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Improving Maternal and Neonatal Health: Measuring the Impact of the PAIMAN Project in Ten Districts in Pakistan: A Summary

Comparing Baseline and Endline Survey Findings (2005-2010)



USAID
FROM THE AMERICAN PEOPLE



Improving Maternal and Neonatal Health:
Measuring the Impact of the PAIMAN Project in Ten Districts in Pakistan

Comparing Baseline and Endline Survey Findings (2005-2010)

SUMMARY

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SUMMARY

The Pakistan Initiative for Mothers and Newborns (PAIMAN) project was a USAID-funded project that focused on improving maternal and newborn health in Pakistan. The project was implemented by a consortium led by John Snow Inc. (JSI), with partners from Pakistani and international organizations, including Aga Khan University (AKU); Contech International Health Consultants; Greenstar Social Marketing (GSM); Johns Hopkins University Bloomberg School of Public Health Center for Communication Programs (JHUCCP); Pakistan Voluntary Health and Nutrition Association (PAVHNA); Population Council; and Save the Children USA. The involvement of both GSM and PAVHNA did not continue when the project was expanded and extended in 2009.

PAIMAN strategized specific interventions designed to improve awareness and promote positive maternal and neonatal health behaviors; to increase access to maternal and child health services; to improve service quality in the public and private sectors to manage obstetric and neonatal complications; to increase the capacity of healthcare system managers and providers in maternal and neonatal health; and to improve management and integration of services at all levels.

The project, which lasted for six years beginning in 2004 and ending in 2010, had a mandate to assist the Government of Pakistan to improve the status of maternal and newborn health in ten districts. In 2007, two Agencies of FATA, two Frontier regions, and Swat district were added. In September 2008, USAID awarded the consortium an expansion of the project, adding 13 more districts and increasing the scope of work to include child health and child spacing. The baseline survey was conducted in 2005 to measure selected maternal and neonatal health indicators in the ten original project districts. The endline survey was conducted in 2010 in the original ten districts where the baseline survey had been conducted and where the project had been operating for the longest duration.

The ten original PAIMAN districts in which the baseline and endline surveys were conducted were: Upper Dir and Buner districts in Khyber Pakhtunkhwa province; Rawalpindi, Jhelum, Khanewal and Dera Ghazi Khan in Punjab province; Sukkur and Dadu in Sindh province; and Jaffarabad and Lasbela in Balochistan province. Both surveys used comparable randomized sample designs and standard research tools for the assessment of indicators of interest.

Findings

Community profile

Key informants were interviewed in the communities where the surveys were conducted in order to obtain community-wide information: essentially, this was a panel of the same communities for baseline and endline surveys (baseline - 391; endline - 385). The characteristics of communities selected in the endline survey were quite similar to those of the communities in the baseline

survey. Because of the importance of transport when obstetrical emergencies occur, the increase in communities that had access to transport during daytime (from 49 to 74 percent) and at night (from 43 percent to 63 percent) was important

Household characteristics

Information regarding household characteristics came from 9,384 baseline household interviews and 11,501 endline household interviews. The socioeconomic conditions of the communities surveyed improved slightly over the project period. Ownership of a television, which can be the major resource for creating awareness of maternal and neonatal health issues, increased by 9 percentage points. Broader access to multiple TV channels probably contributed to the 14 percentage point decline in possession of radios. Possession of other valued items (e.g., car, refrigerator, etc.) increased from 3 to 12 percentage points depending on the item. Electricity was found to be the major source of lighting in both surveys (increasing from 88 to 94 percent).

Household ownership of agricultural land remained constant at 36 percent; however, agriculture declined as a major source of livelihood, from 18 percent in the baseline to 16 percent in the endline survey, reflecting a shift from agriculture to other sectors in the economy.

Respondents' characteristics

Currently married women of reproductive age (from 15 to 49 years) were interviewed in both surveys: 9,242 in the baseline survey and 12,357 in the endline survey. The mean age of these women was higher in the endline survey, from 31.3 to 32.2 years, as was their level of education. In the endline survey, there was a small increase in women who were housewives (from 71 percent to 76 percent); however, the proportion engaged in agriculture fell by 6 percentage points. Exposure to television increased from 54 to 60 percent between the two surveys. A majority of the women watched PTV, a public channel accessible in many rural areas in addition to urban areas. The proportion of radio listeners declined (from 12 to 9 percent). Since a majority of the women were illiterate, it is not surprising that only 2-3 percent of women reported reading newspapers regularly, though those saying they were casual readers increased slightly (from 19 to 22 percent).

PAIMAN interventions

In keeping with the strategic objectives, **key interventions** were implemented to achieve PAIMAN project goals within the PAIMAN districts. The interventions fell into two broad areas: 1) health systems upgradation and 2) behavior change communication/community mobilization.

The health system upgradation had a number of components. Facility upgradation was carried out in 31 health facilities in the original PAIMAN districts, ensuring that these facilities were equipped to provide emergency obstetric care at all times; in some cases, ambulances were also provided for obstetric emergencies. Facility personnel, providers and managers, received training to improve the quality of maternal and newborn care provided and to improve service delivery

outcomes. Public and private healthcare providers also received training to enhance provision of maternal, neonatal and child healthcare and family planning services. Upgradation of the health system included training for traditional birth attendants to improve home-delivery outcomes; this training included early identification of danger signs, making timely referrals, improving use of clean delivery practices, and raising knowledge of maternal and neonatal health and family planning, etc. PAIMAN funds were also used to train and mobilize the new cadre of community midwives in PAIMAN districts through a national 18-month training program and deployment to their home communities; these community midwives are expected to greatly increase the coverage of skilled birth attendance at home deliveries, especially in rural areas.

The second broad intervention category was behavior change communication/community mobilization at different levels. A number of activities -- women's support group meetings (WSG); training and involvement of community midwives; dramas and advertisements on TV and radio on maternal and newborn health; puppet shows in rural and remote areas; and involvement of ulama and religious scholars for creating awareness about maternal and newborn healthcare in light of the teachings of Islam -- were part of this intervention strategy undertaken by the PAIMAN project in selected areas.

Findings show that dramas and advertisements on TV were the most known intervention (26 percent), followed by women's support group meetings held by lady health workers (LHWs) (12 percent overall and 18 percent in LHW-covered areas) and, finally, by nongovernmental and community-based organizations' engagements in maternal and neonatal health education activities (6 percent). Other individual interventions that were implemented on a limited scale reached fewer women in the communities, and their impact on the entire project was naturally limited as well.

The impact of the PAIMAN behavior change communication interventions is described below for different stages of the birthing process, from pregnancy to the postnatal period, for husbands and for mortality rates.

1. *Pregnancy care*

Knowledge of three or more danger signs during pregnancy increased from 31 percent in the baseline to 38 percent in the endline survey. The proportion of women who could not name a single danger sign declined from 23 percent to 19 percent in the corresponding period. Women who were exposed to PAIMAN behavior change communication interventions had significantly higher knowledge of danger signs during pregnancy compared to the women who were not exposed to these interventions (45 vs. 34 percent).

There was a substantial increase in those having at least one antenatal care visit during their last pregnancy, from 58 to 72 percent. The proportion of women who had three or more antenatal care visits increased significantly from 34 percent to 44 percent. In PAIMAN districts, women who were exposed to PAIMAN behavior change communication interventions were significantly more

likely to receive antenatal checkups compared to women who had not been exposed to these interventions.

More women visited a provider for their first antenatal care visit in the first trimester of pregnancy than other trimesters: the proportion of first-trimester visits increased from 47 to 52 percent during the duration of the project. The proportion of those who had their first antenatal care visit in the third trimester declined from 24 to 19 percent. Of those who had antenatal checkups, a majority preferred to use the private sector, increasing from 52 to 71 percent, while seeking antenatal care from the public sector declined.

Awareness about tetanus toxoid (TT) injections increased from 87 to 92 percent during the project, and the proportion of those who actually had TT injections in their last pregnancy also increased, from 53 to 62 percent. However, there continues to be a substantial gap between awareness and action. The proportion of those who had at least two TT injections increased by 8 percentage points, from 48 to 56 percent, whereas an increase of 19 percentage points was observed among women exposed to any PAIMAN behavior change communication intervention over those who were not exposed to these interventions.

2. *Delivery care*

Knowledge of three or more danger signs during delivery increased from 16 to 23 percent between the two surveys; however, the proportion of women who had no knowledge of any danger signs remained the same (around 27 percent) during the project period. Women who were exposed to PAIMAN behavior change communication interventions had significantly higher knowledge of danger signs during delivery compared to the women who were not exposed to these interventions (28 vs. 19 percent).

Indicators of birth preparedness improved during the project period. There was an increase in the proportions of women who now had information about the nearest facility where obstetric emergencies could be treated (from 51 to 71 percent) and who had arranged money for a normal delivery (from 60 to 74 percent).

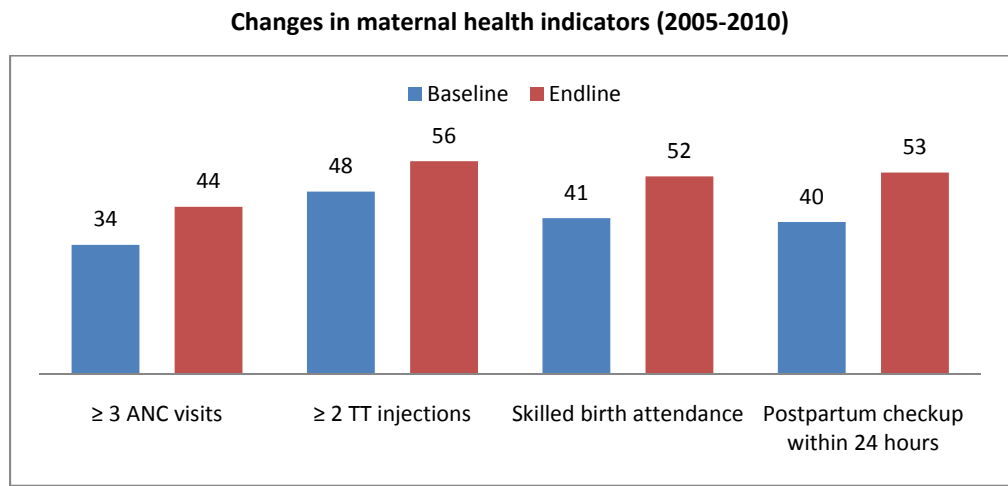
Eighty-eight percent of the total births were normal deliveries in the baseline compared to 82 percent in the endline. The number of Caesarean sections was higher (from 6 to 11 percent) in the endline compared to the baseline.

Overall, skilled birth assistance increased between the two surveys, from 41 to 52 percent. An increase of 11 percentage points was observed among women who were exposed to any one of the PAIMAN behavior change communication interventions compared to a much smaller change among women who were not exposed to any of these interventions.

Deliveries at home declined by 12 percentage points (from 62 to 50 percent). These changes were captured by the increase in institutional deliveries in the private sector, while deliveries in public-sector facilities declined slightly (2 percentage points).

Clean delivery practices improved in the PAIMAN project areas in comparison with the baseline findings. The largest increase for maternal care was in the use of a clean surface for the delivery (22 percentage points).

Women reporting at least one complication during their last delivery decreased between the two surveys, from 37 to 32 percent. The proportions of women reporting specific complications were higher in the baseline compared to the endline. Among those who had any complication and had treatment, a majority went to private hospitals/clinics. Though the proportion declined, there were still many women who did not get any treatment for their complications.



3. *Postpartum care*

The proportion of those who knew about three or more postpartum danger signs increased slightly, from 11 to 14 percent. However, awareness about danger signs during postpartum did not change. Overall, 28 percent of the women reported having no knowledge of danger signs in both surveys. Only one-third of the women were aware of only one danger sign and a quarter knew about two signs; these proportions remained the same during the project period. Importantly, women who were exposed to PAIMAN behavior change communication interventions had significantly higher knowledge of danger signs during the postpartum period compared to women who were not exposed to these interventions (18 vs. 11 percent).

An increasing proportion of the women believed that postpartum care was essential (from 47 to 64 percent), and postpartum checkups within 40 days of delivery increased by 11 percentage points (from 45 to 56 percent), reflecting an important change. The proportion of those who received postpartum care within the first 24 hours after delivery increased by 13 percentage points (from 40 to 53 percent). A significantly higher number of women who were exposed to PAIMAN behavior change communication interventions received postpartum care within 24 hours after delivery as compared to women who had no exposure to these interventions – an increase from 44 to 54 percent.

Nearly one out of five women had at least one complication following her last delivery. High fever and low abdominal pain were the two postpartum complications most reported. However, a substantial proportion of these women did not get treatment (32 percent in the baseline; 28 percent in the endline). Among those who sought some treatment, an increasing proportion went to private-sector hospitals/clinics (rising from 34 to 44 percent). Utilization of public-sector facilities showed a decline. The proportion of women who did not seek outside treatment and used traditional methods instead increased from 19 to 30 percent.

4. *Newborn care*

Clean delivery practices are instrumental in reducing newborn and maternal morbidity and mortality. In both surveys, it was assumed that institutional deliveries were performed by trained healthcare personnel observing clean delivery practices; therefore, women who had delivered at home were asked about the newborn-care practices adopted by their delivery attendants. Among other improvements over the duration of the project, was an increase in the use of a new blade or sterilized instrument to cut the cord (9 percentage points).

Women's knowledge of 3 danger signs in newborns within one hour of birth increased from 34 to 40 percent, while knowledge of danger signs in newborns within a week of birth remained about the same. For a majority of the women who knew specific danger signs in newborns within an hour of birth and within the first week, the knowledge level was higher in the endline compared to the baseline survey. Five healthy newborn care practices within the first hour after birth all showed some level of improvement. The highest improvements were seen for bathing the newborn 6 or more hours after birth (from 23 to 53 percent); getting a physical/medical examination of the newborn within three days of birth (from 36 to 55 percent); and wrapping the newborn in a clean cloth after birth (from 64 to 75 percent).

The proportions of newborns reported to have danger signs within an hour after birth and within the first week after birth were lower for the endline as compared to the baseline survey. An increasing proportion of newborns who had danger signs within an hour after birth (from 38 to 55 percent) or within a week (from 45 to 60 percent) were taken to private hospitals/clinics for treatment.

5. *Husbands*

There were 3,017 husbands interviewed in the baseline survey and 3,203 interviewed in the endline survey to get a better assessment of men's knowledge and attitudes toward the maternal and neonatal health of their wives and children. PAIMAN behavior change communication interventions targeting men were designed to increase their supportive role in preparing for childbirth and post-birth care.

The proportion of husbands who thought that women should seek antenatal checkups during pregnancy increased between baseline and endline (from 82 to 94 percent), as did the proportion who thought women should seek antenatal care in the first trimester of pregnancy (from 41 to 61 percent). A high percentage of husbands at both endline and baseline thought that delivery

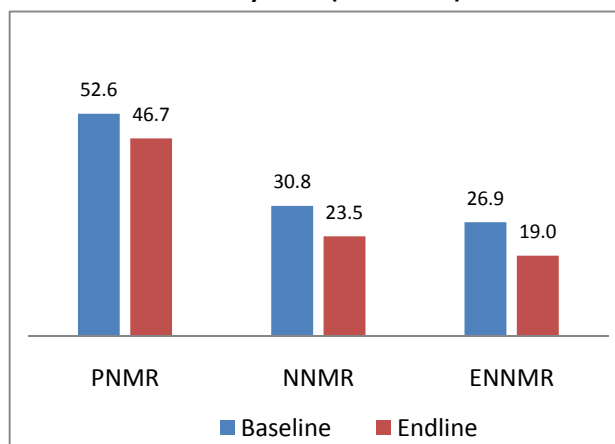
should be assisted by a skilled birth attendant (90 percent baseline; 96 percent endline). There was a larger increase in the proportion of husbands who thought that postpartum care was necessary (from 57 to 65 percent).

One-third of the husbands reported that they had heard maternal and neonatal health messages through at least one of the PAIMAN behavior change communication interventions. Twenty-seven percent of the husbands had heard maternal and neonatal messages through TV dramas/advertisements. The findings show that husbands who were exposed to at least one behavior change communication intervention had a better attitude about critical maternal and neonatal care practices compared to husbands who had no exposure.

6. Mortality estimates

The main objective of the PAIMAN project was to demonstrate through evidence that a certain package of interventions can lead to reduced maternal and neonatal mortality in districts across Pakistan. The project's key outcome indicator was selected to be neonatal mortality, since it is almost impossible to measure maternal mortality with high levels of accuracy. All PAIMAN interventions were collectively expected to have an impact on reducing neonatal mortality, also reflecting changes in maternal mortality. The results of the endline survey are very encouraging and reinforce the positive impact of PAIMAN overall on reducing neonatal mortality.

Changes in perinatal, neonatal and early neonatal mortality rates (2005-2010)



The endline survey results show a decline both in perinatal and neonatal mortality rates. The neonatal mortality rate declined from 31 deaths to 24 deaths per 1,000 live births (a decline of 24 percent), whereas the early neonatal mortality rate declined from 27 deaths to 19 deaths per 1,000 live births (a decline of 29 percent). It is observed that the reduction in NNMR is mainly due to the decline in early neonatal mortality. It should be pointed out that perinatal mortality is probably the most sensitive indicator of improvements in pregnancy and delivery care, and most closely related to maternal mortality as well.

A further encouraging result is that the reduction in the perinatal mortality rate (stillbirths and early neonatal mortality per 1,000 births) for women who were exposed to at least one PAIMAN behavior change communication intervention is significantly greater than for women who were not exposed to such interventions. Indeed, we can safely conclude that, while some interventions probably had greater influences than others, some of which we cannot measure individually because of their limited geographical spread, overall, being exposed to *an* intervention of the

PAIMAN project certainly improved the chances of survival of newborns, and most likely their mothers as well, in Pakistan.

Conclusion

In conclusion, PAIMAN has been successful in impacting positively on overall maternal and neonatal health indicators in these mainly rural districts of PAIMAN in a short period of six years. The thrust of PAIMAN efforts were aimed at reducing the health risk to mothers and newborns by increasing knowledge of danger signs, risks and birth preparedness and, most importantly, improving antenatal and delivery practices. Success has been recorded in almost all areas, albeit with varying degrees of coverage and impact.

Two of the most notable changes in the six-year period are improvements in skilled birth assistance and declines in neonatal and perinatal mortality in the PAIMAN project districts. The majority of the increase in skilled birth attendance is due to institutional deliveries that occurred in private institutions, not surprisingly, given the growth in the private sector in the past decade. The upgrading of facilities carried out by PAIMAN in the public sector, particularly in terms of human resources, most likely played a catalytic role.

The other important finding, the decline in perinatal as well as early neonatal mortality in the PAIMAN districts during the project period, is an outstanding achievement given that Pakistan has continued to struggle with stagnant neonatal mortality rates. PAIMAN findings, when analyzed further, can offer real solutions to this national challenge. PAIMAN has succeeded in reducing perinatal mortality in a period of six years in the project districts through a combination of improved knowledge of pregnant women on maternal and newborn health issues, and increased ANC checkups, TT injections, skilled delivery attendance, and postpartum care utilization.

In general, women who were exposed to PAIMAN behavior change communication interventions were significantly more likely to obtain maternal health services during pregnancy, delivery and postpartum period, and to know about danger signs during these times, compared to women who did not have exposure to these interventions. PAIMAN behavior change communication interventions had a greater impact in rural areas compared to urban areas. This is not surprising since the room for improvement in maternal and neonatal healthcare practices is also greater in rural areas where opportunities for getting information and accessing services are scarcer. It is important to point out that the focus of the major PAIMAN behavior change communication interventions was in the rural areas, where women were more likely to be exposed to the women's support groups (WSGs) conducted by LHWs and mobilization of the local NGOs/CBOs for safe deliveries by training dais and generally informing women of lowering risks during pregnancy and delivery. Maternal health also improved in the urban areas, but the major impact was mainly due to mass media campaigns initiated by PAIMAN. Furthermore, urban women are more likely to have benefitted from the upgradation of public facilities and the expansion of choices of maternal care in the private sector.

The PAIMAN project activities that led to the improvements described above are available for scaling up for use at the national level. At the same time, it is important to point out that for changes in maternal health behavior to become more widespread and integrated into national programs and internalized in personal behavior requires a period longer than the duration of the PAIMAN project. There are still large proportions of women reporting complications during pregnancy, and the overall coverage of at least three ANC checkups, postpartum care within 24 hours and institutional deliveries are still far from satisfactory, despite the tremendous improvements achieved. The challenge now is to take the opportunity to scale up those interventions that had the greatest impact on maternal and neonatal indicators, and create the sustainable framework that will allow women and newborns across the country to reap the benefit of the PAIMAN project's successes.