Primary Health Care

Female health workers boost primary care
Mohammad Ali Barzgar, Mubashar Riaz Sheikh, & Mohamud Khalif Bile

Women residing in villages in three districts of Pakistan were recruited, trained to deliver primary care and mobilize their communities for health, assigned to limited catchment areas, provided with supervisory and managerial support, and remunerated. Their comprehensive activities substantially reduced infant, child and maternal mortality within a year and generated positive perceptions of family planning in the communities. The programme was cost-effective and appeared suitable as a model for reforming the organization and provision of health care services.

In 1993 the utilization rate of rural basic health services in Pakistan was only 23% (1), indicating a need for improved responsiveness in intervention strategies. Facility-based models were unable to link with families and communities at the grassroots level. Pilot interventions were therefore launched in the districts of Chakwal, Malir and Mastung in the provinces of Punjab, Sindh and Balochistan respectively.

Assistance was obtained from divisional, district and subdistrict authorities for the selection of project sites and implementation. From each selected district a Union Council was identified for project implementation, and all or most of the villages in the catchment areas were covered by programme activities providing services for about 50,000 people.

Health teams discussed major objectives and activities with community leaders. Several contacts were necessary to build up sufficient trust between the health teams and the communities and to ensure community support. A self-sustaining training programme was required which would eventually involve all the peripheral service delivery levels in the districts. A trickle-down approach was adopted for the training of district and tehsil (subdistrict) health teams, local health centre staff, and female health workers selected in the villages of the catchment areas. The local health centre staff who were selected as trainers attended a one-week training workshop organized at district level and were briefed on the principles of primary care, its major components, the female health workers’
training curriculum, and the methodology for their training. Trainees went on field visits so that direct links were created between the communities and the health teams.

**Selection and training of female health workers**

Each village was asked to nominate several candidates. The elders were informed that female health workers had to be permanent residents of the villages for which they were to be selected, that they should have a minimum of eight years of schooling, and that they should be aged 18–45 years and, preferably, married. A regular honorarium was to be paid during both training and service. The identification of candidates took place at village level in the presence of family members and community leaders. The candidates were informed about the programme, the nature of the training, and the tasks they would be required to perform. Each selection interview was conducted by the local health authority and a community member from the catchment area in the presence of a member of the candidate’s family. This strategy was essential because family decisions affect the attitudes and behaviour of individual family members.

Basic training, which lasted three months, covered community organization, questionnaire administration, interpersonal communication, awareness-building on maternal and child health care services, health education and promotion, oral rehydration therapy, vaccination skills, nutrition education with reference to breast-feeding, timely introduction of weaning foods, treatment of minor ailments, antenatal care, establishing links with traditional birth attendants, promotion of safe drinking-water and environmental sanitation, and referral of at-risk pregnancies and severely ill or malnourished cases to the nearest local health centre.

WHO case management modules, adapted to local requirements, were used to cover the care of children with diarrhoea and acute respiratory infections (2,3). Instruction was given on the vaccination of infants against six immunizable diseases and of pregnant women against tetanus, on handling vaccine carriers in the field, and on maintaining vaccination cards and the related reporting system. The trainees were taught how to communicate with married women on family size, contraceptive methods, the direct provision of oral contraceptives and condoms, and referral to health or population welfare facilities for injectable contraceptives, intrauterine devices or sterilization.

**Service delivery**

After the first three months of training, the female health workers were deployed in their respective villages. For the next year, three-week periods of service delivery alternated with one-week periods of training in accordance with a flexible curriculum intended to achieve a steady improvement in knowledge, skills and attitudes. The content of the training sessions was based on the curriculum, self-reported field problems, and trainers’ and field supervisors’ assessments.

Each female health worker was assigned to a population of 1000–1500 and asked to allocate one room of her house for the delivery of primary care services. Assisted by the health teams and local leaders, the trainees facilitated the formation of male health committees and women’s groups in their catchment areas. Before beginning
their services in the villages, they registered the members of each family, recording the name, age, sex and marital status of every individual. In each catchment area they initiated the organization and provision of primary care and family planning services. Home visits were made in order to establish contact with families, and communities were mobilized for health purposes through locally constituted bodies. Supervisory visits were made every two weeks by the medical officer and/or female health visitor from the local health centre, who also provided referral support.

**Baseline data collection**

A retrospective baseline survey of all families resident in the project catchment area was conducted by means of a simple questionnaire translated into Urdu. The head of each family was asked about births and deaths during the previous 12 months. If a death had occurred, details were recorded of the specific symptoms of preceding illness. Information was requested about the vaccination of children aged under two years. Pregnant women were registered and given antenatal care, including immunization against tetanus. Contraceptive use by eligible couples was recorded, and investigations were conducted into the sources of drinking-water and the availability of latrines in houses.

**Data collection during intervention**

The female health workers registered all births and deaths, noted possible causes of death, and recorded the specific symptoms of illness preceding death or the diagnoses made at health facilities. They also continuously recorded morbidity, antenatal care, delivery outcomes, family planning activities, and child care activities including vaccination, growth monitoring and nutrition education, and presented the data in monthly reports. The data were analysed using the EPI INFO 6.0 software package.

**Community organization for health**

In each village the male health committee and the women’s health group discussed health priorities and strategies, and assisted the female health workers in encouraging community acceptance and utilization of family planning and primary care services such as antenatal care, immunization, nutrition education, growth monitoring, environmental sanitation, and referral. In women’s group meetings the female health workers provided information about maternal and child care services and educated mothers about their role in promoting family health.

**Regular visits to households**

The female health workers made regular home visits, during which they provided health promotion, case management and counselling on family planning. The population covered by one worker ranged from 667 to 1275 individuals, corresponding to 105 to 208 households. During the first two months of implementation, some families, in particular those that were in-laws of female health workers, were hesitant about accepting home visits. This resistance was overcome after discussion with the families, who assigned a female relative or elderly village woman to accompany the health worker initially. The female health workers each made at least five home visits a day, and felt that the practice was useful in enabling them to establish direct interaction with mothers. Furthermore, it undoubtedly improved the accessibility of the primary care services.
Pilot areas as field training sites

The deployment of female health workers in the field provided an opportunity to expose senior health managers to the primary health care approach. The competence of the female health workers in delivering their tasks has consolidated the viability of the strategy. The model areas soon became active training sites where district health officers and others acquired their first field experience of and briefing on community-based primary care.

Outcomes of intervention

The female health workers successfully recorded births, deaths and population movements to and from the catchment areas. Before intervention, 88.2% of babies were delivered in the mothers’ homes; after a year of primary care the figure was 82.5%, which was not significantly different. None of the mothers used labour facilities provided at the local health centres. In Mastung, 16 traditional birth attendants were trained to perform safe deliveries and simple maternal and child care.

The specific symptoms preceding deaths of infants in the baseline study were of diarrhoea, neonatal tetanus, low birth weight/malnutrition, and pneumonia/acute respiratory infections, which occurred in 33%, 26%, 10% and 6% of cases respectively; during the year of intervention the values were 15%, 1%, 26% and 18% respectively. Thus, mortality from diarrhoea and neonatal tetanus declined markedly, whereas there was no evidence of reduction in deaths associated with low birth weight/malnutrition and pneumonia/acute respiratory infections. Diarrhoea, low birth weight/malnutrition and pneumonia/acute respiratory infections accounted for almost 60% of infant mortality during the project period. Eight of the 14 infant deaths from acute respiratory infections were associated with low birth weight or malnutrition, and ten of the deaths associated with acute respiratory infections occurred among cases referred to local health centres or hospitals.

For children aged 1–4 years the specific symptoms preceding death in the baseline study included those of acute diarrhoea (52%), acute respiratory infections (10%) and measles (6%); during the year of primary care implementation they included acute diarrhoea (14%), acute respiratory infections (21%), malnutrition (17%) and high fever (17%). The reduction in mortality associated with acute diarrhoea was highly significant. There were no deaths from measles in the intervention period.

The major causes of morbidity among 25,365 cases in children aged under 5 years who were seen by female health workers during the year of primary care implementation were acute respiratory infections, high fever, diarrhoea, wounds/injuries and
worm infestation, accounting for 24%, 19%, 14%, 10% and 8% of cases respectively. Scabies and eye infections were each responsible for approximately 5% of cases of childhood morbidity.

Overall baseline immunization coverage of infants was 17%, 26% and 42% in Chakwal, Mastung and Malir respectively, while the corresponding figures after a year of primary care implementation were 84%, 94%, and 99.6%; coverage among children aged 12–23 months increased from 24%, 38% and 52% to 88%, 90% and 98% (Fig. 1). For pregnant women in their last trimester, baseline coverage with two injections of tetanus toxoid was 7%, 9% and 11% in the respective districts, whereas a year later it was 85%, 82% and 98%.

The proportion of couples using contraceptives increased from 11% to 24% during one year of primary care implementation, a highly significant improvement. In Chakwal there was a significant preference for oral contraceptives over intrauterine devices, and the latter were preferred to injectables and condoms. In Mastung, the order of preference was injectables, oral contraceptives, intrauterine devices, and condoms. In Malir, tubal ligation was more commonly used than other methods; oral contraceptives were preferred to injectables, and condoms were preferred to intrauterine devices; there was no significant difference between the frequencies with which oral contraceptives and condoms were used (Fig. 2).

The overall baseline availability to families of flush and pit latrines was 14%; during the next year there was a 5% increase in the number of sanitary latrines. Hand pumps and piped water were in use by 32% of people in Chakwal and Mastung, while Malir was entirely served by piped water. Generally, however, piped water was available only at some distance from people’s houses, and women collected it in portable containers. During the project period, four villages in Mastung were supplied with safe drinking-water through community self-financing and WHO cofinancing and technical support.

**Costs**

The capital cost of the programme for the recruitment, training and deployment of each female health worker was US$ 386, of which training accounted for 89% and the procurement of kit for the workers and contingencies accounted for the remainder. The capital cost attributed to an individual community member living in a catchment area of 1000 people was estimated at $0.39, significantly below the per capita allocation of $0.94 for the public sector outlay for 1994–95.

Fig. 3 shows the various categories of recurrent expenditure during the year of
primary care implementation. The inputs covered salaries, essential drugs, health information tools, and supervision costs. The average project recurrent per capita cost per year was estimated at $1.13, significantly below the per capita allocation of $1.87 for the public sector outlay for the same period.

Grass-roots health workers are often the main vehicle for the promotion of primary care, and the services they provide are more appropriate to the health needs of the population than are those based on static facilities. The pilot initiative described above has demonstrated the viability of the primary care strategy in the sociocultural context of Pakistan. The communities responded positively to the recruitment of locally resident female health workers, whose training, deployment and service delivery proceeded successfully. Good relationships were established between the female health workers and health committees, women’s groups and mothers. The community role in primary care should be integrated into the institutional framework for grass-roots
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Fig. 3
Programme per capita capital and annual recurrent costs relative to per capita development and recurrent public sector outlay for same period

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<th>Programme per capita capital input</th>
<th>Public sector per capita capital outlay</th>
<th>Project per capita recurrent cost</th>
<th>Public sector per capita recurrent outlay</th>
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<tr>
<td>Cost inputs (US $)</td>
<td>0.39</td>
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Programme inputs relative to public sector outlays

development in order to consolidate these gains and provide leadership and long-term sustainability.

The home visits carried out by the female health workers enabled them to establish close links with mothers, thus enhancing prospects for maternal and child survival in a traditional rural society that offers women only limited mobility. Large reductions in mortality from neonatal tetanus and acute diarrhoea were particularly significant. A high coverage of tetanus toxoid vaccination was achieved among pregnant women. The social intimacy that was established between the female health workers and the mothers probably made this aspect of antenatal care more acceptable than would have been the case with male vaccinators. Moreover, past experience of high mortality caused by neonatal tetanus and diarrhoea may have produced health-seeking responses. Such responses have previously been reported as influencing the use of oral rehydration therapy in Pakistan (4). The improvement in immunization coverage among infants and young children indicated the value of training female health workers to vaccinate and consequently of not having to rely on outreach services alone.

Although post-training appraisals indicated that the female health workers were able to recognize different degrees of severity of acute respiratory infections in a satisfactory manner, mortality from this cause was not reduced during the project period. Low birth weight and malnutrition were evidently major risk factors among fatal cases of acute respiratory infections. However, delayed referral by female health workers probably also played a part, resulting from parents’ failure to recognize the clinical signs of pneumonia. The scarcity of essential antimicrobial treatment for the management of pneumonia in health facilities was yet another contributory factor.

The training of female health workers should be coupled with regular education of household members on nutrition and the signs and symptoms of acute respiratory infections through structured home health care and referral support. Significant reduction in mortality associated with acute respiratory infections has been achieved elsewhere through the efforts of village health workers (5).

The modest reduction in malnutrition was not accompanied by a comparable reduc-
tion in specific mortality, showing that primary care activities should be complemented with strategies aimed at meeting the basic developmental needs of communities (6). Three causes accounted for almost 60% of infant mortality, further reductions in which can be expected if these causes and the associated risk factors are given priority through primary care and other interventions.

The marked increase in contraceptive utilization achieved during such a short period seems to indicate that, even in the traditional rural communities studied, there is a high demand for family planning.

The water and sanitation sector is run by the Department of Public Health Engineering, which, unfortunately, has no established organizational links with the Department of Health. The launching of coordinated or integrated interventions by these departments is highly desirable as a means of reducing childhood morbidity and mortality. Modest improvements in water supply and sanitation were brought about through promotional activities and hygiene education. In rural Bangladesh, a significant reduction in morbidity associated with diarrhoea was achieved solely through education in water supply, sanitation and hygiene (7).

The capital and yearly recurrent costs of $0.39 and $1.13 per person respectively were affordable, being lower than the allocations for the public sector outlay in the same period. Primary care has no equal in the degree to which it is cost-effective, matches the health needs of the community, and produces sustainable outcomes that can be replicated equitably on a large scale (8).

Clearly, comprehensive primary care activities can progressively reduce infant, child and maternal mortality and generate positive perceptions of family planning in the community, provided that locally resident female health workers are recruited, trained, assigned to limited catchment areas, remunerated, and provided with the essential supervisory and managerial support (9). The creation of a district health system based on primary care could be the most appropriate way to reform the organization and provision of health care services in Pakistan. ●

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9. **de Winter ER.** Material resources are not enough: good management is the key to effectiveness. *World health forum*, 1996, **17**: 49–51.

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**Community participation: expectations**

A community's expectations and previous experience with development projects are important factors to consider in the implementation of primary health care. In some countries, villagers offered the option of primary health care have turned it down. In most cases, once they see the improvements in the villages that have accepted it, they change their minds. Villages are not homogeneous and they should not be regarded as such.