

Status of emergency obstetric care in four districts of Punjab, Pakistan — results of a baseline assessment

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Abstract

Objective: To assess the availability and quality of Emergency Obstetric and Newborn Care in four districts of Punjab.

Methods: The cross-sectional descriptive study was conducted in Attock, Gujranwala, Rahim Yar Khan and Khanewal districts of Pakistan's Punjab province. Data was collected in July 2012 from all District Headquarter Hospitals, Tehsil Headquarter Hospitals and selective Rural Health Centres (RHCs) using a pre-formatted questionnaire to assess availability of signal functions of Emergency Obstetric and Newborn Care, including staffing and equipment, number of births and women with complications, maternal case fatality rate and stillbirth rate. SPSS 20 was used for statistical analysis.

Results: In total, 32 health care facilities were surveyed: 14(43.75%) providing basic care and, 18(56.25) providing comprehensive obstetric care. All required signal functions were available at 4(22%) in the latter category, and 3(21%) facilities in the former category. Met need for Emergency Obstetric and Newborn Care was 17.8%. Besides, there were 26 maternal deaths among the 1,482 women with recognised obstetric complications, indicating an overall case fatality rate for all districts of 1.75%.

Conclusion: Continued efforts are needed to improve the availability and quality of Emergency Obstetric and Newborn Care through targeted skill-based training and provision of adequate drugs and equipment.

Keywords: Pakistan, Emergency obstetric care, Skilled birth attendance, Maternal & newborn health, Emergency obstetric care signal functions. (JPMA 65: 480; 2015)

Introduction

Although the maternal mortality ratio (MMR) worldwide has dropped from 543 per 100,000 live births in 1990 to 289 in 2013,¹ but the number of women who die during pregnancy or childbirth from preventable causes still remains cause of concern. The majority of all maternal deaths result from haemorrhage, sepsis, eclampsia, complications of obstructed labour and abortions. These deaths can largely be prevented.^{2,3}

Pakistan remains one of the countries in South Asia with the highest MMR with a lifetime risk of a maternal death of 1 in 110 and estimated MMR of 276 per 100,000 live births.¹ An estimated 2.6 million stillbirths occur globally each year with half of these occurring intrapartum.⁴ The stillbirth rate in Pakistan is reported to be 47 per 1,000 births⁵ and many of these could be prevented by timely intervention and good quality care at the time of delivery.

Providing Skilled Birth Attendance (SBA) and Emergency Obstetric and Newborn Care (EmONC) are two major strategies to reduce maternal and neonatal mortality and

morbidity.⁶ The availability of skilled providers trained to deal with life-threatening obstetric complications coupled with an enabling environment consisting of essential equipment, drugs and other supplies is crucial to the prevention of maternal and perinatal deaths.^{3,7}

As life-threatening complications are rarely predictable, availability of and access to EmONC services is important. These services are categorised into Basic (BEmONC) and Comprehensive (CEmONC) services, both providing a set of essential interventions called signal functions (SF). At BEmONC level, these SFs include administration of parental antibiotics, uterotonics and anticonvulsants (i.e. magnesium sulphate), performance of manual removal of placenta, removal of retained products of conception (manual vacuum aspiration or dilation and curettage [D&C]), assisted vaginal delivery (preferably ventouse) and neonatal resuscitation with bag and mask. CEmONC also includes the ability to perform a caesarean section (CS) and give a blood transfusion. In addition, five United Nations (UN) process indicators are used to measure the availability, utilisation and quality of EmONC services.^{8,9}

Although it has been shown that access to EmONC services is essential to reducing maternal mortality in Pakistan,¹⁰ but it has been estimated that less than 5% of

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women with complications recognise the need and are provided with EmONC at the health facility level (met need for EmONC).¹¹ This might be due to several reasons, one of which could simply be the unavailability of EmONC in facilities even when women access them for care.¹²

We undertook a baseline survey in four districts of Punjab province which consists of 36 districts.

Attock district lies in the north-west of the province. The last census (1998) recorded its population as 1,274,935 but official estimates in 2012 showed the population had grown to 1.60 million. The majority of the population (90%) are agriculture-based but most of Attock's revenue is generated through oil and gas reserves and hydropower projects. The district is divided administratively into six Tehsils. There is one tertiary level district headquarter hospital (DHQ) and five Tehsil headquarter hospitals (THQs). Rural Health Centres (RHCs) normally refer cases to THQ hospitals and they refer to the DHQ hospital. To travel from an RHC to the nearest referral hospital in Attock takes approximately 30-60 minutes (15-50km) and to travel from a THQ to the DHQ hospital takes 45-110 minutes (30-75 km).

Gujranwala district lies in the north-east of Punjab. The last census (1998) recorded a population of 3,400,940 but recent estimates show the population (2012) has grown to 4.55 million. Revenue is from agriculture and cottage industries. The district is divided administratively into four Tehsils. There is one DHQ and three THQs. To travel from an RHC to the nearest referral hospital takes approximately 15-60 minutes (10-50km) and to reach the DHQ from a THQ takes 30-50 minutes (25-35 km).

Rahim Yar Khan district is the southern-most in Punjab. The last census (1998) recorded a population of 3,141,053 but recent estimates (2012) show the population has grown to 4.36 million. Revenue is from agriculture and industries such as textiles, pottery, handicrafts and agriculture machinery. The district is divided administratively into four Tehsils. There is one DHQ and three THQs. To travel from a THQ to the DHQ takes approximately 45-60 minutes (29-45 km).

Finally, Khanewal district is situated in central Punjab on the main road and railway linking northern and southern Pakistan. The last census (1998) recorded a population of 2,068,490 while recent estimates (2012) show the population has reached 2.66 million. It is a fertile agricultural area.

The district is divided into four Tehsils and has one DHQ and three THQs. To travel from a THQ to the DHQ hospital takes approximately 25-55 minutes (20-50 km).

The survey of these four districts was conducted to assess the current availability and quality of EmONC prior to commencing the 'Making It Happen' programme which aims at improving the availability and quality of EmONC by conducting targeted training and the provision of equipment for EmONC.

Subjects and Methods

The cross-sectional descriptive study was conducted in Attock, Gujranwala, Rahim Yar Khan and Khanewal districts of Pakistan's Punjab province. After consultation with the provincial Health authorities, the Liverpool School of Tropical Medicine (LSTM) in collaboration with Child Advocacy International (CAI), Pakistan, conducted a baseline survey in July 2012 from all the DHQs, THQs and selective RHCs in the four target districts. Written permission to conduct the baseline assessments was obtained from the Punjab Ministry of Health.

A rapid assessment tool (RAT) was developed by CMNH to measure availability of EmONC at health facility level. This was adapted for use in Pakistan. The RAT has three main objectives: to assess the initial situation at the facilities prior to an intervention, to identify staff to be included in EmONC training and to identify facilities to be included in an M&E programme. The semi-structured questionnaire is completed in English and used to collect data on the availability of signal functions of EmONC, availability of drugs and equipment needed for EmONC, staffing levels, numbers of deliveries, women recognised to need and receiving EmONC, maternal deaths and still births⁸ and has 10 sections plus a generic information section.

The regions and target facilities to be surveyed are identified by the in-country Ministry of Health with CMNH representatives. Baseline data is collected by field workers recruited in-country, who are trained to carry out the survey in accordance with the CMNH protocol. They are usually nurses and doctors who work in the target area.

Survey facilities included all DHQ and THQ hospitals designated to provide CEmONC in the four districts as well as RHCs designated to provide BEmONC in Khanewal and Rahim Yar Khan districts.

Prior to the survey, a team of 11 data collectors was trained. They also received guidelines to assist them during the data collection and were able to contact a Data Collection Supervisor to raise queries. Data was collected from all available registers, including maternity registers, operation theatre, specific registers for manual vacuum aspiration (MVA) or D&C, female or gynaecological ward registers and obstetric admission books as well as specific registers for maternal deaths and referrals.

Bias was minimised as the data collection tool was standardised and used numerical or closed-ended responses.

After data collection, all forms were reviewed for inconsistencies and the data was entered, cleaned and analysed using SPSS 20.

Results

A total of 32 healthcare facilities were surveyed. Of them, 14(43.75%) were dealing with BEmONC and 18(56.25%) with CEmONC. Compared to the United Nations recommendations of one CEmONC per 500,000 population, half of the surveyed districts had a sufficient number of facilities: Khanewal 4 present/4 recommended; Attock: 5 present/3 recommended). The other two had less than the recommended number: Gujranwala 5 present/7 recommended; and Rahim Yar Khan 4 present/6

recommended). For the total population of about 10 million, UN recommendations advise a minimum of 20 healthcare facilities able to provide CEmONC and an additional 40 able to provide BEmONC.¹³

The full range of nine SFs was available in 4(22%) of all healthcare facilities designated to provide CEmONC, and in 3(21%) facilities expected to provide BEmONC (Figure).

In the 32 facilities surveyed, 595 healthcare providers who delivered emergency obstetric care were identified; 122(20.6%) in Attock, 189(31.7%) in Gujranwala, 78(13%) in Khanewal and 206(34.6%) in Rahim Yar Khan.

Penicillin was available in 24(75%) facilities, Cephalosporin in 10(31%) and Metronidazole in 24(75%). Oxytocin was available in 22(69%) facilities whereas Misoprostol in only 3(9%). Despite being the first-choice

Table-1: Availability of drugs and equipment at Basic and Comprehensive EmONC levels in four districts in Punjab Province.

Drugs							
	Penicillin	Metranidazole	Gentamicin	Cephalosporin	Oxytocin		
BEmOC (n=14)	13 (92.9%)	10 (71.4%)	8 (57.1%)	2 (14.3%)	10 (71.4%)		
CEmOC(n= 18)	11 (61.1%)	14 (77.8%)	7 (38.9%)	8 (44.4%)	12 (66.7%)		
	Misoprostol	Magnesium Sulphate	Diazepam	Nifedipine	Methyldopa		
BEmOC (n=14)	2 (14.3%)	1 (7.1%)	12 (85.7%)	2 (7.1%)	6 (42.9%)		
CEmOC (n= 18)	1 (5.6%)	3 (16.7%)	15 (83.3%)	4 (22.2%)	5 (27.8%)		
Equipment							
	Syringes	IV giving sets	Ringers Lactate	Normal saline	Fridge for storing oxytocin	Patella hammer	
BEmOC (n=14)	14 (100%)	12 (85.7%)	10 (71.4%)	11 (78.6%)	0 (0%)	3 (21.4%)	
CEmOC (n= 18)	14 (77.8%)	15 (83.8%)	14 (77.8%)	9 (50%)	2 (11.1%)	6 (33.3%)	
	Sterile gloves	Elbow length gloves	Suture material	Blood pressure machine	Pinard stethoscope	Doppler	Ultrasound
BEmOC (n=14)	11 (78.6%)	0 (0%)	7 (50%)	14 (100%)	13 (92.9%)	6 (42.9%)	14 (100%)
CEmOC (n= 18)	15 (83.3%)	0 (0%)	12 (66.7%)	18 (100%)	18 (100%)	7 (38.9%)	17 (94.4%)

Table-2: Number of deliveries, complications and maternal deaths recorded in the three months preceding the EmONC survey.

District	Type of Facility	Deliveries	Maternal Deaths	Number of Complications
Attock	DHQ (N=1)	781	1	69
	THQ (N=5)	1,075	1	58
	RHC (N=5)	535	0	19
Gujranwala	DHQ (N=1)	1,357	0	138
	THQ (N=3)	549	0	56
	RHC (N=9)	511	0	25
Khanewal	DHQ (N=1)	422	0	103
	THQ (N=3)	373	0	102
Rahim Yar Khan	DHQ (N=1)	2,425	10	394
	THQ (N=3)	551	9	278
Total	32	8,579	21	1,242

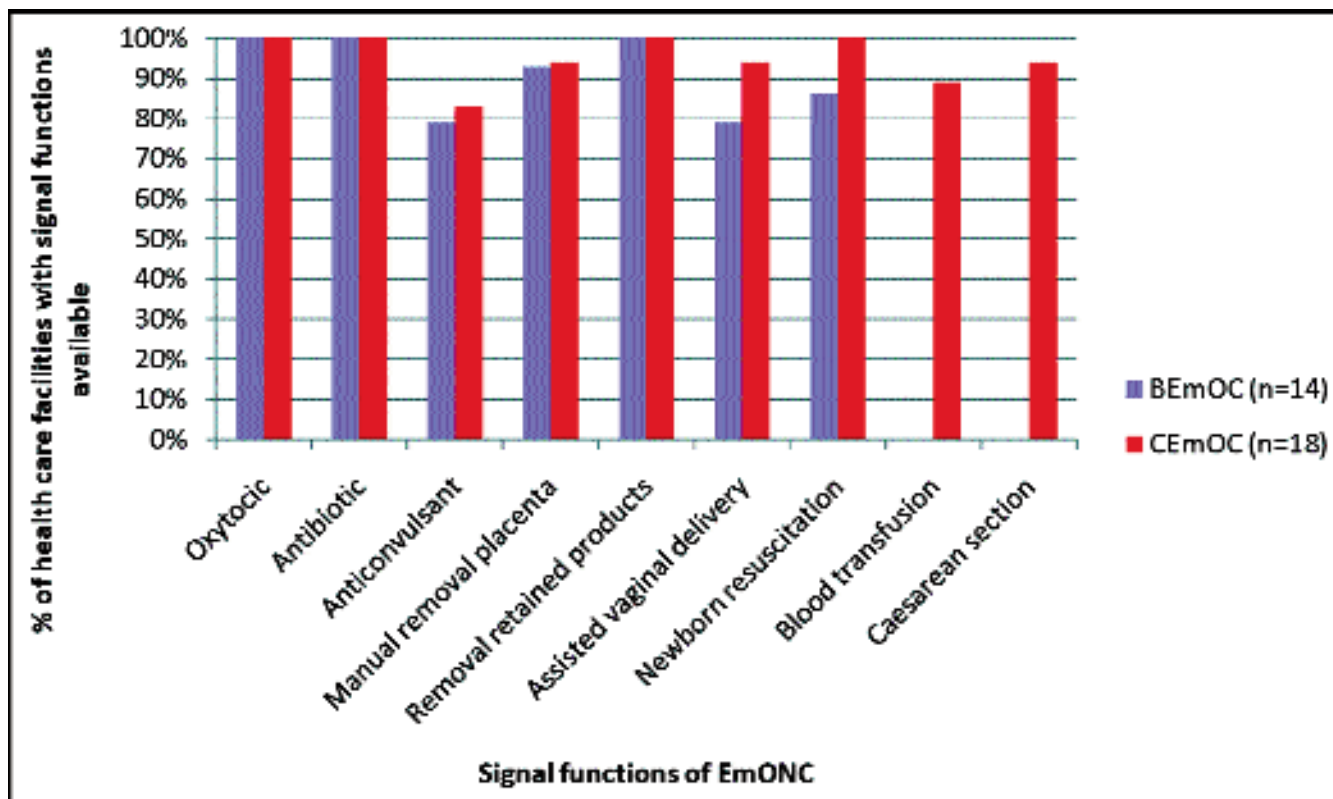


Figure: Availability of signal functions of Emergency Obstetric Care (EmONC) in health care facilities in four districts in Punjab Province (n= 32).

drug for eclampsia, Magnesium Sulphate was available in only 5(16%) facilities, whereas 27(84%) facilities had Diazepam (Table-1).

Equipment such as syringes for injections were available in 28(88%) of the total 32 facilities surveyed, intravenous (IV) kits in 27(84%). Blood pressure machines were available in all facilities but a simple patella hammer was available in only 9(28%).

Of an estimated 66,504 deliveries expected in three months for the population of the four districts, a total of 8,579(12.9%) deliveries took place in the facilities being assessed. There were large variations among the different DHQs with a range of 130 to 855 deliveries recorded per month. The average number of monthly deliveries in THQs ranged between 41 and 72, whereas in the RHCs it was between 19 and 36 per month. Assited vaginal delivery services were available in 28(87.5%) of the 32 facilities; 9(32%) in Attock, 12(43%) in Gujranwala, 4(14%) in Khanewal, and 3(11%) in Rahim Yar Khan (Table-2).

Partographs were routinely used in only 5(16%) facilities.

The met need for EmONC defined as the proportion of women with recognised obstetric complications treated

in the target facilities was estimated to be 17.8%.

A total of 26 maternal deaths from among 1,482 women with recognised obstetric complications were documented, indicating an overall case fatality rate for all districts of 1.75%. Of the reported deaths, 9(34.6%) resulted from eclampsia, 3(11.5%) from haemorrhage, 3(11.5%) from sepsis, 3(11.5%) from complications of obstructed labour, 1(3.9%) from complications of abortion and 7 (26.9%) were recorded against unknown causes. The total number of stillbirths in the preceding 3 months was 257 with an estimated stillbirth rate of 30 per 1000 births.

Discussion

The survey indicates that both the availability and quality of EmONC requires further strengthening in order to improve maternal and newborn health outcomes for women who deliver or are referred with complications during pregnancy and childbirth to these healthcare facilities.

Only half of all surveyed districts had a sufficient number of CEmOCs which is in line with previous studies.¹¹ Similarly, although the infrastructure, drugs and

equipment for EmONC are generally in place with all healthcare facilities able to provide some of the signal functions, but less than a quarter were able to provide the full complement of signal function expected to be in place. This has similarly been described in earlier surveys from India, Kenya, Malawi and Sierra Leone.¹² The findings for Pakistan are similar with regard to CEmONC availability, but better for BEmONC availability with 21% in Punjab province able to provide the required signal functions compared to less than 5% of designated BEmONC healthcare facilities in the multi-country survey.⁸

The World Health Organization (WHO) Essential Medicines List is updated every two years and provides an evidence-based inventory of medicines that can be used by to treat key healthcare needs of a population. The WHO Eastern Mediterranean List of Essential Medicines covers Pakistan. Regarding obstetrics, the List contains oxytocins, misoprostol, nifedipine plus other drugs to treat EmOC signal functions such as anti-convulsants (magnesium sulphate), anti-hypertensives and antibiotics.

The current survey showed that the drugs and equipment needed to provide EmONC were generally in place, except for magnesium sulphate, which is acknowledged as the first-line drug for preventing fits in eclamptic patients^{14,15} and is listed for use in eclampsia and severe eclampsia in the Pakistan National Essential Drugs List-2007.¹⁶ A total of 109 documented cases of eclampsia seen over a period of three months at the healthcare facilities surveyed in the four districts in Punjab with several maternal deaths recorded indicated that targeted efforts are required. This includes increasing drug availability but also investment in the training of healthcare providers in the recognition of pre-eclampsia and the management of eclampsia.¹⁷ The latter is of particular importance as the lack of expertise in the administration of magnesium sulphate was mentioned as one of the major reasons for not using magnesium sulphate in the surveyed facilities.

MVA, an intervention proven to be more cost-effective and associated with shorter hospital stays than D&C, can be effectively performed by nurses.¹⁶⁻¹⁸ However, our survey revealed that removal of retained products of conception was still performed in the majority of facilities by D&C in a theatre setting. Increasing the number of less invasive interventions such as MVA would require equipment and training.

The study showed that signal functions such as administration of anti-convulsants, manual removal of the placenta, assisted vaginal (vacuum) delivery and newborn resuscitation were not available at all healthcare facilities designated to provide EmONC. Another study from South

Asia¹⁹ has shown that most of these signal functions were provided only by medical doctors in Asia whereas in sub-Saharan Africa other cadres of staff are successfully trained and legislated to perform these crucial signal functions.¹⁹ The absence and shortages of mainly female medical doctors as described by a study²⁰ could be one of the reasons why these signal functions are not regularly performed.

Compared to previous studies from Pakistan which reported that between 2.1% and 5.7% of births took place in EmONC facilities,^{11,20} our results revealed a higher coverage with an estimated 12.9% of all expected births taking place in healthcare facilities in principle providing EmONC in the surveyed districts. Although facility-based caesarean section (CS) rates were noted to be high, only 2.7% of all expected deliveries in the population were delivered via CS in the healthcare facilities surveyed. Although this is higher than the rate of 0.4%¹¹ and 0.5% reported in previous publications from Pakistan,²² it would suggest that not all women who need a CS are currently delivered by CS in the healthcare facilities that should provide CEmONC. In this regard, it is also important to note that more than 10% of recorded maternal deaths resulted from complications of obstructed labour.

Although the findings of this survey are encouraging and could indicate that the access to facilities has improved, but they are also illustrative of a low met need for EmONC (less than 20%) and a case fatality rate (CFR) of 1.75%, which is higher than reported CFRs of 0.63% and 0.7% in other such surveys^{11,22} and higher than the UN indicator of 1%.

Similarly, although the documented stillbirth rate of 30 per 1000 births recorded in this survey of facilities in Punjab is below the national average of 47 per 1000 births²³ but there is still a clear need to renew efforts to improve both the availability and quality of EmONC in this setting. A community-based study from Pakistan revealed stillbirth rates similar to our sample.²⁴ It indicated that the majority of stillbirths were fresh whereas our sample revealed a fresh stillbirth rate of only 10%. Distinguishing between a fresh and a macerated stillbirth is, however, often missing in the records and the majority of these deaths are reported as "stillbirth". There is a need to improve record-keeping, which is often poor due to a lack of staff motivation and missing feedback to the providers.²⁵ Partographs were only used in 16% of facilities and two of the major reasons given for not using them were the lack of forms and lack of knowledge to complete partographs; challenges which have reported

already in other low-resource settings.²⁶ Nevertheless, the role of partographs as useful tools for the detection of prolonged labour²⁷ underline the necessity to train providers in using this tool and also to support existing structures in the provision of forms.

Conclusion

Availability, access and quality of EmONC services need to be strengthened in the Pakistani province of Punjab. This can be done by increasing targeted skill-based training and provision of additional equipment and drugs where needed.

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