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Primary Health Care and the Rural Poor in the Islamic Republic of Iran

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Executive Summary

Rural households in Iran have traditionally been the most disadvantaged segment of Iranian society, not only in terms of income and political power but also in accessing basic public services, including health. A major achievement of public policy in Iran over the past 20 years has been the improvement of rural health and the near elimination of health disparities between higher-income urban populations and the rural poor. For example, in 1974 the infant mortality rate was 120 and 62 per thousand live births for rural and urban areas, respectively. By 2000, however, both the level and the differential of infant mortality had declined considerably, to 30 for rural areas and 28 for urban ones.

The Primary Health Care System in Iran

The Iranian primary health care (PHC) system was established to improve access to health care for the disadvantaged and reduce the gap between health outcomes in urban and rural areas. To improve access in remote areas in the face of shortages of human and capital resources, the system has relied on three main components: (1) establishing *health houses* in remote and sparsely populated villages; (2) staffing the health houses with health workers, known as *behvarzan,* recruited from local communities; and (3) developing a simple but well-integrated health information system.

The health house, usually the only health facility accessible to the rural population, is the most basic unit of the Iranian PHC network. Located in individual villages, it is designed to cover a target population of about 1,500; each health house also serves several satellite villages selected with careful attention to their cultural and social compatibility. The distance between the village in which the health house is located and the satellite villages served by it is typically, by design, no more than a one-hour walk.

Tasks performed by the health house include record keeping and data collection; public health education and promotion of community participation; antenatal, perinatal, and postnatal care; care of children under five and of school-age children; family planning services; immunization; and disease control services. The second and third levels in the hierarchy of the rural health network provide backup for the rural health houses, offer diagnostic and treatment services, and refer those needing more specialized care to district health centers or hospitals. There are also urban counterparts of these organizations.

One male and one or more female health workers (*behvarzan*) run each rural health house. The health workers are chosen from among local people familiar with the households in the village. Such a close relationship between the *behvarz* and his or her community facilitates the accurate collection of health information, among other things. *Behvarzan* have had a pivotal role in the success of Iran's PHC network.

Although the primary responsibilities of the health workers are divided along gender lines, with the female *behvarz* generally responsible for tasks performed within a health house

and the male *behvarz* for tasks outside the health house, both genders are trained for and expected to cover all duties, as necessary. Training occurs at the district level; students receive free training and financial support throughout the two-year training period. In return, they are formally obliged to remain and serve at the village health house for a minimum of four years after completing their study.

The health information system (HIS) enables the *behvarzan* to collect detailed information on rural communities. The main components of the HIS are the household file (containing demographic and health information), various logbooks in which daily activities are recorded, and monthly report forms.

The Impact of the PHC System

If we judge the effectiveness of resources invested in the PHC system by reference to the improvements in the health status of the Iranian population in general, and the rural population in particular, the results are impressive. The PHC system is funded entirely by the national government, and the pattern of public health spending is oriented toward rural public health services—a fact that may partly explain the good performance with respect to rural infant mortality rates. The specific measures taken by the PHC system are almost certainly responsible for reducing infant and child mortality, eliminating major infectious diseases of childhood, and improving the health of mothers. These measures include the promotion of healthy attitudes and behaviors; the universal immunization of children; and encouraging mothers to breastfeed, use iodated salt, and provide appropriate treatment for children suffering from diarrhea and acute respiratory infections (ARI). A Multiple Indicators Cluster Survey (MICS) conducted in 1997 suggested a narrowing gap between urban and rural areas in terms of basic health interventions, including immunization coverage and infant, child, and maternal health care intervention. Despite these advances, however, some disparities remain, for instance in areas such as health insurance coverage.

The presence of the community-friendly *behvarz*an in the village, with their constant interaction with the community, has helped to ensure that health messages have not gone unheeded. Moreover, the ability of the PHC system to support the health messages by providing easy access to the means needed (vaccines, oral rehydration therapy, essential drugs, and so on) where and when they were required has also helped to bridge the gap often found between knowledge, attitudes, and practice.

The family planning program in existence before the 1979 Revolution was revived in 1989. The program has been extremely successful. By 1996, more than 74 percent of eligible couples were using a contraceptive, and the total fertility rate had dropped from 6.5 to 2.6. The traditional gap between urban and rural areas has also been substantially narrowed. Iran is making good progress toward the Millennium Development Goals, especially Goal 4, which aims to reduce child mortality and Goal 5, which aims to improve maternal health.

Factors for Success: Political Commitment and Institutional Innovation

Two factors have been critical to the success of the Iranian experience. The first is the political commitment for change after the Revolution, expressed in a Constitutional mandate to provide universal access to basic health services. This political commitment has been combined with institutional innovation and the broader involvement of communities and local governments in rural health system decisions.

These factors have helped Iran to develop a primary health care system distinguished by culturally sensitive and cost-effective service delivery features—rural health houses, the *behvarzan*, and the simple health information monitoring system. Each of these institutional elements has been adapted and implemented in a way that has improved the chances of success. Without the locally recruited *behvarz, s*taff turnover, absenteeism, and lack of knowledge about local circumstances could have rendered the physical facilities of the health houses much less effective. Simple health status tracking methods have made it possible to keep up with the evolving health needs of individuals as well as to detect village-level trends and disparities.

Problems to Overcome

There are some weaknesses in Iran's PHC system. Most of the improvements seen so far are the result of outstanding efforts of the workers and health houses; other facilities are lagging behind. Also, institutions at the second and third tiers of the system do not support the health houses sufficiently. Urban health centers must tackle even more serious constraints, and the problem of limited building space in cities can be overcome only with increased government support. Finally, there is no transparent policy for collaborating with the private sector, training managers, and providing a sustainable mechanism for improving the quality of services.

RURAL households have traditionally been the most disadvantaged section of Iranian society, not only in terms of income and political power but also in accessing basic public services, including health. In light of this, a major achievement of public policy in Iran over the past twenty years has been the improvement of rural health status and the near elimination of health disparities between higher income urban populations and the rural poor. Trends in the infant mortality rate (IMR) provide an illustration. In 1974, the IMR was 120 per thousand live births for rural areas and 62 for urban areas. By 2000, the IMR had declined precipitously and the urban-rural differential was nearly eliminated with the IMR at 28 for urban areas and 30 for rural ones. Key to this achievement has been the Primary Health Care (PHC) system.

This case study examines how political commitment combined with innovative approaches to health care provision were successful in bringing about improvements in health status for poor and geographically dispersed rural citizens. These remarkable improvements were achieved with relatively modest financial resources. Public health expenditures in Iran in 2000 amounted to 2.5 percent of GDP, compared to an average of 2.7 percent for the lower middle income group of countries (WDI 2003).[1] The Iranian experience demonstrates how efficient allocation and utilization of resources, coupled with the use of appropriate technology and manpower, have enabled a developing country to reduce the urban-rural gap in health indicators despite continuing disparities in other areas of development.

The case study is organized as follows. Section A describes the PHC program in Iran. Section B assesses the impact of the program on various health indicators and provides a discussion of the effectiveness with which resources have been deployed. Section C reviews the critical factors driving the success of the Iranian PHC. Section D concludes with lessons learned.

The Primary Health Care System in Iran

The Iranian primary health care (PHC) system was established with the objective of improving access to health care for the disadvantaged and reducing the wide gap between urban and rural areas in terms of access to basic health services. To improve access in remote areas in the face of shortages of human and capital resources, the system has relied on three main components:

- The establishment of *rural health houses* in remote and sparsely populated villages;
- The staffing of these rural health houses with health workers, known as *behvarz*, recruited from local communities;
- The development of a simple but well integrated Health Information System.

[1] Total health expenditures in Iran, including both public and private spending, are also comparable to those in lower middle income countries—respectively, 5.5 percent and 5.6 percent of GDP (WDI 2003 CD-ROM).

Rural Health Houses and Centers

The soul of Iran's PHC system is its most outlying facility—the rural Health House (*Khane Behdash*). Located in individual villages, the Health House is the most basic unit of the Iranian PHC network and is usually the only health facility that is accessible to the rural population. Each Health House is designed to cover a target population of about 1,500. Since most Iranian villages have fewer than 1,500 residents, each Health House also serves several 'satellite' villages. Such villages are carefully selected with due attention to their cultural and social compatibility. The distance between the village where the health house is built and the satellite villages served by it is also carefully defined to be no more than one-hour's walk (rather than so many kilometers).

Some of the important tasks performed by the Health House include: (a) annual census of the population covered; (b) collection, recording, and storage of health information and preparation of regular reports; (c) public health education and promotion of community participation; (d) antenatal, perinatal and postnatal care; (e) care of children under 5; (f) care of school age children; (g) family planning services; (h) immunization; and (i) disease control services.

The second level of the rural PHC network is the Rural Health Center (RHC) situated in a village and covering a population of about 7500 (i.e., the population served by 5 rural Health Houses). The RHC is run by a medically trained doctor (usually a General Practitioner) aided by a number of nurses, assistant nurses and laboratory technicians. The main functions of the RHC are to provide backup services to rural Health Houses, pay regular visits to all Health Houses, offer diagnostic and treatment services to cases referred by the *behvarz* and refer those needing more specialist care to district health center/district hospitals. A number of RHCs have developed special maternity facilities where women from surrounding villages can go for delivery and many of them have mobile teams that visit villages for special operations (e.g., vaccination).

The third level in the hierarchy of the rural health network is the District Health Center (DHC) which is mainly concerned with the supervision and coordination of the activities of rural health centers, liaison with more specialized district hospitals, follow up of cases referred for tertiary care from lower levels, and organization of health education activities in the district. Most DHCs have a training center attached to them which is responsible for the initial selection, academic education, practical training, initial deployment and monitoring of field performance, and continuing supervision and retraining of the *behvarz*.

The urban counterparts of rural Health Houses and Health Centers are Urban Health Posts (UHP, mainly staffed by volunteer women from the same community) and Urban Health Houses (UHH, staffed by a doctor and a number of nurses, assistant nurses, and health technicians) which offer public health services similar to those offered by the rural Health Houses and RHCs in urban areas. They are supervised by the local District Health Center. District Health Centers, District Hospitals and other public medical or paramedical establishments of all districts within each province are in turn affiliated with and supervised by the provincial University of Medical Sciences & Health Services (UMS).

The Behvarz

Each rural Health House is run by one male and one or more female health workers, the *behvarz* (plural: *behvarzan*). These workers come from the same village where they are to be stationed in the future. Choosing *behvarzan* from among local people has been a basic policy decision, closely observed throughout the expansion of the PHC network. The *behvarz* is knowledgeable about the community, is familiar with all households, and knows every mother, child, and family who seeks service at the Health House. Such a close relationship between the *behvarz* and his or her community facilitates the accurate collection of health information, among other things. *Behvarzan* have had a pivotal role in the success of Iran's PHC network.

The female *behvarz* is generally responsible for the tasks that are performed within a Health House (i.e., receiving clients, providing routine health care to those under coverage, immunization, recording data, providing simple curative care and medications, etc.). The male *behvarz* on the other hand, is predominantly concerned with activities outside the Health House (i.e., follow-up on cases with communicable disease, case finding, immunization, environmental health, and routine care in satellite villages). But both genders are trained and expected to cover all these duties where necessary.

The *behvarz* is nearly always chosen from the main village where the Health House will be stationed. Where this is not feasible, a candidate is recruited from one of the satellite villages. The selection is typically from among 16 to 24 year old female candidates, and 20 to 28 year old males, with direct participation from village authorities, such as the village council, local clergy, and other influential figures of the community.

The process of training the *behvarz* is an example of using appropriate technology. Given the national literacy rate, candidates are required to have eight years of formal schooling (nowadays frequently a high school diploma). Candidates must successfully complete a written exam and interview before enrollment in the training course. Their studies, which span two full years, are arranged in a manner totally contrasting the traditional pedagogy. Memorization of volumes of written material has been replaced with practical training through group discussion, role-playing exercises, and working at the Health House alongside a carefully selected qualified *behvarz*.

The *Behvarz* Training Center is located at the district level, which ensures that trainees will not have to travel to other districts or provinces in order to attend courses. Instructors who teach the class in the morning can personally supervise and facilitate field training programs in the afternoon. This also allows trainees to put their knowledge into practice at the field.

Students receive free training and financial support throughout the two-year period of their training. In return, they are formally obliged to remain and serve at the village Health House for a minimum of four years after completing their study. Each student's progress is assessed by instructors at monthly intervals, and students who successfully complete all the courses, pass the exam at the end of each block, and pass the final examination, receive the "Certificate for Completion of *Behvarz* Training".

The Health Information System

One of the key tools developed to ensure that *behvarz* can do their job effectively is a simple but well integrated Health Information System (HIS) that enables them to collect detailed information on rural communities and their catchment population. The main components of the HIS are: the household file (containing all demographic and health information) and various logbooks (in which daily activities are recorded); the Vital Horoscope, the Statistical Wheel and Monthly Report Forms.

The Vital Horoscope is a much studied innovation of Iran's HIS. It was designed to display births, deaths and family planning activities within the rural community served by each *behvarz*. Physically, it is a sheet of paper 50cm x 70cm, always kept pinned on the wall of the Health House. The chart owes its name to the conspicuous concentrically colored circles at its center, which resemble the horoscope of ancient astrology. From the center outward, the circles represent live births, mortality among infants, children aged 1 to 5 and those over 5 years of age. The chart also includes tables summarizing demographic information, such as the population census, for each village. Comparing figures recorded in the circle with those on the adjacent tables provides for rapid quality control of data collection at the Health House level. The Vital Horoscope has proven to be a very useful and practical tool for the *behvarz*.

Impact of the PHC System

Health Spending

Iran spends 2.5 percent of GDP on health, compared to 2.9 percent in the Middle East and North Africa region and 2.7 percent among lower middle income countries of the world.[2] A closer look shows that the pattern of public spending is oriented towards rural public health services—a fact that may partly explain the good performance with respect to rural infant mortality rates. Table 1 shows that the share of rural areas in the health budget in 2001-2002 was around 31 percent on average. Since the population share of the rural areas is about 35 percent, this suggests that roughly equal amounts were spent on rural and urban citizens on a per capita basis. However, the rural budget was much more oriented towards public health services than the urban health budget. As shown in Table 1, the share of public health services was around 61 percent of the total rural health budget.[3]

[2] The expenditure share of GDP data refer to public spending for the year 2000, the latest year for which these are available (World Development Indicators, 2003, CD-ROM).

[3] It is also possible, of course, that rural areas may have benefited from the spillover from investment in the health of the urban population, in terms of hospitals and specialized manpower available in both private and public sectors of the urban health system. However, the contribution of such spillovers is hard to assess. On the other hand, the urban areas remain the main beneficiaries of Iran's relatively well developed private health sector and its rapidly expanding social security system which mostly addresses urban industrial work force and/or the urban self-employed.

Table 1: Distribution of Health Budget, 2001-2002[1]

Indicator	
Total health budget (billion Rials)[2]	4,409
Total rural share (percent)	30.8
Total urban share (percent)	58.1
Running expenses (non-allocable) share (percent)	11.1
Rural public health services (percent of rural budget)	60.9
Urban public health services (percent of urban budget)	33.4
Total Public Health Services Share (percent of total budget)	38.1

1/ Calculations exclude allocations to medical universities.

2/ Official exchange rate in 2001 was 1753.6 Rials to US$ (WDI 2003, CD-ROM).

Source: Iran Ministry of Health and Medical Education (MOHME).

The PHC system is entirely funded by the national government and the resources allocated to it are included within the general budget of the Ministry of Health and Medical Education (MOHME). The exact amount of funds spent on PHC services cannot be easily separated from funds allocated to other preventive, administrative and curative services carried out by the MOHME. In fact, below the health center level, the services provided by the PHC system are so closely enmeshed with other services that it is almost impossible to estimate their relative share of the budget. The relative cost of PHC services in rural areas is also difficult to determine because most of the more expensive specialist diagnostic in-patient care and follow-up services lie outside the rural area. Still, there is little doubt that the costs of building, maintaining and running a rural health house or a rural health center are much lower that that of similar health facilities in urban areas.[4]

Other aspects of the pattern of spending can be seen from Table 2 which shows the proportion of the rural health budget assigned to each province, the poverty level in the province and changes in the IMR and U5MR by province. Two correlations are worth noting. First, there appears to be a link between the share of the rural health budget assigned to a province and changes in its health status. The simple correlation coefficients for the (rural) IMR and the U5MR with respect to budget shares are 0.30 and 0.32.[5] Second, poorer provinces, such as Zanjan and Sistan, saw the biggest improvements in mortality rates. Simple correlation coefficients between IMR and U5MR, on the one hand, and poverty rates, on the other, are 0.34 and 0.44 respectively.

[4] A rough approximation of the cost of a behvarz is $2000 per annum (in 1999). Also, three behvarzes usually staff one rural health house covering 1500 clients.

[5] A more rigorous argument could be made if data were available on health expenditures per capita over time. In the absence of such information, we resort to indicative simple correlations between budget shares in a given year with changes in mortality rates.

Table 2: Rural Health Allocations, Poverty and Health Outcomes

Province	Share in Rural Budget (percent)	Poverty Headcount Index (percent)	Change in Rural Infant Mortality Rate: 1994-2000	Change in Rural Under 5 Mortality Rate: 1994-2000
Ardabil	3.1	17	10.8	12.9
E. Azarbayjan	5.6	29	7.4	11.0
W. Azarbayjan	5.4	32	9.4	12.1
Bushehr	1.8	42	8.8	12.2
Chaharmahal/B	2.6	46	5.1	11.8
Esfahan	4.7	30	-1.9	0.5
Fars	6.5	20	6.4	11.2
Gilan	5.9	24	5.5	9.7
Golestan	2.1	52	2.1	3.4
Hamadan	2.5	41	7.5	11.2
Hormozgan	3.1	30	11.4	13.0
Ilam	1.7	33	2.1	5.1
Kerman	4.0	43	6.2	7.8
Kermanshah	5.0	31	2.6	4.9
Khorasan	7.1	44	10.9	14.5
Khuzistan	6.9	28	4.1	6.3
Kohgiluyeh/Boyer.	1.9	28	1.4	6.2
Kurdistan	3.2	49	5.0	7.7
Lorestan	3.4	34	-7.8	7.0
Markazi	3.1	21	1.9	5.8
Mazandaran	5.9	17	6.7	9.8
Qazvin	1.9	21	2.2	4.7
Qum	0.5	6	-5.4	-3.7
Semnan	1.1	25	-5.6	-2.5
Sistan/Baluchistan	2.9	58	13.1	19.3
Tehran	3.5	11	8.3	9.5
Yazd	1.6	24	7.1	10.1
Zanjan	2.9	55	13.2	15.5

Source: Poverty rates from World Bank (2003). Poverty in Iran: Trends and Structure, 1986-1998; Budget shares and mortality rates are from MOHME data and documents.

Improvements in Health Status

If we judge the effectiveness of resources invested in the PHC system by reference to the improvements in health status of the Iranian population in general, and the rural population in particular, the results are impressive. As shown in Table 3, infant mortality, which was above 100 per 1000 live births in the mid-1970s, had dropped to under 30 by the mid-1990s. The IMR of rural areas was about twice that of urban areas in 1974 and 1984. The most recent survey (2000) indicates an urban-rural difference of only 3 points. Similarly, the urban-rural disparity in the under-5 mortality rate has more or less disappeared. The maternal mortality ratio has also dropped from 120 to 24 per 100,000 live births in urban areas and from 370 to 55 per 100,000 live births in rural areas between 1974 and 1996. More recent data for the rural population indicate an even lower MMR of 35.

Table 3: Changes in Health Outcomes, 1974-2000

Year	Neonatal Mortality Rate (per 1000 live births)		Infant Mortality Rate (per 1000 live births)		Under-5 Mortality Rate (per 1000 live births)		Maternal Mortality Ratio (per 100,00 live births)	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
1974[1]	16	39	62	120	17	35	120	370
1985[2]	15	25	33	71	10	22	77	233
1988[2]	21	31	31	58	40	72	41	138
1991[2]	14	23.5	24	43	35	52	26	53
1996[3]	NA	NA	NA	NA	NA	NA	24.3	54.5
2000[4]	17	20.6	27.7 (25.2)	30.2 (34.7)	36.8 (31.7)	34.6 (42.5)	NA	35.0[5]

1/ Tehran School of Public Health Survey (1974).

2/ Ministry of Health Surveys (1984, 1988, 1991 quoted in Malekfzali, 1991).

3/ MOHME/UNICEF (1996, RAMOS Survey).

4/ MOHME/SCI/UNICEF DHS Iran (2000, figures in brackets are values obtained by indirect calculation).

5/ MMR for rural women in 2000 is obtained from mortality data collected by the PHC network.

Source: Author calculations.

Although direct causality cannot be proved, it is quite likely that these changes are due to deliberate public health interventions aimed at eradicating the traditional sources of morbidity and mortality. A Multiple Indicators Cluster Survey (MICS) conducted in 1997 suggested the following:

Immunization coverage:

- The overwhelming majority of both urban (96.7 percent) and rural children (97.1 percent) had received their third shot of DPT vaccine;
- The overwhelming majority of children under one year in both urban (96.8 percent) and rural areas (97.1 percent) had received their third shot against polio;
- Only 4.6 percent of rural and 3.5 percent of urban children under one year had not been vaccinated against measles;
- Less than 2 percent of either urban (1.5 percent) or rural (1.2 percent) babies under one year had not received BCG vaccine; and
- About 10 percent of both rural (10.8 percent) and urban children (9.4 percent) under one year had not received their third shot of hepatitis B vaccine.

Infant and child health care interventions:

- There was little difference between the proportion of urban (10.1 percent) and rural children (12.8 percent) children under five who had suffered from diarrhea;
- The proportion of children under five with diarrhea who had received antibiotic drugs was almost the same in urban (54.5 percent) and rural (51.5 percent) areas; and

- The proportion of children under five with diarrhea who had received ORT was very similar in urban (45.5 percent) and rural areas (51.8 percent).

Maternal health care interventions:

- The proportion of mothers who had received less than two antenatal visits during the past five years was slightly higher in rural areas (27.6 percent) than the urban (21.1 percent);
- But the proportion of mothers not vaccinated against tetanus was higher in urban areas (25.1 percent) than the rural (21.4 percent);
- However, deliveries by an a untrained person were much more common in rural areas (30.4 percent) than the urban (4.7 percent); and
- Prevalence of blindness, deafness, physical handicap and mental retardation among children aged 6-17 was less than 1 percent in both rural and urban areas.

Other interventions

A DHS-type survey carried out in October 2000 provides further evidence of the narrowing gap between urban and rural areas in terms of basic health interventions:

- 98.5 percent of rural and 95.2 percent of urban households use iodated salt;
- 82.9 percent of rural women as compared with 94.8 percent of the urban had received at least one antenatal care (ANC) visit;
- 87.9 percent of rural women as compared with 92.9 percent of urban women had received two ANC visits;
- 75.2 percent of rural women (as compared with 82.4 percent of urban) had received at least six ANC visits;
- Coverage of tetanus vaccination by rural (77.8 percent) and urban women (80.7 percent) was very similar;
- Over a quarter (25.3 percent) of rural women (as compared with only 5.2 percent of the urban) had delivered their last child at home;
- Incidence of deliveries through caesarian section in urban areas (41.9 percent) is almost twice that of rural areas (22.5 percent);
- Although 21 percent of deliveries in rural areas (as compared with only 4.5 percent of the urban) had been attended by a traditional birth attendant, the proportion of rural (56.5 percent) and urban women (63.9 percent) receiving at least one postnatal care (PNC) visit is very similar;
- A slightly larger proportion of rural women (31.6 percent) than the urban (30.7 percent) had received at least two PNC visits.

Despite achievements in narrowing the urban-rural gap in terms of access to basic health services, some disparities still remain. For instance, the same MICS study listed above also showed that in 1997:

- About 76 percent of rural children under 5 as compared with 49 percent of the urban had no health insurance coverage. The corresponding rates for children aged 6-17 were 68.4 percent and 40.2 percent;
- The proportion of married woman aged 15-49 in rural areas (67.1 percent) who are not covered by medical insurance is twice that of urban women (38.0 percent).

Interventions and Outcomes: Role of PHC System

It is unlikely that all the above-described interventions would have succeeded in reducing infant and child mortality, eliminating major infectious diseases of childhood, and improving the health of mothers without the specific measures taken by the PHC system, that is promotion of healthy attitudes and behaviors, universal immunization of children, encouraging mothers to breastfeed, use iodated salt, and provide appropriate treatment for children suffering from diarrhea and acute respiratory infections (ARI).

The presence of the community friendly *behvarz* in the village and her constant interaction with the community as well as her prompt and proactive interventions have probably ensured that health messages have not gone unheeded. Moreover, the ability of the PHC system to support the health messages by providing easy access to the means needed (e.g., vaccines, ORT, essential drugs, etc.) where and when they were required would also have helped in bridging the gap often found between knowledge, attitudes, and practice. According to the DHS (2000), of rural women who had been pregnant during 1998-2000, 77.5 percent had visited a rural health house. The corresponding figure for urban women was only 3.4 percent. Sixty four percent of rural women compared to 71 percent of the urban had delivered their last child in a government hospital/maternity center. However, only 5.6 percent of rural women and 1.4 percent of the urban had delivered their baby in a maternity facility attached to health house. In contrast, 21.2 percent of urban women as compared with 3.8 percent of the rural had used a private hospital/maternity center for their last delivery.

There is other evidence also to suggest that the health education messages delivered in the rural health houses by the *behvarz* are being absorbed. For example, according to the DHS (2000), when faced with child illness, almost the same proportion of urban (93.1 percent) and rural (92.0 percent) mothers had treated their sick child correctly. The same applies to cases of child diarrhea. There was virtually no difference between urban and rural mothers with respect to the correct treatment of the child suffering from diarrhea, the rate being astonishingly high (91 percent). And finally, with respect to cases of children with acute respiratory infection, equally high proportions of both rural (91.8 percent) and urban mothers (93.4 percent) were reported to have correctly dealt with the illness.

Family Planning and the PHC System

Another example of the role played by the PHC system in Iran is provided by the family planning program. Iran had run a widely advertised family planning program for over 10 years before the revolution. By 1978 about 20 percent of rural couples were using contraceptives. The program was suspended after the revolution and the new government adopted a pronatalist policy which was further reinforced by economic incentives for having large families built into the nationwide rationing system introduced in 1981. As a result, the fertility rate rose substantially and the population grew at the unprecedented rate of 3.9 percent between 1976-1986. After the war, the authorities realized that such a rate of growth was inconsistent with the economic reconstruction and development plans of the country and the family planning program was revived in 1989. The program has been extremely successful. By 1996, over 74 percent of eligible couples were using a contraceptive and the total fertility rate had dropped from 6.5 to 2.6. More interestingly, the traditional gap between urban and rural areas had been substantially narrowed. In fact the prevalence of modern contraceptives advocated by the program was higher in rural areas and the remaining urban-rural difference in CPR was mainly due to the wider use of traditional methods (particularly withdrawal) by the better educated urban couples.

Results of the DHS-type survey (2000) have confirmed earlier evidence regarding the success of Iran's family planning program. Almost two thirds of all married couples aged 15-49 report using a contraceptive. The slightly lower contraceptive use rate of rural women (67.2 percent) as compared with the urban (77.4 percent) is mainly due to the fact that the latter are more likely than the former (27.8 vs. 13.9 percent) to use withdrawal, a method not recommended by the program. In fact, a higher proportion of rural women using any contraceptives (85.1 percent) than urban ones (71.3 percent) use the more effective modern methods provided and promoted by the program. Over two-thirds of all couples using contraceptives report public facilities as their source of supply. The rate is much higher among rural couples.

Health Trends and the MDGs

Iran is making good progress towards the Millennium Development Goals (MDGs), especially towards goals number 4 and 5. Goal 4 aims to reduce child mortality and Goal 5 to improve maternal health. Table 4 shows specific targets, indicators and outcomes. It underscores the achievements in rural health outcomes with respect to all indicators.

Table 4: Health Trends and the MDGs

Goal / Target	Indicator	Outcomes
Goal 4. Reduce child mortality Target 5: Reduce by two thirds, between 1990 and 2015, the under-five mortality rate	13. Under-five mortality rate	Between 1988 and 2000, rate reduced: -In urban areas, from 40 to 36.8 (31.7?) - In rural areas, from 72 to 34.6 (42.5?)
	14. Infant mortality rate	Between 1988 and 2000, rate reduced - In urban areas, from 31 to 27.7 (25.2) - In rural areas, from 58 to 30.2 (34.7)
	15. Proportion of 1-year-old children immunized against measles	Vaccination rates in 1997: -measles: over 95 percent of rural and 96 percent of urban children in age group; - polio: 97 percent of urban and rural children in age group had received their third polio shot. - BCG: almost 99 percent of urban and rural children in age group
Goal 5. Improve maternal health Target 6: Reduce by three quarters, between 1990 and 2015, the maternal mortality ratio.	16. Maternal mortality ratio (MMR)	- In urban areas, MMR per 100,000 live births was reduced from 26 in 1991 to 24.3 in 1996 (2000 not available). - In rural areas, MMR per 100,000 live births was reduced from 53 in 1991 to 35 in 2000.
	17. Proportion of births attended by skilled health personnel	- In 2000, 71 percent of urban women and 64 percent of rural women delivered their last child in a government hospital/maternity center. - About 82 percent of urban women and 75 percent of rural women received at least six antenatal care visits.

Critical Success Factors

Political Economy for Change

Iranian authorities responsible for public health had long been concerned over the gap between urban and rural areas in terms of access to basic health facilities and services. The rural population was scattered in a large number of small and hard to reach settlements across the vast area of Iran. Further, the number of medical doctors and other health workers produced by Iranian universities was too small to meet the needs of a rapidly growing population. The government first tried to meet the problem by creating a health corps which required medically trained university graduates not needed by the army to spend their military service in rural areas. The scheme, although innovative, was far from sufficient to meet the needs of the rural population. There was also the problem of lack of continuity, cultural incompatibility, and communication gaps between the predominantly urban health corps workers and the poor and primitive conditions of rural population. Thus, the need for a more permanent and culturally appropriate primary health care system was felt acutely in early 1970s. With the increased oil revenues in early 1970s the possibility of recruiting foreign doctors and other medical personnel (particularly

from Bangladesh and the Philippines) offered another alternative for meeting the health needs of rural population.

With the 1979 Revolution, the goal of providing access to basic social services to the poor became enshrined in the constitution. By 1980, the government was constitutionally bound to provide basic education, health and social security benefits to all citizens, particularly the disadvantaged urban and rural segments of the nation. This commitment was reflected in a number of steps taken shortly in the early 1980s. These included the creation of an interdepartmental semi-voluntary rural reconstruction organization known as *Jehad Sazandagi* (reconstruction crusade) which took on the responsibility for building rural roads, extending electricity and telecommunication facilities, providing piped water and other means of environmental hygiene in rural areas, delivery of the rationed basic goods to rural households and payment of retirement benefits to people aged 60+ in rural areas. As a revolutionary organization, the JS was also very much active in the field of political education aimed at securing/maintaining the support of the rural population for the new regime. This helped to raise the expectations and demand of the rural people for the publicly supported social services enjoyed by urban dwellers. The more democratic nature of the post-revolution system, in which almost all political positions are directly (in the case of the national assembly and the president) or indirectly (in the case of the leader of the revolution) elected, had also created a situation where the rural population found it possible to influence the decisions of policy makers.

The creation and expansion of the PHC system was in effect a pragmatic way of responding to this heightened popular demand for health care services. Faced with resource and manpower constraints, the government endorsed the creation of an extensive network of primary health care that relied on simple yet adequate and cost effective means of service delivery. The goal was to create a culturally sensitive and cost-effective service delivery system to meet the basic health needs of the rural population and to ensure that they will be able to have access to, and make effective use of, their proper share of the national resources allocated to health care.

Prior to the Revolution, the Government spent a large fraction of its budget on health but the pattern of spending emphasized tertiary and curative facilities. Money was spent on building expensive hospitals and in providing more hospital beds. Patients too adopted the habit of relying upon curative rather than preventive methods of health care and of preferring hospitals to primary clinics as their first stop in seeking medical care. Since the Revolution, the focus on poor and underserved communities, and the emphasis on preventive care, is likely to have contributed to the results that have been achieved.

Institutional Innovation

The success of the PHC system was partly due to institutional changes within the national health system which resulted in its decentralization and more active involvement of local communities, at both province and sub-provincial (district) levels, in the allocation of resources and administration of services. A bill passed in 1986 took away all medical universities from the Ministry of Higher Education and put them under the umbrella of the renamed Ministry of Health Care and Medical Education. Under the decentralized system, medical schools (renamed as the

University of Medical Sciences and Health Services, UMSHS) became responsible not only for the training but also for the recruitment and deployment of all health manpower employed by the government as well the planning, establishment and administration of all health service delivery points (from teaching hospitals to rural health houses) affiliated with the MOHME. Being located in the capital city of the province, the UMSHSs were naturally closer to and more responsive to the health needs of the rural communities of various provinces.

The Iranian PHC system has also benefited from institutional adaptations that allowed health care to be delivered in a cost-effective manner. As already noted, the system is distinguished by three main features: rural Health Houses, the *behvarz*, and a simple health information monitoring system. None of these institutional elements is unique to Iran but each has been adapted and implemented in a way that has improved the chances of success. The rural health house has proved to be a convenient venue for organizing the delivery of simple yet adequate preventive and primary health care services. It may be asserted that a good deal of the success enjoyed by the rural health system of Iran is due to the initial decision to use *behvarz* as the backbone of the system. Without the *behvarz*, it is possible that staff turnover, absenteeism and lack of knowledge about local circumstances would have rendered the physical facilities of the health houses much less effective.

But equally important is the judicious care exercised in the selection, training and on the job supervision and monitoring of the *behvarz*, Without the latter, it is likely that the *behvarz* would soon end up behaving like the large mass of unmotivated bureaucratically-minded health workers commonly found in the urban clinics of Iran and many other developing countries. Finally, the attention given to regular community censuses and service record keeping as part of the functions of the *behvarz* and the development of simple but interesting and effective methods of health status tracking has helped keep the *behvarz* up to date about the health status and needs of her individual clients as well and to provide detailed information on village level trends and disparities of interest to higher up decision makers and planners.

Learning and Experimentation

The current version of the Iranian PHC system has been built in part on lessons learnt from earlier efforts. For example, the idea for the *behvarz* originated from two pilot projects, implemented a few years before the revolution, indicating the feasibility of training locally recruited young men and women with only primary education as rural health workers. The first pilot was on *behvarz* training in Kavar rural district near Shiraz in the early 1970s, initiated by Iranian professionals working at the Community Medicine Department of Shiraz University. The Center continued its training and research well after the revolution. The second pilot was the West Azarbaijan pilot project implemented in collaboration with the World Health Organization (WHO, 1974-1976).

Lessons Learned

The most prominent merits of the Iranian PHC are:

- Provision of a rational basis for stratification of services and the distribution of facilities (reflected in the Health Posts, Houses, and Centers at various levels).
- Assured easy access to every health service facility.
- A strong program of *behvarz* training, which produces efficient community health workers who have frequently been acclaimed for their quality of service.
- Relatively good intra-sectoral coordination at the highest level of planning and decision-making.
- Collection and maintenance of reliable information and statistics regarding rural areas of the country.
- Provision of a medium for health system research by scholars interested in the subject.
- Potential for use of the health network for applied research, which has been effective in promoting a community–based style and methodology of research, and learning–by–doing. The results of these studies have also been very helpful in identifying areas of weakness.

At the same time, the PHC system suffers from a number of weaknesses:

- Most of the credit gained so far has been by virtue of outstanding efforts of *behvarzes* and Health Houses; other facilities are as yet lagging behind.
- Insufficient support of Health Houses by the Rural Health Centers has so far hindered implementation of an efficient referral system, while the cooperation of hospitals in accepting referrals from the Rural Health Center has been disappointing.
- Rural Health Centers have not yet acquired the capacity to support and guide Health Houses. Given this situation, health technicians have not live up to what is expected from them.
- Urban Health Centers must tackle even more serious constraints. It is hard to see how the problem of limited building space in cities can be overcome in the near future with the present amount of government support.
- There is no transparent policy to collaborate with the private sector, train managers, and provide a sustainable mechanism for improving the quality of services.