



## Special Communication

# ENVISIONING ROLE OF COMMUNITY MIDWIVES IN PUNJAB, PAKISTAN

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## SUMMARY

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The majority of women prefer the deliveries at home because this option is affordable and accessible. Midwifery care results in lower costs due to fewer unnecessary, invasive, and expensive interventions. This research highlights the motivation, efficiency and proficiency of community midwives working at the grassroots level. This study shows the existing retention status of CMWs in their geographical area. This paper provides an overview of research and statistics that describe the practice of midwives in Punjab. Some key reasons including financial constraints, lack of trust and a fear of being mishandled by newly trained young CMWs resulted in low acceptance of CMWs for maternal healthcare. The awareness regarding availability of trained CMWs in the community along with backup support by the district health system is extremely important to address the concerns of the community, thus leading to enhanced acceptance of the CMWs by the community and gaining optimum confidence. This study aims at improving the mother and child health, with the objective to improve the performance of community midwives (CMWs). One of the objectives of this study is to identify the indicators to improve the performance of CMWs in Punjab, Pakistan. Challenges/Bottlenecks are also pointed out and suggestions are made. The methodology used is empirical, quantitative data is represented in pie, bar, and line graphs. Three year secondary data from 2013 to 2015 of CMWs performance was collected from IRMNCH and nutrition program.

**Keywords:** Community Midwives; Skill Birth Attendants, Maternal and New-born Child Health; Maternal Mortality Ratio.

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## INTRODUCTION

The high number of maternal deaths in some areas of the world reflects inequities in access to health services, and highlights the gap between rich and poor. Almost all maternal deaths (99%) occur in developing countries. The maternal

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mortality ratio in developing countries in 2013 was 230 per 100 000 live births versus 16 per 100 000 live births in developed countries<sup>1</sup>.

A woman's lifetime risk of maternal death is 1 in 3700 in developed countries versus 1 in 160 in developing countries whereas in Pakistan it is a staggering 1 in 1702,3. There are large disparities between countries, with few countries having extremely high maternal mortality ratios around 1000 per 100 000 live births. These discrepancies are further bifurcated within countries, between women with high and low incomes and between women living in rural and urban areas. Women in developing countries have on average a greater number of pregnancies than women in developed countries, with a higher lifetime risk of death due to pregnancy. Every minute of every day, 150 babies are born in some part of the world<sup>4</sup>. Every minute of every day, one mother dies while attempting to bring forth new life<sup>5</sup>. It is believed that motherhood is the most dangerous occupation in developing countries. It can be ascertained by the fact that complication in pregnancy is the cause of death of approximately 350,000 women every year<sup>6</sup>. Each year obstetric complications kill over 500 000 women worldwide. Many of these deaths could be prevented by skilled attendance during labour, delivery and in the early postpartum period<sup>7,8</sup>. Unfortunately most countries have failed to achieve the targets set under Millennium Development Goals (MDG) 2015. Only 19 out of 183 countries were able to achieve MDG Target 5 related to Maternal Mortality Ratio (128/100,000 live births by 2015). Pakistan's ranking in the Mother Mortality Ratio MMR (276/100,000) toppled from 147th to 149th position in 2015. Pakistan has not only performed poorly in the global arena, but also when compared with neighboring countries in a regional context. Except Afghanistan, all the countries in

the region have much better health indicators than Pakistan. In the urban areas of Pakistan, the MMR of the poor is 2.5 times greater than those of the rich<sup>3</sup>. Approximately 12,000 women die in pregnancy every year, this number being the fourth highest globally. There are 423,000 child deaths annually, and 44% of children suffer from chronic under-nutrition<sup>9</sup>. Neonatal mortality (53 per 1000 live births) constitutes over half of Under 5 Mortality deaths. Poor children born in rural areas have a higher probability of death than their counterparts in the urban areas. These statistics become more worrisome when the disparity between provinces is compared such as in Balochistan where the MMR is over 700 and in Punjab it is around 20010,<sup>11</sup>. Skilled care given before, during and after childbirth can save the lives of women and new-born babies. Numerous studies showed that homebirth and out-of-hospital birth centers are at least as safe as hospitals for normal deliveries. The safe childbirth depends on the overall health of the woman and the presence of a skilled birth attendant. Poor women, those who come to the place of birth malnourished and often unattended, die 100 times more often than their wealthier counterparts. Maternal death in the United States is 1 in 2,500 as compared to 1 in 6 in Afghanistan<sup>12</sup>. It seems evident from literature that planned home birth is a safe option for women who are at low risk of complications as they receive care from qualified attendants with adequate access to support, advice, referral and transfer mechanisms. There is no evidence available showing an increase in risk of maternal morbidity or mortality in relation to homebirth. "Community Midwives" CMWs cover a full range of primary healthcare services for women from adolescence to beyond menopause. They provide individual care to women according to their physical, mental, emotional, spiritual and cultural

**TABLE-1**  
**Deployed and Reporting CMWs with covered Population**

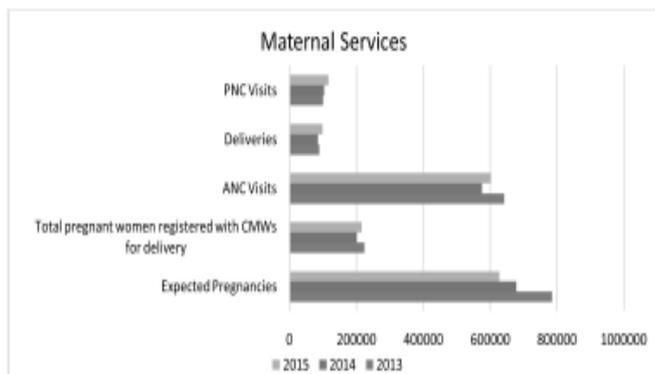
Year	Total Deployed CMWs	Reporting CMWs	Population Covered by CMWs
2013	2708	2297	27080000
2014	2339	2064	23390000
2015	2165	1967	21650000

**TABLE-2**  
**ANC, PNC and Delivery Services by CMWs**

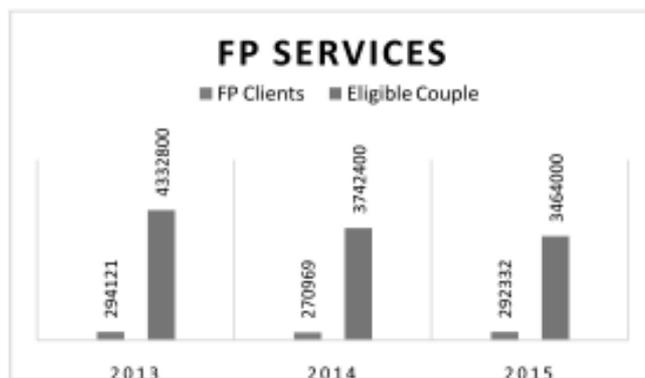
Year	Expected Pregnancies	Total pregnant women registered with CMWs for delivery	ANC Visits	Deliveries	PNC Visits
2013	785320	224249	642273	88710	100363
2014	678310	200968	575880	84843	103567
2015	627850	215737	602879	98232	116174

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**FIGURE-1**  
Maternal Services by CMWs



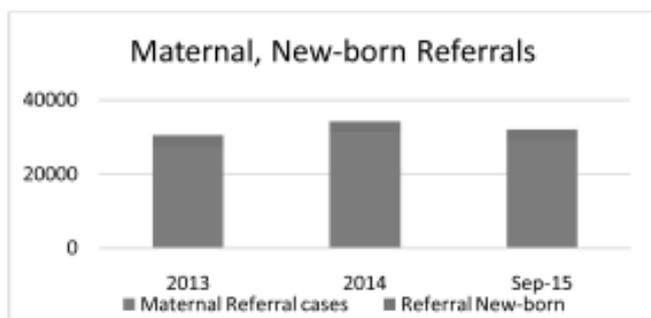
**FIGURE-2**  
Family Planning Services Provided by CMWs



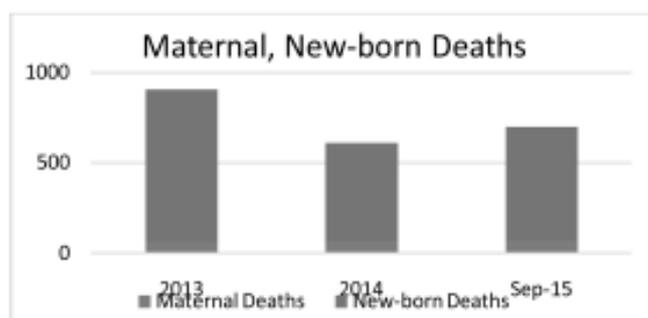
**TABLE-3**  
Family Planning Services Provided by CMWs

Year	FP Clients	Eligible Couple
2013	294121	4332800
2014	270969	3742400
2015	292332	3464000

**FIGURE-3**  
Maternal and New-born Referrals by CMWs



**FIGURE-4**  
Maternal and New-born Death Reported by CMWs



**TABLE-4**  
Maternal and New-born Referrals by CMWs

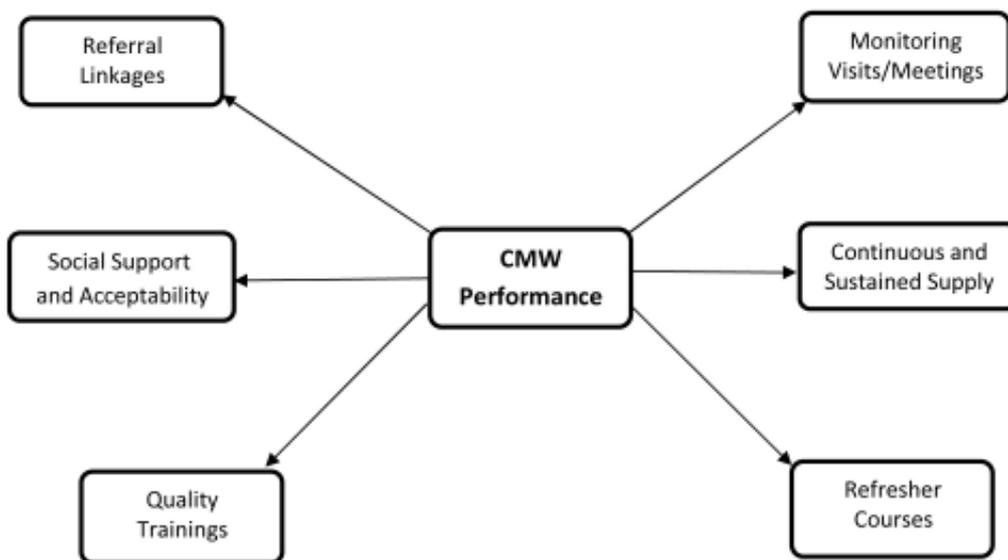
Year	Maternal Referral cases	Referral New-born
2013	27474	3013
2014	31418	2880
Sept 2015	29262	2757

**TABLE-5**  
Maternal and New-born Death Reported by CMWs

Year	Maternal Deaths	New-born Deaths
2013	67	838
2014	68	542
Sept 2015	76	624

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**FIGURE-5**  
Performance Model



$$Y_i = \beta_0 + \beta_i X_i + \varepsilon_i$$

**TABLE-6**  
R-SQUARE

Model	St. Error of the Estimate	R Square	Adjusted R Square
1	0.19725	0.861	0.842

a. Predictors: (Constant), Y, X1, X2, X3, X4, X5, X6, X7, X8, X9

**Table-7**  
MODEL SUMMARY

ANOVA						
	Model	Sum of Squares		MSE	F	Sig
1	Regression	235.643	1	235.643	161.432	0.0000
	Residual	45.251	31	1.4597		
	Total	250.894	32			

needs. They provide primary care, gynecologic and family planning services, care during pregnancy, childbirth and the postpartum period etc. The vast majority of maternal deaths occur around the time of delivery and are attributed to a lack of skilled care at birth, yet about 60 million deliveries worldwide take place at home without skilled care each year<sup>13</sup>.

However in Pakistan, approximately 60% of all births are conducted at home by unskilled personnel, major contributor of maternal death. Findings from the recent Pakistan

Demographic and Health Survey show that 65 percent of women in Punjab delivered at home and only 10 percent delivered at a public-sector facility as compared to 24 percent within a private-sector facility<sup>14, 15</sup>. Pakistan was one of the countries who showed an improvement on this front but failed to fully achieve Millennium Development Goal<sup>5</sup>. One of the reasons of this failure is accrued to slow pace of improvement in Skilled Birth Attendants (SBAs), especially in rural areas since Skilled Birth Attendance is considered to be an important component of MMR. Nutrition during

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**TABLE-8**  
**ANALYSIS OF VARIANCE**

Model	Beta Coefficients	t-Statistics	Significance
Constant		4.102	0.00013
X1	0.912	3.193	0.00161
X2	0.461	2.985	0.00275
X3	0.652	5.123	0.00001
X4	0.357	4.178	0.00011
X5	0.219	5.105	0.00001
X6	0.717	6.123	0.00001
X7	0.411	4.105	0.00013
X8	0.635	3.973	0.00019
X9	0.813	4.312	0.00007

pregnancy is another important factor affecting the health of mother and the developing infant. Poor quality diets during pregnancy are associated with maternal excess weight gain, preterm birth and miscarriage<sup>16, 17</sup>. The importance of midwives in this regard is paramount as they are in the prime position to provide healthy eating information to pregnant women<sup>18</sup>. Proportion of deliveries conducted at home is 48% and proportion of SBAs is only 65% in Punjab, hence there is a dire need of SBAs at the grassroots level to reduce MMR<sup>19</sup>. In 2008, the National Institute of Health and Clinical Excellence (NICE) in the United Kingdom issued recommendations for health professionals (including midwives) to provide nutrition support to pregnant women<sup>20</sup>. Furthermore, the Australian Nursing and Midwifery Council (ANMC) confirmed in their national competency standards 21 that the midwife has an important role in general health counseling and education, including antenatal education.

To improve the percentage of SBAs using community level skilled birth attendant, Ministry of Health, Pakistan established a new cadre of skilled birth attendants called Community Midwives (CMWs) in 2006. The program aimed to train and deploy around 12,000 CMWs nationwide to increase coverage of Maternal New-born Child Health MNCH services by skilled providers. CMWs are rural women from the same community as their clients. They are given 18 month training on antenatal, intra-partum, normal domiciliary deliveries, postnatal and new born care that conformed to International confederation of midwives (ICM) and global standards for midwifery education. Those who complete their training are legally licensed or certified by Pakistan Nursing Council (PNC) for practice as a midwife in community. They are then deployed in their home area for two years bond period and provide maternal and child health care to the population of 10,000 defined as catchment area. By Dec 2011, 4,700 CMWs were trained and deployed. In Punjab, Eight thousand

and three hundred midwives have been trained till to date. Forty five CMWs school have been established and 130 Tutors are currently working with Integrated Reproductive Maternal New-born Child Health (IRMNCH) & Nutrition Program. External funding entities also contributed to the project by increasing institutional capacity of CMWs in some districts. Cost of training of one CMW is Rs. 200,000 while cost of trained and deployed CMW is Rs. 270,000 and Cost of delivery conducted by CMW is Rs. 3750. Total cost for delivery borne by the client through CMW is half than that of the delivery conducted at the BHU. Therefore, CMWs in communities is a cost effective source to reduce MMR<sup>22</sup>.

Midwifery is a unique empowering model of MNCH care that is employed in all countries of world. In Punjab, each CMW is currently reporting on an average of 4.3 deliveries per month with a range of 2-15 deliveries per month. Bhakkar, Faisalabad, Jhang, Jehlum, Nankana Sahib, Rahim yar khan are the districts which have not been able to achieve the target of 4 deliveries per month so more attention is being given to these districts. Nine<sup>(9)</sup> districts have achieved 5 deliveries per month which includes Bahawalpur, Gujranwala, Mianwali, Narowal, Okara, Sargodha, Sheikhupura, Sialkot and Vehari<sup>23</sup>.

It is evident from the above table that Antenatal Care (ANC) is not four times of the pregnancies according to the criteria laid down by WHO. On average, there is no improvement in antenatal care coverage among women in Punjab from 2012 to 2015. Deliveries were 37% of regular pregnancies in 2012 and increased to 44% in 2015 but still demands more attention as remaining pregnancies are being delivered out of system which shows community distrust on the facilities and SBAs. Other reasons include the non-expertise of CMWs, non-availability of equipments, no proper referral from the LHWs and CMWs homes are not approachable.

According to MICS 2014, there is 17.5% unmet need for

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FP services in Punjab. A family welfare center receives an average of only 2 clients per day. One reason may be the limited mobility of Pakistani women, accessing family planning center is logistically complex because husband, mother-in-law, or another adult family member must be persuaded to act as an escort<sup>24</sup>. Community midwives can be utilized to provide family planning services in such type of settings. The provision of FP services through CMWs appears to be one model of service delivery that will help to achieve universal access to family planning. It is clear from the table that FP services have decreased since 2013. Mothers' lives cannot be saved until or unless SBAs are integrated with a good referral system that is able to transport women in acute emergencies to facilities that can provide comprehensive obstetric care. Graphs show maternal and new born referral cases with maternal and new born deaths. Maternal and newborn deaths show that quality of emergency obstetric care available at the facility level is not meeting the standards it is quite traumatic that a mother reach a health facility but die because of a poorly functioning health system. Although there is increase in referrals from 2012 to 2015 yet there are issues which need immediate attention like no timely referral, no proper referral, lack of equipment and lack of a functional referral system in all districts. The performance of CMWs is affected due to many reasons. Performance can be improved if CMWs tutors are well-trained, if there is good training of CMWs on before, during and after childbirth, refresher training, continuous and sustained supply of safe delivery kits, better referral linkage, social support and acceptability Advocacy, meetings with trainers and supervisors to improve performance. Community women are uninterested in to be recruited as CMWs due to low social status and non-acceptability of CMWs in the society. Policy and Strategic Planning Unit (PSPU), Department of Health and decision makers should address issues, gaps and challenges for enhancing the progress and performance of CMWs. Here performance of CMWs is measured on many grounds. Performance of 100 randomly selected CMWs of Punjab is observed on the following Model. Performance showed direct proportionality with mentioned indicators

$Y_i$  represents the Performance of CMWs,  $\beta_0$  denotes the constant,  $\beta_1$  is regression coefficient of variables on which performance is depending i.e. explanatory variables,  $X_i$  represents explanatory variables and  $\epsilon$  denotes the random error.

$Y$  = Performance of CMWs

$X_1$  = Quality training of CMWs on before, during and after childbirth, gynecologic and family planning services and the postpartum period

$X_2$  = Quality training of all the CMWs tutors on technical assistance

$X_3$  = Refresher training of CMW tutors

$X_4$  = Refresher courses of deployed CMWs

$X_5$  = Continuous and sustained supply of Safe delivery kits and contraceptives

$X_6$  = Referral linkage with LHW and Health Facility

$X_7$  = Visits to CMW for technical assistance and monitoring by CMW tutors, LHS and District Coordinators of IRMNCH & N Program

$X_8$  = Social Support and acceptability Advocacy for CMWs and community awareness meetings by Social Organizers

$X_9$  = Meetings with District Coordinator, Principals Nursing School, CMW Tutors and Social Organizer for improving performance

So equation representing our model is given as

The  $R^2$  in the model is 0.861 which shows that all explanatory variables mentioned above are explaining 86% of CMWs performance. The adjusted  $R^2$  demonstrates that 84% of the variations are explained in this model. In this model standard error of estimate is 20% that explains the standard deviation of the estimate.

The model shows the significant impact of independent variables on Performance of CMWs.

Here we have shown the impact of nine independent variables on the performance of CMWs of Punjab.

The Betas explain the contribution of each independent variable in the explanation of the dependent variable. This frame work shows that we can improve the performance of CMWs by focusing on indicators like trainings, refresher courses, monitoring visits, continuous supply of medicines and better referral linkages between LHWs and CMWs and social support from community. By analyzing the path coefficient beta, it is apparent that there is significant impact of these indicators on performance.

The table-2 shows that the independent variables like quality training of CMWs on before, during and after childbirth, quality training of all the CMWs tutors, refresher training, refresher courses, continuous and sustained supply, referral linkage, visits to CMW for technical assistance, social support and acceptability, meetings show strong contribution in improving the performance of CMWs. All these variables show positive impact on performance.

## DISCUSSION

CMWs are not referring to health facilities when needed, and thus adversely affecting medical outcomes. 68% of CMWs were unaware of what to examine in mild bleeding and 57% did not know how to manage it. Improvement in CMWs knowledge and practical skills is needed across the board to reduce maternal mortality and morbidity. CMWs are given a stipend of PKR 2,000 with an additional training allowance of PKR 1,500. They feel that this is their salary from the Government without realizing (due to lack of communication about this goal) that this is a temporary compensation to allow them to establish in the communities<sup>25</sup>. The 80% of the women responded that they were not referred

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to community midwives by any lady health worker. They expressed that they got opinion for delivery from their family members like husband or mother-in-law, and they referred them to the dai. This way, lady health workers claim that they have introduced community midwives in the village and explicated their professional responsibilities to them<sup>26</sup>. A study funded by Technical Resource Facility (TRF) in Pakistan showed that significant proportion of trained community midwives had little information about maternal and neonatal health services, and very few community midwives could list all the services required to be given to mothers and newborns. It is the utmost responsibility of the frontline skilled birth attendants to identify the early complications and to decide for timely referral which is vital to reduce maternal mortality in the country<sup>27</sup>. A study reported that around 20-30% of neonatal mortality could be reduced by implementing skilled birth care services<sup>28</sup>. CMWs are not getting fully trained due to shortage of CMW Tutors. Furthermore, CMWs face other mobility and security problems. Government should redress this issue for effective role of CMWs. Another inevitable cause of demotivation is lack of acceptability and support of community. An awareness campaign must be launched in favor of CMWs. Government should concentrate on the point that no application is submitted for the selection of CMWs from remote and least developed areas.

In Punjab there are 42 CMWs school in 36 districts with 967 admissions in 2014 and 745 admissions in 2015<sup>29</sup>. This decreasing trend shows lack of interest of community due to no acknowledgement from community and poor retention setup. Community members are unaware about the availability and purpose of CMWs. This is due to ineffective communication strategies and the non-engagement with the community at the time of deployment. IRMNCH has revised retention model to overcome this situation. Previously retention fee was Rs.5000 per month and bond period was only for 5 years and referral package was Rs.300 per referral. IRMNCH & Nutrition program has approved a new retention model on 30th December 2015 by letter number 3755-59. Now retention fee for CMW is Rs.2000 per month for life time and performance base incentive is Rs.300 per delivery for more than three deliveries and Rs.50 per client for family planning and Rs.150 per referral.

### SUGGESTIONS

Strengthening CMW model is crucial in reducing child and maternal mortality, and helpful in improving the nutritional status of women and children. It is well established fact that health outcomes are dependent upon the household-to-hospital continuum that is influenced by the accessibility, affordability and quality of care offered by the health system.

1. Final post-2015 framework should include a clear commitment to reduce child and maternal deaths with measurable targets.

2. Selection of CMWs according to need (district mapping, selection criteria) to increase coverage of uncovered area by CMWs
3. Prepare retention plan with extension of their retention period and develop a mechanism for performance based incentives like performance incentives for every delivery, every IUCD insertion and for referral to resolve the issues of retention after bond period.
4. Administrative and technical supervision to be ensured through LHS, FPO, SO, DC, DoH and EDO and CMW Tutor DTMO and midwifery specialist to improve the coverage of CMWs.
5. A two-week refresher training course for CMWs must be held every year to polish their skills.
6. There is shortage of CMW tutors as currently 60 CMW Tutors are on pay scale of IRMNCH Program and remaining 70 have been hired from Nursing Schools on incentive. There is need to recruit CMW tutors with the pre requisite of teaching diploma in teaching administration to overcome shortage of CMW Tutors.
7. Clinical training must be provided at DHQ/THQ Hospitals with an incentive scheme for clinical tutors.
8. There is a dire need to reduce the number of CMW schools and instead uplift the quality of training. Currently there are 45 Community midwifery schools across Punjab but the priorities must be realigned keeping into view that there is shortage of Public health Nursing School in Lahore, Gujranwala, Gujrat, Jehlum and Rawalpindi. The CMW schools in Lahore, Gujranwala, Gujrat, Jehlum and Rawalpindi may be upgraded as Public Health Nursing School.
9. Advocacy and social mobilization campaign is required at the district and union council due to low acceptance of CMWs at community level. Social Organizer has to visit CMWs School and deployed CMWs to undertake advocacy and communication activities to enhance the acceptance of CMWs by the local community.
10. Research showed that 16% of CMW graduates had never conducted a delivery independently in hospitals, whereas 46% had never conducted a delivery independently in the community<sup>30</sup>.
11. Union Council wise targets of SBAs need to be set in order to enhance SBAs efficiency at UC level.
12. The New Zealand model must be replicated and midwifery education should also be delivered in tertiary institutions with the clinical component undertaken in partnership with practicing midwives in both hospital and community settings.
13. There is a possibility that women choosing homebirth may need a transfer to hospital care antenatally, during labour or in the postnatal period due to unforeseen complications. Therefore transport should be available to a referral facility for obstetric care in case of emergency.

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14. It is necessary that their support partners be given counseling regarding the indicators for intrapartum transfer to hospital, and the transfer is appropriate and measured.
15. Lack of sustainability/continuity of investments/interventions must be dealt with.
16. The CMWs must be linked with health facilities 24/7 so that they can refer difficult cases as needed.
17. Maternal mortality can be reduced by introducing effective interventions such as the availability of exclusive Ambulance Services for women at the time of delivery and referrals.
18. Supervision and accountability is generally effective in maintaining high-quality performance of CMWs in low-resource settings<sup>31</sup>.
19. The training duration for courses on multiple topics must be increased. Informative reporting coupled with appropriate cautions in interpretation are necessary for communicating complicated goals, concepts, and procedures. Furthermore, most report content must communicate effectively to a broad range of stakeholders, engaged in policy development and implementation.
20. There is a need to involve community representatives in selection of women for CMW trainings as this will help build ownership of community.
21. One of the challenges is regarding finding suitable candidates, especially in remote rural areas where education standards are particularly low. Furthermore, many tutors require more thorough training in helping students develop analytical skills and the ability to synthesize and apply knowledge. There is need to build capacity to ensure effective implementation of the midwifery curriculum to improve training.
22. There must be high quality control and quality assurance in data collection, data definitions, analysis and reporting.
23. There is also a need to ensure that incentives, supplies of medicines and FP commodities remain uninterrupted for the CMWs.
24. Internal and external peer review of all aspects will enhance quality of services of CMWs.
25. CMWs should be actively engaged in delivering specific preventive interventions that include identifying and treating maternal anaemia, pregnancy-induced hypertension and prevention of pre-eclampsia by the provision of supplements, prophylactic use of misoprostol, early wrapping of newborn, encouraging kangaroo care, exclusive breast feeding and counseling on birth-spacing.
26. CMWs are deputed in other areas for clinical care for instance CCU and ICU. CMWs are demoralized by other medical professionals and pressurized by other health care personnel during practice so their duties must be streamlined in their core departments.
27. Strong referral linkages is required between LHWs and CMWs. According to the guidelines and policy document of the IRMNCH and Nutrition program (PC-1), it was originally held that LHWs would refer pregnant women to CMWs for ante natal and delivery<sup>32</sup>. So there is need to improve this linkage.
28. Legislation is also being done to discourage customs, such as early marriages, which are responsible for the high MMR.
29. CMW delivery homes should be financed by Punjab Health Foundation (PHF) in order to provide infrastructure with all equipments so that safe delivery is made possible. In order to sustain CMW houses, loans should be interest free and recovered in easy installments.

CONFLICT OF INTEREST

Authors declare that there is no conflict of interest

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