## Report

# Iranian and American Health Professionals working together to Address Health Disparities in Mississippi Delta based on Iran's Health House Model

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### Background

Health sectors have spent millions of dollars on Mississippi Delta in southern USA, over the years, attempting to address health issues disproportionately affecting the region's African-American population.[1] Such expenses and efforts have led to little or no changes in the health status of rural populations. Combined with a long history of discrimination and unemployment, more than 20% of the population in Delta region is uninsured, and rates of diabetes, hypertension, obesity, and infant mortality are among the highest in the country.[1] Many residents have no access to regular care and turn to the hospital emergency room when they need medical attention. This problematic situation has encouraged policy makers in health sector and compassionate people to seek a solution. On the other hand, Iran's rural populations experienced a similar health-related situation in the early 1980s. Thanks to Iran's post-1979 revolution social justice actions that led to development of a unique health network system that has been providing accessibility to primary health care for all people especially to the rural population in remote areas.[2] As a part of this network, the health house program was established in the mid-1980s. Staffed by males and females recruited from among the villages and trained with competency-based skills, the health houses have been providing rural populations primary health care services and linking the patients with appropriate treatment-base services when needed. The program has eliminated geographical health disparities for Iran's rural population, garnering high praise internationally.[3,4,5]

Regarding the article 111 of the declaration of Montevideo, health care models should work for the establishment of health care networks and social coordination that ensures adequate continuity of care. WHO/ Pan American Health Organization (PAHO) advocates implementation of an "Integrated Delivery Network" (IDN) as one of the principal operational manifestations of the Primary Health Care (PHC) approach at the level of health services, helping to bring to life several of its most essential elements, such as universal coverage and access; first contact; comprehensive, integrated, continuous care; appropriate care; optimal organization and management; and inter-sectoral action.[6]

The above mentioned clearly indicate the health network system of Iran have good criteria to be a model or solution for health situ-

ation of Mississippi. Hence, a group of concerned and committed American and Iranian professionals, through their institutions, have been working on a project in Mississippi Delta Region. The aim of this joint project between two scientific centers in Iran and USA is designing a model based on Iran's health houses for Delta region of the US in order to improve its health situation.

### Health status in USA in general and in Mississippi in specific

Health care in the US is funded through private and public insurance. Coverage of private health insurance is about 64%.[7] Among the publicly funded insurance programs are Medicare, Medicaid and the State Children Health Insurance Plan, and other state specific healthcare plans. However, over 49 million socioeconomically poor Americans (16–17%) lack health insurance.[6] This is the case despite the fact that the US is spending 15.2% (about $7175 per person per year) of gross domestic product on health.[8]

Statistics indicate beyond question that many of the rural population of the Mississippi Delta Region are afflicted with poor health status. The Country Health Rankings indicates that the region ranks poor in both health outcomes and health factors.[9] Additionally, the United Health Foundation ranks Mississippi 50th for the past eight years due to[9]:

- Children with full immunization at age 2 years was at 80.5 in Mississippi in 2007 differing from 73.6 to 87.4 in various districts;
- Limited availability of primary care physicians with 81.9 primary care physicians per 100,000 populations; and
- A high rate of deaths from cardiovascular disease at 373.07 deaths per 100,000 populations.[10]

In table 1 some of health indicators of Mississippi have been compared with the United Stated, EMRO, and Islamic Republic of Iran.

### Health status Iran: past and present

Given Iran's geographical and geological situation, rural populations and the villages that they live in, are distanced from one another. Based upon several health-related pilot experiences, Iran's current health network system was established in the 1980s. The core of this system for the rural population was the Health House Concept — a health house staffed with usually a male and female health workers called *Behvarz* serve an entire village with specific number of population actively. These health houses deliver a wide variety of integrated primary health care free of charge to the rural populations.[15] Table 2 shows the achievements of health network system of Iran between 1984 and 2010.

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**Table 1.** Health indicators of Delta Mississippi in comparison with US, EMRO, and Iran 2009.[9,11]

| Indicators | Mississippi[9] | United States[11] | EMRO[12] | Iran[13] |
|---|---|---|---|---|
| Crude birth rate/ 1000 live birth | 15.3 | 14 | 28.9 | 18.3 |
| Low birth weight for white (%) | 8.9 | 7.16 | 6.02* | 7.2* |
| Low birth weight for nonwhite (%) | 16.1 | 13.55 | — | — |
| Maternal mortality ratio/ 100,000 live | 30.4 | 15 | 55 | 25 |
| Total fertility rate (R) per woman | 2.2 | 2.09 | 3 | 1.8 |
| Life expectancy at birth | 72.5 | 77.9 | 72.3 | 72 |
| Hypertension rate (%) | 34.8 | 32.6 | 29[13] | 26.6[13] |
| Overweight & Obesity rate (%) | 70.6 | 66.8 | 43[13] | 46.8[14] |
| Infant mortality rate/ 1000 live birth | 10.4 | 6.75 | 17 | 27 |
| Adult physical inactivity (%) | 32.2 | 23.7 | 79 | 40 |
| Diabetes in adult 20 years and over (%) | 15 | 11.9 | 14.5[13] | 8.7[12] |
| *These rates are based on official report of WHO.[11] It needs to be confirmed by field research. | | | | |

**Table 2.** Comparing the Key Health Indicators in Iran's rural area 1984 and 2010.[17]

| Indicators | 1984[17] | 2010 |
|---|---|---|
| Neonatal mortality rate/1000 live births | 20 | 17[13] |
| Contraceptive prevalence rate (%) modern method | < 44 | 59.7[18] |
| Coverage of Immunization among children < 1 (%) | | |
|   BCG | 10 | 95[12] |
|   Polio-vaccine (3doses) | 32 | 98[12] |
|   DTP (3doses) | 33 | 98[12] |
|   Hepatitis B (3doses) | No* | 98[12] |
| Immunization coverage of pregnant women (%) | 3.7 | 85[12] |
| PHC access (%) | 15 | >86 |
| Screening coverage of non-communicable diseases among  >30 years people | No* | 85 |
| *There was no active program on that time. | | |

The following infrastructural principles were stated as the designing and planning policies [16]:

1. Prioritizing prevention services over treatment;
2. Prioritizing remote and impoverished rural areas over urban areas when allocating resources, taking the service-providing for vulnerable groups;
3. Prioritizing outpatient services over inpatient ones, and hence prioritizing G. P.-based services over specialist-based services;
4. Decentralization in order to make different regions rely on themselves;

### American and Iranians exchanging health-related solutions

After initial visits and revisits by several committed American and Iranian health professionals, Shiraz University of Medical Sciences and a consortium of Jackson State University, Jackson Medical Mall Foundation and Oxford International Development Group signed a memorandum of understanding in 2009. Professionals from both sides have verified that the health house model is a good infrastructure for establishment of PHC in Delta Mississippi. The leading causes behind this recommendation were; the role of health houses in reducing health disparities in rural area in compare with urban area, remarkable improvement in health indicators of covered population, integrated health services. Moreover, high efficiency of the system, simple design and establishment, disease prevention and health promotion approaches, community based service, and active oriented service are other prominent characteristics of this system that make it suitable as a model for health system reform of Mississippi. The Community Health Worker (Behvarz) could be the best choice for staffing health houses that will be able to offer primary health care to defined population. They will also identify and refer individual to the next level for treatment as needed. In addition, the cost of training and recruiting CHWs based on our purpose is much lower than a nurse or a physician.

### The proposed solution

For designing an appropriate model of health system in Delta region, the first step was *situation analysis* and preparing evidences. Accordingly health indicators and demographic data of Delta's population were collected through literature review. Along with this activity several focus group discussions were conducted. Participants in these focus group included expert health professionals as well as lay community members of rural and urban. Additionally, the team working on data collection also visited rural region numerous times and interacted with health professionals serving in the current health system. The team looked at accessibility, coverage, service package, and analyzed them. In addition to the analysis, some relevant rules and regulations of US health system were taken into account. Results obtained from these activities on Rural Mississippians' health included:

As for health system;

- Low accessibility and affordability to health services;
- Low and passive health care coverage of target population;
- Low health insurance coverage;
- Fragmented health system in terms of information, referrals and quality of care
- Existence of patient-based health centers rather than community-based health center as defined and advocated by PHC practices and approaches.

As for community health;
- High prevalence of chronic diseases such as; diabetes,

hypertension, obesity, C.H.D, mental disorders;

- Communicable diseases such as; STIs, HIV/AIDS, …. ;
- Low coverage of health care for target population such as; maternal health care, child health care, vaccination;
- High prevalence of teen pregnancy, and its consequences.

The above stated analysis, re-convinced the participating teams that each strategy or reform should respond to the existing health-related problems – as listed above. Therefore, community health house, modeled on Iran's Health House, has been reconfirmed as an appropriate model for Mississippi Delta.

The second step has focused on *designing service package*; in this regard the data collected in situation analysis were used. Demographic data have shown distribution of population in each age and sex group. According to health needs or prevalence or incidence of health issues among the population, and the number of each age and sex group the frequency and type of health services were calculated for defined population.

Another step was *estimating the covered population* and accordingly *staffing*. By using the formal working time in the US, estimated time needed for delivery of each type of health service, and also the frequency of service appropriate number of population under coverage of each health house has calculated (3000–4500). To meet the health needs of that population, the number of required staff has been estimated based on frequency of services (general tasks of health houses also have been taken into account) multiply to its needed time per year, divided by total work time per year per person. According to our calculation the number of staff was …. for each health houses.

Given the above results, *essential equipment, needed spaces and localizing the setting of health houses* was determined.

The fifth and very important step of training of CHWs was *designing training curriculum*. In this regard required knowledge and skills of CHWs, and community needs in accordance with the existing rules and regulations of US health system were taken into account. CHWs' curriculum includes four categorical courses: General, Basic, Core, and Specialty courses in addition to field work. All such courses were defined and designed with specific competencies and skills in mind.

The most important features of the designed model are;

- Stratified Health Care System;
- Bottom-up complexity;
- Clear cut catchment area;
- Defined population.

Furthermore, links to connect these community health houses to the existing clinics/hospitals were also defined. Additionally, an overseeing system (monitoring and evaluation) - that plays a crucial role, for all activities of PHC in general and the community health houses in particular, was also taken into account.

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### References

1. Bristol N. US region to model health service on Iranian system. *Lancet*. 2010; **375:** 625.
2. Aghajanian A, Mehryar AH, Ahmadnia S, Kazemipour S. Impact of rural health development programme in the Islamic Republic of Iran on rural-urban disparities in health indicators. *East Mediterr Health J.* 2007; **13:** 1466 – 1475.
3. Shadpour K, Jamshidbeigi E. To establish the organization and management of district health network. Ministry of Health, training office; 1990.
4. Puderbaugh A. Iran's health houses provide model for Mississippi Delta. National Institutes of health Fogarty International Center. 2009; **8(6)**. Available from: URL: http://www.fic.nih.gov/news/globalhealth-matters/pages/1209_health-house.aspx
5. Esteghamati A, Meysamie A, Khalilzadeh O, Rashidi A, Haghazali M, Asgari F, et al. Third national surveillance of risk factors of noncommunicable diseases (SuRFNCD-2007) in Iran: methods and results on prevalence of diabetes, hypertension, obesity, central obesity, and dyslipidemia. *BMC Public Health*. 2009; **9:** 167.
6. Having reviewed the report of the Director Integrated Health Services Delivery Networks Based on Primary Health Care (Document CD49/16), Washington, D.C., USA, 28 September – 2 October 2009. Available from: URL: http://www.lachealthsys.org
7. DeNavas-Walt C, Proctor BD, Smith JC. Income, Poverty, and Health Insurance Coverage in the United States: 2010. U.S. Department of Commerce Economics and Statistics Administration U.S. CENSUS BUREAU. Issued Sep. 2011 (U.S. CENSUS BUREAU).
8. American Human Development project of the Social Science Research Council, March 11, 2010. Health Care doesn't have to cost an arm and a leg: 29 Reasons for Optimism from Comparisons between Countries and U.S. States. Available from: URL: http://www.measureofamerica. org
9. A program of the Robert Woods Johnson Foundation. America's health rankings; 2010.
10. The 2005 Mississippi State of the Heart Report. Mississippi Department of Health (Office of Preventive Health and Office of Health Services Data Unit) and the American Heart Association, Southeast Affiliate; March 2005.
11. National Center for Health Statistics. Health, United States, 2010: With Special Feature on Death and Dying. Hyattsville, MD. 2011. Library of Congress Catalog Number 76–641496 For sale by Superintendent of Documents, U.S. Government Printing Office Washington, DC 20402.
12. World Health Organization, Country Profile, Last updated August 2010. Available from: URL: http://www.emro.who.int/emrinfo/index. aspx
13. Khatib O. Noncomunicable diseases: risk factors and regional strategies for prevention and care. *East Mediterr Health J.* 2004; **10:** 778 – 788.
14. World Health Organization, EMRO non-communicable diseases, hypertension. Available from: URL: http://www.emro.who.int/ncd/obesity.htm
15. Joulaei H, Honarvar B, Zamiri N, Moghadami M, Lankarani KB. Introduction of A Pyramidal Model Based on Primary Health Care: A Paradigm for Management of 2009 H1N1 Flu Pandemic. *IRCMJ*. 2010; **12:** 224 – 230.
16. Iran. Ministry of Health and Medical Education. Health Network expanding group. Criteria and principles of Health Network structure of Iran. Tehran: MOH; 2009.
17. Shadpour K. Primary Health Care network in the Islamic republic of Iran. *East Mediterr Health J.* 2000; **6:** 821 – 825.
18. Khosravi A, Najafi F, Rahbar M, Motlagh MA, Kabir M. Health indicators of Islamic Republic of Iran: Iran's Ministry of Health; May 2009: 70 – 79.