DG Khan was up to 8 years compared to much higher levels for other schools. It is also interesting to note that total experience of more than 26 years is again linked with the lower ranking of a school. To some extent, this notion is also true for the years of experience that tutors have had as a tutor/trainer, but this is not as strong as for the total professional experience.

Table 4.5: Percent distribution of tutors at CMW training schools, by total years of professional experience

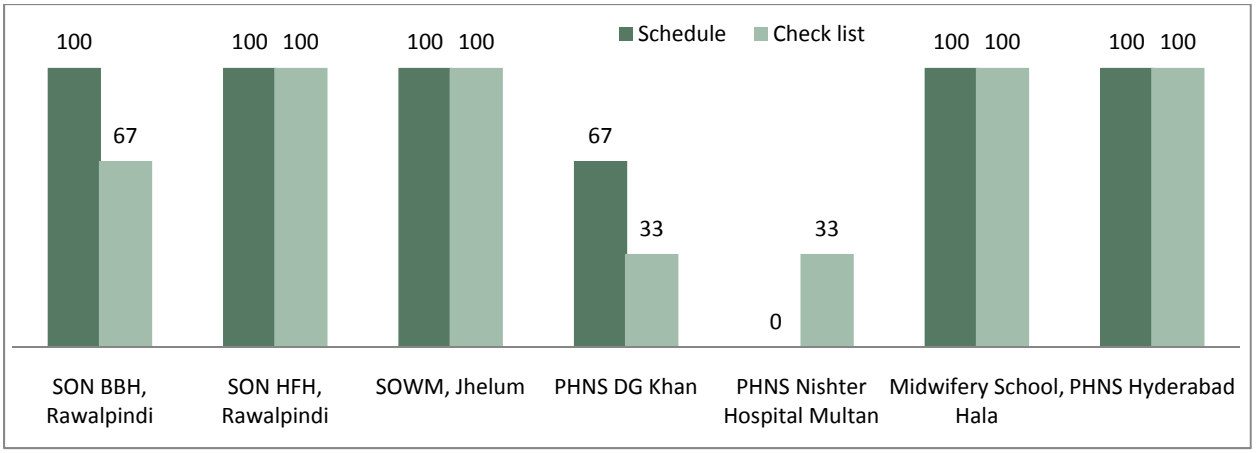
Years	SON BBH Rawalpindi	SON HFH Rawalpindi	SOWM Jhelum	PHNS DG Khan	PHNS Multan	Midwifery School Hala	PHS Hyderabad
5–10	0	33	0	100	0	0	0
11-22	0	33	33	0	33	100	100
23 or more	100	33	67	0	67	0	0

The mean number of lectures delivered by each tutor daily was also related to the ranking of the school. The mean for the top ranked schools was 3.7 and 3.0, while the mean at other schools was 1, 2 and 5, suggesting that too few or too many lectures by the tutors negatively affected the ranking of schools. Observations of the tutor during a classroom session did not reveal any conclusive factors for six of the schools under consideration (no observation was conducted at PHS Hyderabad), though at PHNS DG Khan, the lowest ranked CMW school, the following steps were missing on the part of the tutor:

- Informing students about method of teaching for the day's topic
- Eye-to-eye contact with all students
- Asking open-ended questions
- Giving enough time to the students to think and reply
- Encouraging students who participated less to participate

All of the tutors from the top five ranked schools reported affirmatively when asked about ever visiting the field for monitoring the CMWs. Only two-thirds of the tutors from the lower-ranked schools reported visiting the field to monitor CMWs. Nearly all of the tutors from the top ranked schools who had ever visited the field for monitoring reported that they had a schedule for field monitoring and a monitoring checklist compared to half of the tutors from schools which scored lower for CMW graduates' knowledge and skills.

Figure 4.3: Percentage of tutors at CMW training schools, by type of monitoring tools they had

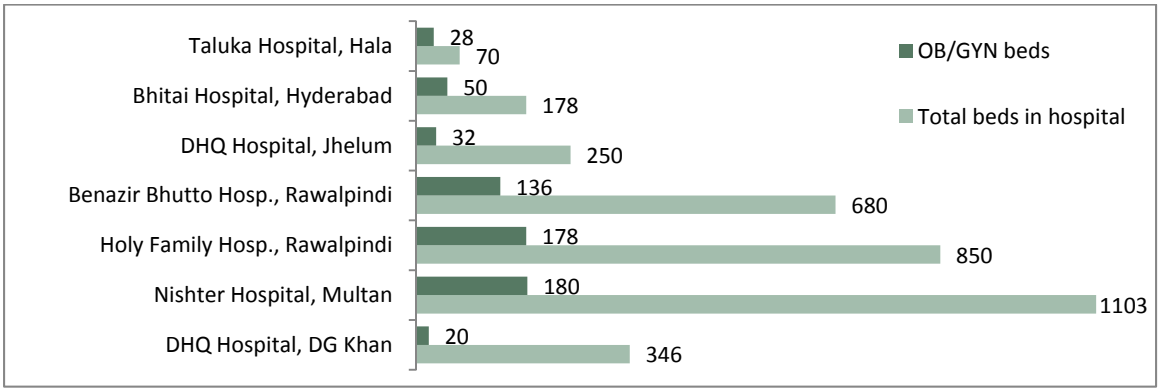


To some extent, the overall technical knowledge of the tutor was also linked to the knowledge/skills of the graduated CMWs of the same institutions, especially the knowledge on severe complications of pregnancy, delivery and newborns. Knowledge of tutors was also linked to the knowledge/skills of graduated CMWs on puerperal sepsis, management of eclampsia and prolonged labor.

Allied hospitals

Each of the seven schools was attached to an allied hospital. The figure below shows the number of beds and OB/GYN beds in these allied hospitals.

Figure 4.4: Total number of beds and beds in OB/GYN department in the allied hospitals

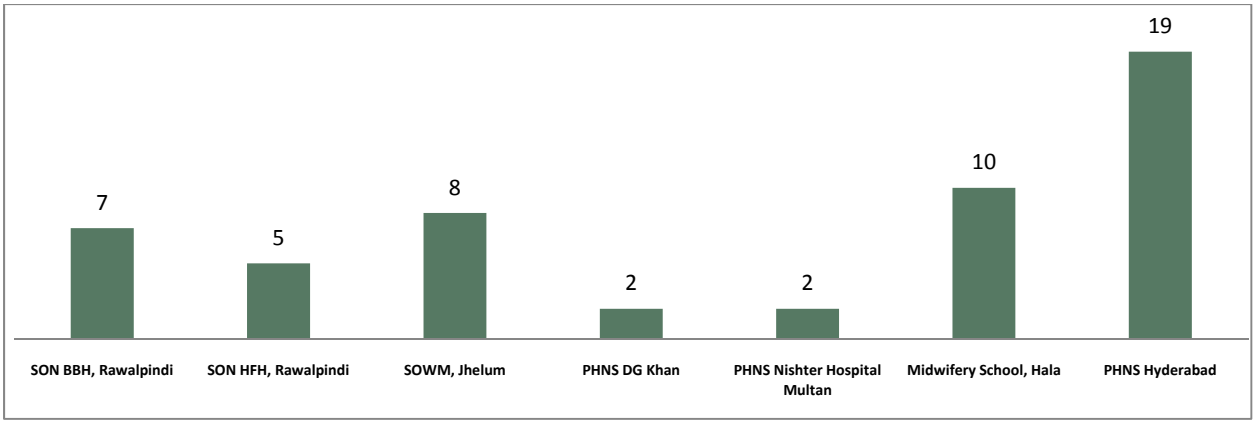


The most important factor among the allied hospitals linked to the performance of the CMW graduates was the size of the hospital. Though Holy Family Hospital in Rawalpindi and Nishtar Hospital in Multan are very large teaching hospitals with the large numbers of total beds and OB/GYN beds and a large number of obstetric cases and deliveries, the CMWs who graduated from the programs for which these facilities were the allied hospitals scored low in knowledge and skills. However, very small numbers of OB/GYN beds, labor room beds and deliveries also negatively affected the ranking of that hospital (e.g., DHQ hospital DG Khan. The remaining hospitals (THQ Mitiari, DHQ Jhelum, and Bhitai hospital Hyderabad) fall in between and ranked better than the two extremes. Probably the main reason for this is that in very large teaching hospitals there are many postgraduate students, medical students, house officers, and nursing and LHV students who also require hands-on experience, and there may be fewer opportunities for a CMW student to observe or assist at deliveries. In this environment, it would seem possible that the clinical supervisors are preoccupied cannot spare time for the CMW students.

Clinical supervisors

Half of the interviewed clinical supervisors at the two top ranking hospitals were LHVs; at the other allied hospitals, there were no LHVs serving as clinical supervisors. In contrast, most of the clinical supervisors at the lowest ranked hospital (DG Khan) were MBBS doctors. The mean years of experience as a clinical supervisor was the lowest for the three lowest ranking hospitals (i.e., in DG Khan, Multan and Rawalpindi. For the other allied hospitals, the mean was 7 years or more. The years of experience of the clinical supervisors seems to be an important factor in the knowledge/skills of the CMWs.

Figure 4.5: Mean years of experience as a clinical supervisor



Most of the supervisors belonging to the higher-ranked hospitals reported that they had been provided with some written supervisory/training guidelines/standards/protocols to train CMWs, compared to those at other allied hospitals.

Supervision by the clinical supervisor during delivery

The clinical supervisors were observed in the labor room of the allied hospitals while they were conducting deliveries and a CMW student(s) was present. The following steps were taken by the clinical supervisors of the top-ranked hospitals; these steps were either not followed or were followed to a lesser degree by supervisors of the lower-ranked hospitals:

- Asked CMW to perform delivery under her supervision
- Used partograph
- Examined the neck of the baby to confirm that cord is not wrapped around neck
- Immediately laid the baby on the abdomen of the mother
- Explained the anatomy of placenta after taking in hand (cup shape)
- Advised the CMW to provide immediate care to baby according to the checklist
- Explained about the one vein and two arteries at the cut end of the cord
- Explained to CMW how to remove and dispose of gloves (0.5% chlorine solution)
- Advised CMW to place linen/cloths and instruments in the chlorine solution after washing with detergent or soap
- Advised CMW to clean and count the instruments used during delivery
- Allowed CMW to observe delivery
- Communicated verbally during the procedure with CMW
- Asked CMW to assist her
- CMW assisted in more than a few steps of delivery
- Allowed CMW to perform delivery
- Supervised CMW for more than a few steps during the delivery

Setting priorities for CMW training program

In view of the above analysis of the teaching schools and allied hospitals that CMWs who had participated in the OR survey of training and skills had graduated from, we can prioritize the following areas for better outcomes of the CMW training program:

1. Ensure adequate orientation and training of clinical supervisors.
2. Establish and adhere to selection criteria for clinical supervisors.
3. Focus CMW hands-on training at secondary-care level hospitals (DHQ/THQ).
4. Provide written supervisory/training guidelines/standards/protocols for all supervisors/trainers.
5. Appoint CMW tutors on a regular basis.
6. Establish and adhere to selection criteria for CMW tutors.
7. Ensure field monitoring by tutors through established field monitoring schedule and plan.
8. Provide computer, clean drinking water, electric water cooler and telephone for CMW students.

Chapter 5: Discussion and Conclusions

Discussion

This study provided an overview of the CMW training program underway in various public health and nursing schools across Pakistan. It also provides a look into how the CMWs are being trained three years after the introduction of the program. In an earlier study conducted by Population Council, "Initial Assessment of Community Midwives in Rural Pakistan," it was found that knowledge and skill levels of the graduated CMWs were variable and at times deficient. This indicated that CMWs were beginning their work in their communities with inadequate knowledge and skills about MNCH issues, even after having been trained. It is hoped that this study can be used as a tool in the ongoing process to improve the CMW training program and the skills of the CMWs.

Under the PAIMAN project, selected training schools and allied hospitals were updated to accommodate the training of the new cadre of community midwives. As part of PAIMAN's efforts, tutors and supervisors were trained in the objectives and the curriculum of the CMW program. This study provided the first opportunity to look more closely at how many different aspects of the training program were being carried out.

The current assessment found that, in general, the physical facilities and infrastructure of the CMW training schools and allied hospitals was adequate for conducting CMW training programs. However, management issues related to the availability of tutors/supervisors on a regular basis, program guidelines and selection of very large hospitals for CMW trainings were crucial. The most important issues identified through this study were related to the orientation, knowledge and skills of the CMW trainers, especially the clinical supervisors.

Furthermore, results from the current study indicate a wide variation between the responses of tutors and supervisors about the curriculum—subjects taught. Of the nine subjects which are a part of the curriculum, two are highly cited—microbiology and anatomy—while the other subjects were cited less often. This is worrisome, since the findings indicate that CMW training is not going according to plan. Anecdotal evidence provided from our field team indicated that in most of the training schools, curriculum guidelines and details were not provided and the syllabus was not followed according to the criteria set out, and was largely left to the discretion of the tutor or supervisor. This is corroborated by our findings, where 65 percent of the clinical supervisors in allied hospitals were not provided training guidelines specific to CMW students. This could have a large impact on the skills and knowledge imparted to CMWs.

Our study points to ways of improving administrative supervision. For instance, it was reported that there were insufficient numbers of tutors and supervisors in comparison to the number of CMW students present per batch. Additionally, it was observed that there was no proper documentation or system in place that allowed CMWs, once they completed the initial training school component of the curriculum, to be properly introduced/oriented to the allied hospital. It was also observed that there was no knowledge about CMW trainees among hospital staff and there was generally poor coordination in organizing trainings for CMW students. Increasing the number of tutors and supervisors would improve the functioning of the CMW training program.

Most of the hospitals selected for the training are large teaching hospitals. Anecdotal observations from the field teams highlight the fact that there are many other trainees from other cadres, such as medicine and nursing, also present at the same facilities at the same time as the CMWs. These other trainees are given preference in training and practical experience over the CMWs. This has an effect on the skill level of the CMW graduates. As a consequence, CMW students should be oriented in allied hospitals as an equally important and valued cadre

among their peers, tutors and supervisors, so that a favorable environment can be established where all trainers and students can get the most out of the teaching/learning environment. It seems as though it would be practical to have secondary-level hospitals, e.g., district headquarter hospitals (DHQ) and tehsil headquarter hospitals (THQ), chosen as the allied hospitals for CMW training.

Tutors and supervisors are an essential part of the CMW training program, as they prepare CMWs for their role as the skilled birth attendants in their communities. The skills and knowledge the tutors and clinical supervisors possess are passed onto the CMW trainees. Findings from this study highlighted that the knowledge of the tutors and clinical supervisors were deficient in some areas. Knowledge of tutors was better than that of clinical supervisors. However, questions about the competence of both groups to train and tutor CMWs thoroughly and effectively comes into question. To further improve the program, selection criteria for tutors and supervisors should be made more specific and high standards should be set and maintained for these vital members of the CMW training team.

Under the PAIMAN project, tutors and supervisors, in the PAIMAN districts where PAIMAN was upgrading training facilities/programs, were paid honorariums, while CMWs were paid a monthly stipend. The honorarium maintained the tutor and supervisor's interest in training the CMWS, while also conducting field visits in the vehicle provided by PAIMAN, along with an extra stipend. However, since the end of the PAIMAN project, the CMW program nationwide is being run by the MNCH program and qualitative observations during fieldwork indicate that no honorarium or stipends are being paid to the tutors, supervisors or CMW trainees. This has resulted in the lack of ownership of CMW trainees by clinical supervisors in allied hospitals and tutors in the training schools. As a result, tutors and supervisors will also refuse to monitor CMWs operating in communities, hence there are little in the way of checks or surveillance of the performance of the CMWs once they are deployed. Steps need to be taken to create and coordinate a sustainable plan for the transition and supervision of CMWs once they graduate. The MNCH program now needs to take more ownership of the program and better coordinate the training of tutors and clinical supervisors and provide better supervision of the curriculum and trainings being imparted to the CMW trainees.

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Appendix 1: Data Collection Teams

North Punjab	
Medical Interviewers	**Social Scientist Interviewers**
Lubna Gondal	Rabia Batool
Nadia Zafar	Durriya Yousaf
South Punjab	
Dr. Samreen Afzal	Shehzad Nausheen Gul
--	Fahmina Anwar
Khyber Pakhtunkhwa	
Zubaida Khanum	Faiza Noor
Shuhrat Naz	Samara Umar
Shaheen Begum	--
Sindh	
Dr. Shaista Wasi	Afroz Channa
Asifa Mangi	Farzana Khan

Appendix 2: Percentage of CMW Training Schools by Availability of Training Materials/Aids

Training material/aid	Percent
Birthing torso with cover	95
Dummy for vaginal examination	91
Female dummy for CPR with trachea	77
Half /Simulator of external organs	86
Model of pregnant uterus	95
Cross-sectional models	86
Ovaries and fallopian tubes uterus	77
Model of uterus	91
Model of heart	77
Model of kidney	77
Circulatory system	77
Endocrine	55
Digestive	68
Respiratory	73
Lymphatic	45
Models of male reproductive organs	59
Models of male external organs	55
Manikins of fetus	100
Fetus with cord and placenta	91
Fetal part for CPR with trachea	86
Skull of fetus (Suture and fontnal marks)	86
Skeleton	86
Pelvis	95
Sacrum bone	82
Skull	82
Total set of bones (206)	64
Fetoscope	82
Weighing Machine	77
Height Scale	59
Measuring tap	82
B.P. Apparatus	91
Stethoscope	91
Thermometer	77
Stop watch	45
Tongue depressor	82
Torch	77
Tourniquet	50
Hammer	32
Otto scope	41
Bulb Sucker	82
Macintosh	91
Baby cap	64
Sanitary pad	73
Sterilized Gauze	82
Examination Table	73
Foot steps	73
Wash basin	64
Examination Lamp	59
Blades	73
Bowl	86

Training material/aid	Percent
Kidney Tray	91
Sponge holder	86
Scissors (Epi and cutting)	91
Cord Clamps	91
Artery forceps	91
Toothed dissecting forceps	86
Needle holding forceps	86
Suture with needle	73
Surgical Gloves	73
Gown	73
Bowl stand	64
PV light	45
Sterilizer	50
Myo's towel clips	64
Kocher's forceps	77
Baby receiving table	59
Autoclave	41
Heart (model)	59
Liver (model)	50
Enema	73
Endotracheal tube	55
NG, Suction tube, face mask, IV Sets	77
Disposable syringe	86
Urinary catheter	77
Urine bag	73
Laryngoscope	36
Ambo Bag Large	64
Ambo Bag Small	68
Allis forceps	64
Volsellum forceps	86
Iron Bed	82
Weighing Machine (Baby)	77
Baby Cot	73
Sprit lamp	82
Glass tube	77
Blood sample tubes	64
Distilled water	64
Sim's or duck speculum	86
Nail brush	64
Scrub brush	55
Soap	82
TV/VCR/DVD	86
Projector	91
Multimedia	41
Charts	82
White/Black board	100
Markers	91
Duster	91
Chalk	59

Appendix 3: Percentage of Allied Hospitals by Availability of Training Materials/Aids

Training material/aid	Percent	Training material/aid	Percent
Delivery Trolley (Well arranged)	92	Anti Hypertensive (Adalat S/L, Aldomet)	80
Artery Forceps	88	Anti septic solution (Dettol, Chlorine)	100
Baby Hat	48	Antibiotics	100
Baby Tag	64	Disposable enema	80
Bowl	92	Injection Zylocaine	92
Urinary Catheter	96	IV Cannula	100
Chromic catgut (different sizes)	100	IV Drips (Ringer, Lactate, 0.9 % Saline, Dextrose water)	100
Cord clamp	92	Liquid Paraffin	84
Cotton roll	100	Methergin (Injection)	76
Fetoscope	84	Oxytocin	92
Gown	88	Pyodine	92
Kidney tray	96	Sprit	84
Kocher's forceps	88	APGAR score chart	48
Mackintosh	96	Autoclave	80
Needle holding forceps	100	Baby Cot	92
Sanitary Pad	72	Baby weighing machine	96
Scissor (cutting, epi, myo)	100	Bowl stand	96
Sponge holder	100	BP apparatus	100
Surgical gloves	96	Delivery table with mattress	92
Toothed dissecting forceps	100	Foot steps	100
Non toothed dissecting forceps	100	Glucometer	64
Baby sheets	72	Head lights	96
Baby Blanket	64	IV Stand	100
Blades	56	Liquid Soap	72
Bulb Sucker	80	Mother weighing machine	80
Cord clamp	88	Oxygen cylinder	92
Eye ointments	64	Partographs	72
Gauze piece	76	Screen, Curtain	96
Oral Gastric tube (OGT)	92	Sterilizer	72
Syringes	92	Stethoscope	100
Analgesics	100	Suction machine	100
Anti convulsant (valium,magnesium sulphate)	84	Thermometer	100

Appendix 4: Scoring Matrix -- Knowledge and Skills in Maternal and Newborn Health

Knowledge and skills	SON BBH, Rawalpindi	SON HFH, Rawalpindi	SOWM, Jhelum	PHNS DG Khan	PHNS Nishtar Hospital Multan	Midwifery School, Hala	PHNS Hyderabad
KNOWLEDGE							
Maternal health							
Danger signs - pregnancy	4	6	2	5	7	1	3
Danger signs - delivery	6	7	2	4	5	1	3
Management of eclampsia	2	5	5	4	5	3	1
Infection prevention	3	4	1	5	6	1	2
Partograph	5	2	4	7	6	3	1
Frequency of vaginal examination	3	2	1	7	4	6	5
Identify prolonged labor	4	4	1	3	2	4	4
Manage prolonged labor	3	6	6	4	5	1	2
AMTSL	3	5	6	6	4	2	1
OB complications to refer	4	5	1	2	6	1	3
Danger signs postpartum	3	6	3	4	5	1	2
Manage puerperal sepsis	5	4	3	6	6	2	1
Scoring knowledge maternal health	**45**	**56**	**35**	**57**	**61**	**26**	**28**
Neonatal health							
Danger signs – newborns	6	2	4	5	7	1	3
Newborn care management	1	4	3	6	5	1	2
Apgar score	3	4	1	6	5	1	2
Prevention - neonatal tetanus	3	5	4	5	5	2	1
Neonatal complications to refer	5	4	2	7	3	6	1
Scoring knowledge neonatal health	**18**	**19**	**14**	**29**	**25**	**11**	**9**
Scoring knowledge for maternal and neonatal health	**63**	**75**	**49**	**86**	**86**	**37**	**37**
Ranking knowledge	**3**	**4**	**2**	**5**	**5**	**1**	**1**
SKILLS							
Maternal Health							
Assess Anemia	1	1	1	2	1	1	1
Abdominal Checkup	6	5	4	7	2	3	1
Hand washing	3	4	3	4	4	1	2
Use of CDK	5	4	5	6	3	1	2
Steps in delivery	3	5	5	5	4	2	1
Scoring maternal health skills	**18**	**19**	**18**	**24**	**14**	**8**	**7**
Neonatal health							
Cleaning newborn	2	4	2	5	5	3	1
Examining placenta	4	5	3	6	6	2	1
Scoring neonatal health skills	**6**	**9**	**5**	**11**	**11**	**5**	**2**
Scoring skills for maternal and neonatal care	**24**	**28**	**23**	**35**	**25**	**13**	**9**
Ranking skills	**4**	**6**	**3**	**7**	**5**	**2**	**1**
Scoring for knowledge and skills	**7**	**10**	**5**	**12**	**10**	**3**	**2**
Final ranking of schools for knowledge and skills	**4**	**5**	**3**	**6**	**5**	**2**	**1**