Gender equity in health: A secondary analysis of data in Iran

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Abstract

Background: Gender inequality harms the health of millions of women and girls in all over the world. This study aimed to identify the state of gender equity in the health sector of the Islamic Republic of Iran.

Methods: This study was based on the secondary analysis of the available data in four provinces. The research team held three sessions to select the appropriate indicators for measuring gender equity in Iran. Moreover, using the data of different sources, the indexes were evaluated by applying the brain storming method.

To demonstrate the difference between females and males, the ratio of females to males was measured in each indicator. The confidence intervals were used to show significant differences in the gap between men and women. Educational indicators were analyzed using the appraisal framework of UNESCO and International Institute for Education Planning.

Results: Findings revealed gender equality in the indicators of education and under–five underweight in all the provinces. However, the indicator of information on the mild psychological diseases showed inequality in favor of males. Infants' mortality, under-five mortality, crude death, drug abuse and smoking showed inequality in favor of females in all the four provinces. The incidence of tuberculosis, severe psychological diseases, and basic and supplementary insurance coverage was equal in all provinces except Tehran.

Conclusion: This study revealed gender inequality in many indicators among the provinces. Therefore, improving this condition requires policymaking, planning, and conducting appropriate strategies with proper gender approaches.

Keywords: Equity in Health, Gender Equality, Gender Equity in Health, Women's Health.

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Introduction

Many researches in the world emphasize that mortality in men is higher and they have a shorter life expectancy compared to women although women are generally less healthy than men. In other words, women live longer, but become ill more than men, which might result from special conditions and biological differences in case of breeding performance, hormones, and genetic effects (1). In all countries across the world, women's life expectancy is higher than men but this difference is not the same everywhere in any given country, indicating that social factors such as gender inequality directly affects life expectancy (2).

Unfortunately, despite conducting many researches on this subject, limited information exists about the impact of gender on other social factors affecting health; for ex-

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ample, how the problems caused by differences between men and women affect their health requirements (3). Recently, the World Health Organization has detected fundamental defects in the factor of gender as an effective factor in health. Therefore, due to the importance of the issue, Canada founded a section for gender and health studies in the International Health Institute (4). A great deal of emphasis is given to the factor of gender, and many researches are conducted on health improvement (5). The World Health Organization (WHO) supports researches on health and gender (6). Gender is very important in justifying the changes between men and women, and health systems can play a significant role in decreasing health inequalities between them (7).

According to the WHO, gender equity is defined as equality and equity in the distribution of advantages and responsibilities between men and women. The concept recognizes that women and men have different needs, power and access to resources, and this difference should be defined and meet the equality between men and women (8). Equity is a principal concept, but equality is more of an objective scale (9).

In the past 30 years, many important international meetings and treaties such as the Convention on the Elimination of All Forms of and Discrimination against Women (CEDAW) and Millennium Development Goals were held to achieve gender equality. Therefore, measuring and monitoring the differences between men and women are important. Gender equality is a human right and one of the goals of development in every country (10). Different researches have indicated that whenever there is less gender inequality in different economic and social areas such as education, health, and employment, economic growth would be faster and more effective. In other words, decreasing gender inequalities is very effective in the productivity of all production factors (11).

According to different studies, gender not only makes the comparison possible, but also leads to saving the costs of health care

and executing the plans and policies more effectively, and it can be a way to maintain social equity (6). Therefore, since the role of gender as a good health determinant is well known, it is essential to use it to decrease the inequalities and improve women's health and welfare (12). In this case, the Gender Inequality Index (GII) was 0.496 in Iran in 2012, giving Iran a ranking of 107th among all countries (13). In 2014, Iran was ranked 128 in the Gender Human Development Index, which represents low development indices in women compared to men. In addition, seats for women in parliament and women's economic participation are low (14). According to our investigations, gender inequality has not been measured especially in the health sector. Considering the importance of gender equality, this study was conducted to identify the status of gender equity in the health sector of Islamic Republic of Iran and serve as a guide for the policy makers to identify inequality between the two genders.

Methods
This study was the secondary analysis of the available data to determine the status of the whole country with respect to gender equity. Zarabi and Sheikh Baygloo conducted a study on health development indexes for provinces in Iran, and they divided the provinces into four groups (developed, relatively developed, relatively deprived, and deprived) (15). Tehran as developed, Eastern Azerbaijan as relatively developed, Kurdistan as relatively deprived and Ilam as deprived provinces were selected as the research samples presenting all provinces of the country. Data were available for 52 indicators of health equity in these provinces. Moreover, six experts of the health sector held three sessions to determine the appropriate indicators to measure gender equality, using the brain storming method. After comparing the 52 indicators used to assess equity in health, selected by Ministry of Health in Iran (16) and WHO gender sensitive indicators (8), seventeen indicators were selected. These indi-

Table 1. Gender-Sensitive Indicators

Health Status Indicators		
Indicator	Indicator Definition	Source
1- Infants' mortality	Probability of infant death from birth to 28 days of life per 100,000 live births	Health Equity Monitoring System 2013-14
2- Under-five mortality	Probability of dying between birth and the age of the child born alive at 59 months and 29 days per 100,000 live birth	Health Equity Monitoring System 2013-14
3- Crude death	The number of deaths during a year per 100,000 population	Health Equity Monitoring System 2013-14
4- Mild psychological diseases	The number of new cases detected mild psychological diseases per 1,000 population covered mental health programs	The Program of Integrates Mental Health 2011
5- Severe psychological diseases	The number of new cases detected severe psychological diseases diseases per 1,000 population covered mental health programs	The Program of Integrates Mental Health 2011
6- Under–five underweight	Percentage Of under five years children who weigh more than 2 standard deviations below the mean weight standards	Multiple-Indicator Demographic and Health Survey 2010
7- Incidence of tuberculosis	The number of new cases of TB reported in 100000 people	Annal Statistical of Department of Tuberculosis and Leprosy Control 2012
Determinants of health indicators		
1- Smoking	Percentage Of population aged 64-15 who are daily smokers	I.R Iran Non-Communicable disease Risck Factor Surveillance Provincial Report 2009
2- Drug abuse	Percentage Of new cases per year have come in state and private addiction treatment	Annal Statistical of Department of Substance Abuse 2012
3- Overweight	Percentage of people 64-15 years old are overweight or obese with a BMI> 25	I.R Iran Non-Communicable disease Risck Factor Surveillance Provincial Report 2009
4- Pre- School coverage	Net enrollment ratio in pre-school education (5 years)	Health Equity Monitoring System 2013-14
5- First grade absorption	Net enrollment ratio in primary education	Health Equity Monitoring System 2013-14
6- Sustaining until the end of the elementary school	Percent of students entering the first grade have not dropouts by the end of primary school	Health Equity Monitoring System 2013-14
7- Literacy	Percentage of the population aged 15 to 49 who are literate	Health Equity Monitoring System 2013-14
Health Systems Performance Indicators		
1- Death resulted from cardiac diseases	Mortality from coronary heart disease during a year per 10,000 population	Health Equity Monitoring System 2013-14
2- Basic insurance coverage	Percentage Of population covered by a basic health insurance Home	Multiple-Indicator Demographic and Health Survey 2010
3- Supplementary insurance coverage	Percent of the population in addition to the basic insurance, supplemental insurance are covered.	Multiple-Indicator Demographic and Health Survey 2010

cators were categorized into three groups of health status indicators, health determinants, and health systems performance (Table 1). The indexes were evaluated using the data of the health equity monitoring system of the Iranian Ministry of Health, Multiple-Indicator Demographic and Health Survey 2010 (IrMIDHS) (17), and other data from Ministry of Health (18-21).

The female to male ratio in each indicator was measured to find the differences between men and women; a ratio more than 1 showed inequality in favor of males and vice versa. To determine equality, the confidence interval was calculated through the following formula (22), and then the exponential limits were obtained using Excel Software 2010. If the calculated interval contained 1, it was indicative of no significant difference between men and women.

Confidence Interval = LN (women/men) ± 1.96√ (1/D1+1/D2-1/N1-1/N2)

D1= Number of women who have an specific characteristic

D2 = Number of men who have an specific characteristic
N1 = Total number of women
N2 = Total number of men

Educational indicators (including pre-school coverage, first grade absorption, sustaining to the end of the elementary school and literacy) were analyzed based on the appraisal framework by UNESCO Institute for Statistics (UIS) and International Institute for Education Planning. In this case, after dividing the educational status of girls by the status of the boys, if the result was between 0.8 and 0.94, or be-tween 1.06 and 1.25, it was in the middle range; and if it was between 0.95 and 0.96, or between 1.04 and 1.05, it indicated that gender equity in education was close; and if it was between 0.97 and 1.03, education equity was met (scores less than 0.8 and more than 1.25 indicated being far from gender equity) (23, 24).

Results

Tables 2 and 3 represent gender equality or inequality in the selected provinces. In Tehran, as a developed province (Table 2), the female to male ratio for the indicators

Table 2. Assessment of Gender Equity Indicators in Health in Developed And Relatively Developed Provinces

	Developed Province (Tehran)				Relatively Developed Province (Eastern Azerbaijan)			
	Health Status Indicators							
Indicator	Female to Male ratio	Lower limits of ratio	Upper limits of ratio	Assessment results*	Female to Male ratio	Lower limits of ratio	Upper limits of ratio	Assessment results*
Infants' mortality	0.48	0.42	0.55	IFF	0.80	0.67	0.97	IFF
Under-five mortality	0.48	0.43	0.53	IFF	0.80	0.69	0.91	IFF
Crude death (Urban)	0.60	0.58	0.62	IFF	0.75	0.72	0.78	IFF
Crude death (Rural)	0.73	0.69	0.76	IFF	0.00	0.69	0.78	IFF
Mild psychological diseases (Urban)	4.87	4.53	5.23	IFM	4.83	3.99	5.85	IFM
Mild psychological diseases (Rural)	4.31	3.70	5.01	IFM	5.05	4.54	5.62	IFM
Severe psychological diseases (Urban)	2.43	1.76	3.36	IFM	1.27	0.73	2.21	E
Severe psychological diseases (Rural)	1.60	1.06	2.41	IFM	1.08	0.83	1.40	E
Under–five underweight	1.18	0.59	2.36	E	1.42	0.39	5.20	E
Incidence of tuberculosis	1.10	1.01	1.20	IFM	1.24	0.98	1.56	E
	Determinants of Health Indicators							
Smoking	0.13	0.07	0.22	IFF	0.00	0.01	0.08	IFF
Drug abuse	0.06	0.05	0.06	IFF	0.04	0.03	0.04	IFF
Overweight	1.05	50.8	1.30	E	1.37	1.20	1.56	IFM
the Pre- School coverage	0.98	-	-	E	0.99	-	-	E
First grade absorption	0.99	-	-	E	1.00	-	-	E
Sustaining until the end of the elementary school	0.99	-	-	E	0.99	-	-	E
Literacy	0.99	-	-	E	0.93	-	-	E (Middle Position)
	Health Systems Performance Indicators							
Death resulted from cardiac diseases	0.76	0.72	0.81	IFF	1.19	1.12	1.27	IFM
Basic insurance coverage	1.09	1.07	1.11	IFM	1.00	1.00	1.05	E
Supplementary insurance coverage	1.19	1.11	1.27	IFM	0.85	0.85	1.15	E

* Assessment results have been classified into three categories:
E= Equality, IFM= Inequality in Favor of Males , IFF= Inequality in Favor of Females

Table 3. Assessment of Gender Equity Indicators in Health in Relatively Deprived and Deprived Provinces

	Relatively Deprived Province (Kurdistan)				Deprived Province (Ilam)			
				Health Status Indicators				
Indicator	Female to Male ratio	Lower limits of ratio	Upper limits of ratio	Assessment results*	Female to Male ratio	Lower limits of ratio	Upper limits of ratio	Assessment results*
Infants' mortality	0.73	0.59	0.89	IFF	0.53	0.36	0.80	IFF
Under-five mortality	0.75	0.63	0.89	IFF	0.53	0.38	0.74	IFF
Crude death (Urban)	0.69	0.64	0.73	IFF	0.73	0.66	0.81	IFF
Crude death (Rural)	0.68	0.63	0.73	IFF	0.63	0.54	0.73	IFF
Mild psychological diseases (Urban)	1.90	0.94	3.83	IFM	2.17	1.46	3.22	IFM
Mild psychological diseases (Rural)	4.44	2.74	7.20	IFM	2.46	1.76	3.44	IFM
Severe psychological diseases (Urban)	4.00	0.88	18.26	E	1.08	0.51	2.31	E
Severe psychological diseases (Rural)	0.86	0.48	1.56	E	1.20	0.68	2.13	E
Under–five underweight	1.76	0.30	10.26	E	0.44	0.04	4.70	E
Incidence of tuberculosis	1.17	0.87	1.58	E	1.08	0.63	1.86	E
				Determinants of Health Indicators				
Smoking	0.04	0.02	0.10	IFF	0.05	0.02	0.16	IFF
Drug abuse	0.03	0.02	0.04	IFF	0.01	0.007	0.01	IFF
Overweight	1.32	1.14	1.51	IFM	1.20	1.02	1.41	IFM
Pre- School coverage	0.97	-	-	E	1.04	-	-	E (Close)
First grade absorption	1.00	-	-	E	1.00	-	-	E
Sustaining until the end of the elementary school	1.00	-	-	E	1.00	-	-	E
Literacy	0.87	-	-	E (Middle Position)	0.94	-	-	E (Middle Position)
				Health Systems Performance Indicators				
Death resulted from cardiac diseases	0.79	0.72	0.87	IFF	0.72	0.62	0.83	IFF
Basic insurance coverage	1.03	0.99	1.07	E	1.02	0.97	1.08	E
Supplementary insurance coverage	1.31	0.90	1.91	E	1.03	0.74	1.42	E

* Assessment results have been classified into three categories:
E= Equality, IFM= Inequality in Favor of Males, IFF= Inequality in Favor of Females

of infant mortality, under-five mortality, crude death, drug abuse, smoking and the death resulting from cardiac diseases showed gender inequality in favor of females. This ratio showed inequality in favor of males for mild and severe psychological diseases, incidence of tuberculosis, and basic and supplementary insurance coverage.

In general, the results of the evaluation revealed equality between men and women in the indicator of under-five underweight (CI: 0.59-2.36) and overweight (CI: 0.85-1.30) in Tehran. Moreover, based on the appraisal framework, there was gender equality for the indicators of pre-school coverage, first grade absorption, sustaining to the end of the elementary school and literacy.

According to Table 2, in Eastern Azerbaijan as a relatively developed province, the female to male ratio for the indicators of infant mortality, under-five mortality, drug abuse, and smoking revealed gender inequality in favor of females. However, there was gender inequality in favor of men for the indicators of mild psychological diseases, overweight, and the death resulting from

cardiac diseases.

According to the lower and upper limits of ratio there was gender equality in the following indicators in Eastern Azerbaijan: Severe psychological diseases in urban areas (0.73 and 2.21); severe psychological diseases in rural areas (0.83 and 1.40); under-five underweight (0.39 and 5.20); incidence of tuberculosis (0.98 and 1.56); basic insurance coverage (1.00 and 1.05); and supplementary insurance coverage (0.85 and 1.15).

Moreover, according to the educational appraisal framework, there was gender equality in the indicators of pre-school, first grade absorption, sustaining to the end of the elementary school, literacy, and basic and supplementary insurance coverage in Eastern Azerbaijan.

Based on Table 3, in Kurdistan as a relatively deprived province and in Ilam as a deprived province, there was gender inequality in favor of women in the following indicators: Infants mortality, under-five mortality, crude death, drugs abuse and smoking, and death resulting from cardiac diseases according to the female to male ratio. On the other hand, there was gender inequality in favor of men for the indicators of mild psychological diseases and overweight.

According to the lower and upper limit of ratio, in Kurdistan and Ilam provinces, there was gender equality in the indicators of severe psychological diseases, overweight, incidence of tuberculosis, and basic and supplementary insurance coverage.

Moreover, according to the education appraisal framework, there was gender equality in these two provinces for the following indicators: Pre-school, first grade absorption and sustaining to the end of the elementary.

Discussion

According to the appraisal pattern, gender equality existed if the interval between the lower and upper limit of ratio were 1. Gender inequality was found in all the four provinces in the indicators of infant mortal-

ity, under-five mortality and crude death in the urban and rural areas. The inequality was mostly in favor of females. In a research by Rahmani et al. entitled "The Streamline of Children's death in Province of Kurdistan during 2007 to 2011", a significant relationship was found between gender and under-five mortality (25). In addition, the mortality statistics in 2010 showed that the ratio of infant mortality to the total deaths was 91 for the female infants and 92.2 for the male infants. As for the death of children aged 1-59 months old, it was 61.6 for girls and 65 for boys. The ratio of the occurred death to the total deaths for 29 provinces of Iran was 53.6 for women and 54.6 for men in 2010 (26). Therefore, the results of this research are close to the similar researches. They all indicate that the mortality rate is higher in men than women.

With respect to the indicator of mild psychological diseases in the urban and rural areas in the four selected provinces, inequality was mostly observed in favor of men. In the mental health survey, the prevalence of mental disorders was higher in women compared to men. The prevalence was 20.9% in men and 29% in women in Eastern Azerbaijan, 15.4% in men and 25.6% in women in Tehran, 8% in men and 16.3% in women in Ilam, and 19.4% in men and 24.2% in women in Kurdistan (27). The reason behind the high prevalence of mental disorders in women was their gender role; i.e., most of them are limited to one social role, which is being a homemaker, or in if they work, they are still responsible for the daily house chores. They are under more stress and mental pressure.

Severe psychological diseases were more prevalent in women in Tehran, while there was gender equality in other three provinces. The reason can be the problems and pressures of living in the capital city.

There was gender equality in under-five underweight in all the four selected provinces; this may be due to the full coverage of the health system, which is one of the

significant achievements of the Iranian Ministry of Health. In a research conducted in 28 provinces of Iran, the prevalence of underweight was 7.3% for boys and 8% for girls with no significant difference (28). Therefore, the results of this research comply with the mentioned research, indicating no difference between men and women.

The ratio of the incidence of tuberculosis was equal in three provinces, but there was inequity in favor of women in Tehran. Epidemiologic investigations in Tabriz and Golestan showed that the incidence of tuberculosis in females is more than in males (29, 30). Therefore, the results for Tehran are in accordance with the prior researches.

There was inequality in favor of females in the indicator of drugs abuse and smoking in all the four provinces. In 2004, the percentage of smoking was 23.6 %in men and 1.3% in women in Eastern Azerbaijan, 13.9% in men and 1.2% in women in Ilam, 25.4% in men and 3% in women in Tehran, and 28.4% in men and 2.4% in women in Kurdistan. In general, the relative frequency of smoking in indifferent provinces shows that 14% of Iran's population are smokers; the relative frequency of smoking is 6 times more in men than in women (31). A report on the status of risk factors of noncommunicable diseases in 2005 stated that the distribution of the relative frequency of smoking was 24.1% in men and 4.3% in women (32). In 2011, the Urban-Heart Tehran Experience showed that 16% of men and 1.1% of women smoked in 22 districts of Tehran on average (33). An investigation on drug abuse among university students in Tehran in 2005-2006 reported that the lifetime prevalence of smoking was 39.6% in male and 14.8% in female students. (34). Similar studies found that the prevalence of smoking is 41% in men and 11.1 in women in Japan, while in the USA, 20.9% of men and 15.5% of women smoke (35). Thus, the results of the prior researches confirm the current findings, indicating that the prevalence of drug abuse and smoking is lower in females than in males, which can be due to the lifestyle, social values, and culture.

The female to male ratio of overweight revealed inequality in three provinces except for Tehran in favor of men. A study in Shiraz showed that girls had a higher BMI than boys. There was a similar result for the adults as well (P<00). The differences in BMI between genders in all aging groups are significant (36). The prevalence of overweight and obesity in a study in China was 24.1% and 2.8% in men and 26.1% and 5% in women, respectively (37). Therefore, the findings of the current research are in line with the prior investigations and confirm that women are more overweight and obese than men, which can be due to women's lifestyle or their genetic and biological factors.

Evaluation of education indicators showed educational equality in almost all four provinces. According to previous researches, gender equity in education is met in elementary schools. There is inequity in favor of girls in the junior high school, high school, and higher education, and inequity in favor of boys in the pre-university college (38). Therefore, the results of this study comply with the prior researches as we observed gender equity in the elementary and pre-school grades in all the four provinces. The findings of the prior studies showed that the factors affecting gender equity in education can be categorized into four groups of family, educational, social, and economic factors (38). The portrait of health indicators in the Islamic Republic of Iran showed that in general, the number of literate men was more compared to women. Although the literacy rate in women has been increasing during the recent years, their low literacy rate in the provinces of Sistan & Baloochestan, Western Azerbaijan, and Kurdistan was 61.4%, 70%, and 70.1% in 2006, respectively, making it one of the social and cultural challenges of the country (31). These results do not comply with the current research, as we found that gender equity has been achieved during the recent years and there is no significant difference between men and women in accessing educational services.

As for basic and supplementary insurance coverage, gender inequality was mostly in favor of males in Tehran, but there was gender equality in other three provinces. Investigating gender equity and health system reform in Columbia showed that 75.5% of women suffered from lack of insurance coverage before the reform, which decreased to 28.7% after the reform in 2003 (39). Therefore, the number of women lacking insurance was very high before the reform and there was gender inequality, confirming the results obtained in Tehran. A report on health inequality and differences in the U.S. in 2011 showed that 21.25% of the men and 17.3% of the women in 2004 and 22.2% of the men and 17.3% of the women in 2008 lacked medical insurance, indicating that the number of men with no insurance increased. However, in general, there was a significant difference between men and women ($p<0.001$) (40). Therefore, the result of this research is different from that of ours, revealing inequality in favor of men.

Death from cardiac diseases showed gender inequality in favor of women in Eastern Azerbaijan, while there was gender inequality in favor of men in the other three provinces. A study was conducted by Hajivand to determine the most important affective factors of death in terms of the lost years of life in Booshehr. He found that cardiac diseases ranked the second factor, while they were ranked the first for the lost years of life in women in that year (41), and this can be due to the fact that women smoke hookah more than men in Booshehr.

Conclusion

In general, equity has moral and spiritual dimensions; inequity includes inessential and inevitable differences that are unfair and one-sided (9). In this study, despite the lack of integrated information systems and data from various sources, it was found that gender inequity existed in mild psychological diseases that were avoidable and unnecessary. According to this study and others, mild mental illness is more common in women, which might be due to multiple roles of women in today's society. This indicates the necessity of a gender perspective in mental health programs with emphasis on vulnerable women.

Gender inequity in favor of females is shown in infant mortality, under-five mortality, crude death and mortality from heart disease indicators. However, the higher death rates for the male gender cannot be attributed to gender inequity only since genetic and biological factors also play an important role and are inevitable and essentially affect mortality. Nevertheless, we can decrease it with measures such as raising awareness and improving access to services for men.

Inequality in favor of females in under-five mortality and equity in under-five underweight indicators reflect adequate coverage of health programs, particularly maternal and child health programs. It seems that in addition to geographical access, appropriate cultural access should also be provided.

The incidence of tuberculosis in the developed province of Tehran was not in favor of females. This may be due to the marginalization and lack of successful health care system coverage in these areas including full implementation of DOTS (Directly Observed Treatment Short Course) program.

Gender equity in over weight and obesity indicators was only observed in the developed province of Tehran, which indicates the need to focus on educational programs and services to promote healthy lifestyles and more awareness among women.

The indicators of education showed gender equity almost in the whole country. There is evidence of a gender approach in e- programs, economic access to free education and the impact of cultural programs to create equal opportunities for the benefit of both sexes.

In general, the status of gender equity indicators in developed and relatively developed provinces was almost the same. In addition, a similar situation was observed

in deprived and relatively deprived provinces. Therefore, this study confirms the impact of socio-economic development of the provinces on gender equity in health. Moreover, the provinces can be divided into two groups in terms of gender equity in health. Therefore, based on the results of this study, planning and policy making with a gender approach should be considered based on the socio-economic status.

With respect to the implementation of family physicians program, marginalized full coverage program and health care system's reform and their impact on reducing the cost of health care in Iran, their increase in access and studying their impact on gender equality in health is of significant importance. This important topic can be investigated in the universities of medical sciences across all the provinces of the country. Furthermore, cross-subsidization in health care financing is a useful method to promote equity, but its effects must be measured on gender gap.

However, equity has a high priority on the health and social policy agenda to strange the health sector in Iran for resolving challenges and achieving gender equity through the following alternatives:

First, men and women should be equally involved in making decisions about the priorities, policies and initiatives. Second, appropriate steps should be taken to prioritize service provision for particular vulnerable groups and to address the gender gaps in morbidity and mortality. Third, more efforts should be made to involve the community and other stakeholders in any way in the process of decision-making in the health sector.

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