Evaluation of equity in access to pharmaceutical services in selected cites of Isfahan Province, Iran

Majid Davari[1], Mohammad Reza Maracy[2], Abolfazl Aslani[3], Zahra Bakhshizadeh[3], Elahe Khorasani[4*]

[1] Department of Pharmacoeconomics and Pharmaceutical Administration, School of Pharmacy AND Pharmaceutical Management and Economics Research Center, Tehran University of Medical Sciences, Tehran, Iran

[2] Department of Epidemiology and Biostatistics, School of Health, Isfahan University of Medical Sciences, Isfahan, Iran

[3] Department of Pharmaceutics, School of Pharmacy and Pharmaceutical Sciences, Isfahan University of Medical Sciences, Isfahan, Iran

[4] Department of Pharmacoeconomics and Pharmaceutical Administration, School of Pharmacy AND Students' Scientific Research Center AND Pharmaceutical Management and Economics Research Center, Tehran University of Medical Sciences, Tehran, Iran

ABSTRACT

Background: Equity is one of the pivotal aims and priorities of the pharmaceutical system. The World Health Organization report in 2000 clarifies the important role of equity in health-care systems. Equity and efficiency are prominent features of health-care system operation. Pharmaceuticals play an important role in the cycle of health services. The aim of this study was to evaluate the equity in access to pharmaceutical services in selected cities of Isfahan Province, Iran.

Methods: This research is a cross-sectional analytical study. A valid, reliable questionnaire including 25 questions was prepared to measure patients' access to their prescribed medicines and also to determine their socioeconomic status (SES). Totally 800 questionnaires were completed by patients who attended pharmacies in selected cities of Isfahan Province. Equity in access was evaluated using concentration and Lorenz curves.

Results: Nearly 66% of the samples were categorized in moderate-to-extremely poor SES. The highest rate of access to pharmaceutical services was found in Borkhar and Meymeh (98.9%) and the least was in Natanz (90.5%). The concentration index (CI) for access to pharmaceutical services was 0.029 in Isfahan Province, and thus equitable access to pharmaceutical services was estimated to be about 97% in this province.

Conclusion: The CI for access to pharmaceutical services was 0.029 in Isfahan Province. The findings show that the pattern of accessibility is not significantly different between the cities with various development indicators and is not related with various SES. This could be considered as one of the positive features of pharmaceutical policy in Iran.

Keywords: Equity; Pharmaceutical services; Concentration curve; Isfahan; Iran

1. Introduction

The main goal of health-care system is to be in good health [1,2], but it is not the only one. Being in good health in society has two aspects, the first one is the best mean to access health and the second one is that the least difference among people and groups who are looking for health services (equitable access to health care). Equity means that health-care system responds to the people's needs equally and without distinction [3]. In health care, like many other areas, equity as a serious concern controls all related policies and activities [4].

Equity is one of the scientific and general principles of health-care system in many countries which could indicate three concepts; first, the same access to health care for patients with similar need; second, the same treatment for patients with similar need; and third, the same outcomes for patients with similar need [5-10]. Equity is also one of the crucial aims and priorities of the pharmaceutical systems

worldwide. The WHO report in 2000 highlighted the role of equity and efficiency as the prominent feature of the health-care system's operation [11].

Medicine plays an important role in the processes of health-care services [12-14].

In many countries, there has been a great attention to improve policies related to equity in pharmaceutical services system alongside concentrating on the quality of services and financial issues [15-18]. The aim of this study was to evaluate equity in access to pharmaceutical services in selected cities of Isfahan province, Iran.

2. Methods

This research is a cross-sectional analytical study that was undertaken in selected cities of Isfahan Province to evaluate equity in access to pharmaceutical services. The degree of development was used to choose the proper samples among the cities [19]. The cities in Isfahan Province, Iran, were

ranked in terms of degree of development and then the samples were selected so that we ensured that the distribution of the samples was normal, based on the degree of development. Khomeynishahr and Fereydounshahr received the highest and the lowest level of development score, respectively. The pharmacies were chosen based on the total number of pharmacies in each city and random number table. The selected cities included were Isfahan, Khomeynishahr, Borkhar and Meymeh, Naeen, Natanz, Tiran, and Fereydounshahr.

The data were gathered through completion of close-end questionnaires by people who were referred to local pharmacies in the selected cities from September to December 2009.

According to the total population of the Isfahan Province, which was 4,804,457 in 2009, the sample size was estimated to be 800 people. The ratio of the total number of each city's questionnaires to the total number of selected pharmacies was used to calculate the number of each pharmacy's questionnaires. The individuals (patients) were selected from a systematic random method. There was no need of basic study to confirm the questionnaires' reliability, because the questions were objective and clear. Expert's opinions were used to verify the questionnaire validity.

Lorenz curve [20], concentration curve (CC), and concentration index (CI) were used to measure the equity in access to pharmaceutical services. These are common methods to measure equity in access to health-care/pharmaceutical services [17,21].

The CC of each evaluated city is shown in figures 1-9. The vertical axis of each figure represents cumulative frequency percentage of the access to pharmaceutical services, and the horizontal axis represents people's cumulative frequency percentage which is ranked based on their socioeconomic status (SES). The straight line at 45° shows the equitable distribution of pharmaceutical services among the patients. The curve under the straight line represents CC [17,21].
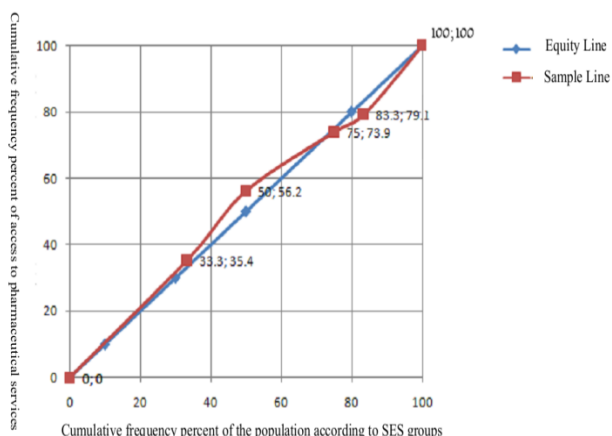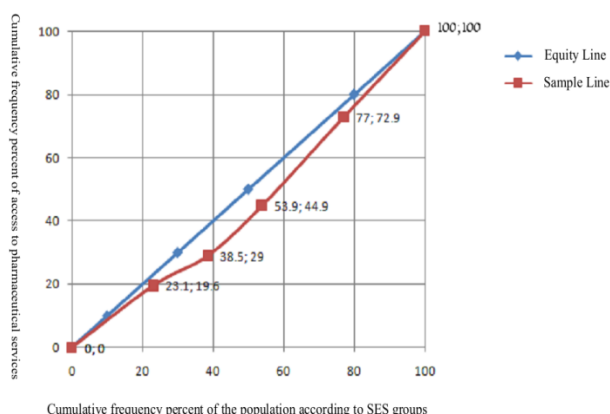

Figure 1. The amount of equity in access to pharmaceutical services in the Fereydoonshahr city

This index is bounded between −1 and +1 and its sign is contractual; when CC coincides with a 45° line, access to pharmaceutical services is completely fair and CI will be zero. However, when all of the access go to wealthiest people, this index will be +1, and if all the access go to the poorest part of the society, the index will be −1. The CI is twice of the enclosed surface between the CC and the completely equitable distribution line. CI could be calculated by the following formula:

$$C = (P_1L_2 - P_2L_1) + (P_2L_3 - P_3L_2) + ... + (P_{T-1}L_T - P_TL_{T-1})$$

Where, P is the cumulative percentage of the population ranked by SES, T is the level of SES, and L is cumulative frequency percentage of access in each socioeconomic class [22].

Figure 2. The amount of equity in access to pharmaceutical services in the Natanz city

To determine people's SES, their income, home status, occupation, family size, and location of residence were considered. The details of determining SES are explained elsewhere [22]. Using this method, the patients were divided into five different SES categories from extremely poor to wealthy classes.
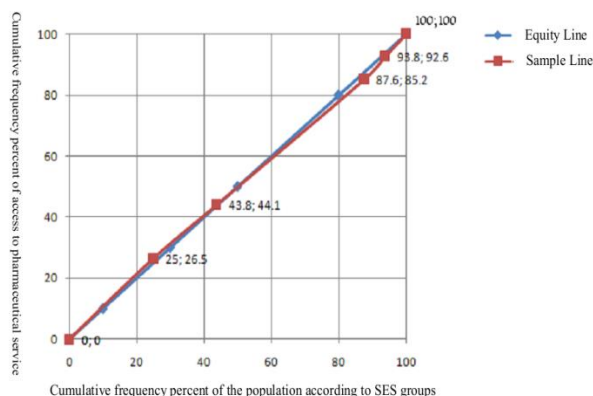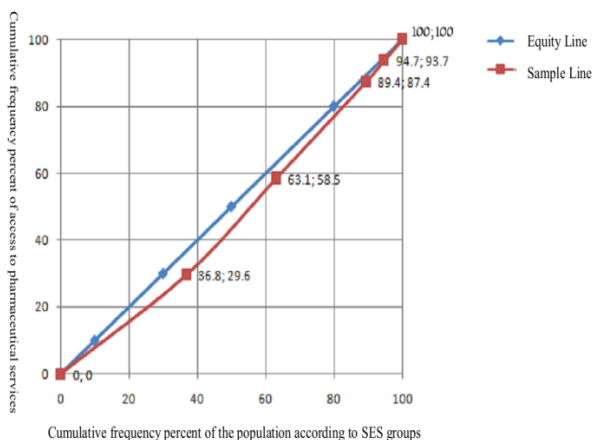

Figure 3. The amount of equity in access to pharmaceutical services in the Naeen city

To evaluate people's access to pharmaceutical services through Lorenz curve, the people were divided into 10 deciles based on their income; 80 individuals in each decile.

According to the experts' opinions, 9 indicators were selected for assessing the access to pharmaceutical services based on the Iranian pharmaceutical system, which is impartially similar to many other pharmaceutical systems in middle-income countries [22]. We assumed that the prescribed medicines were needed for the patients. We

ignored the fact that the medicines may be prescribed based on their availability in pharmaceutical market.

Figure 4. The amount of equity in access to pharmaceutical services in the Tirana and Karvan city

3. Findings

The results of socioeconomic classification show that majority of the population (66%) were categorized in moderate-to-extremely poor SES. In addition, most of them had middle-class jobs (53.9%). Majority of the people (63%) were homeowner or had a mortgage. The family size of 36% of the samples was four, and 4% was two. Almost 96% of the people had insurance coverage, majority of them (38.3%) under the coverage of Social Security Insurance Organization. Table 1 illustrates the distribution of the access to pharmaceutical services in selected cities of Isfahan Province.
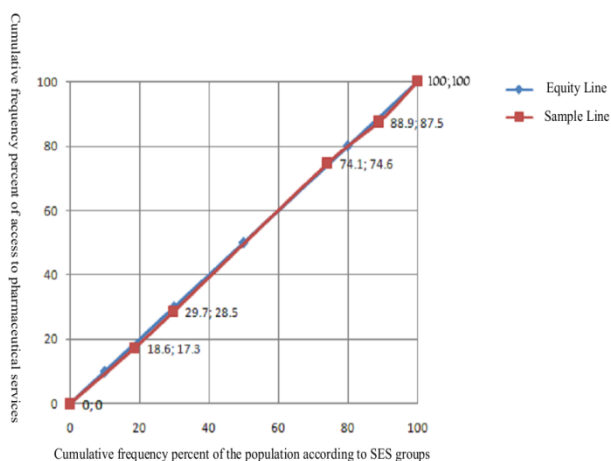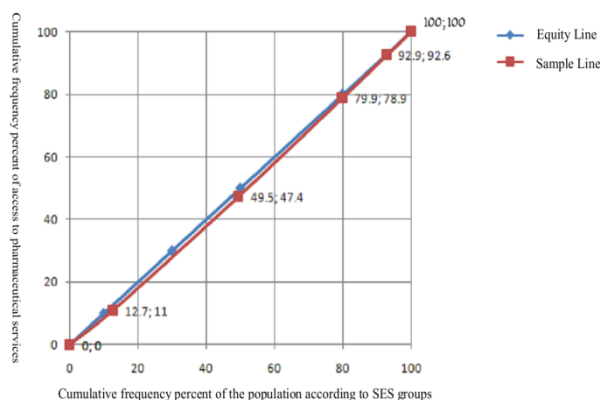

Figure 5. The amount of equity in access to pharmaceutical services in the Borkhar and Meymeh city

As shown in figures 1-8 (the CCs of each evaluated city), the first three groups (extremely poor, poor, and moderate) of population in Fereydounshahr (75%), Natanz (53.9%), Naeen (87,6%), Tiran and Karvan (89.4%), Borkhar and Meymeh (74.1%), Khomeynishahr (65%), Isfahan (79.9%), and Isfahan Province (66.2%), respectively, were benefited from 73.9%, 44.9%, 85.2%, 87.4%, 74.6%, 64.1%, 78.9%, and 64.9% of the total access to pharmaceutical services, respectively.
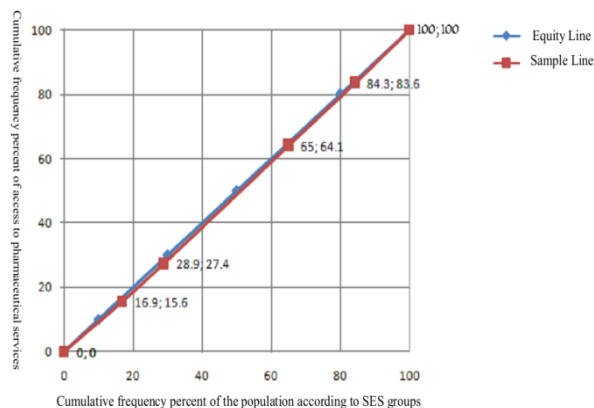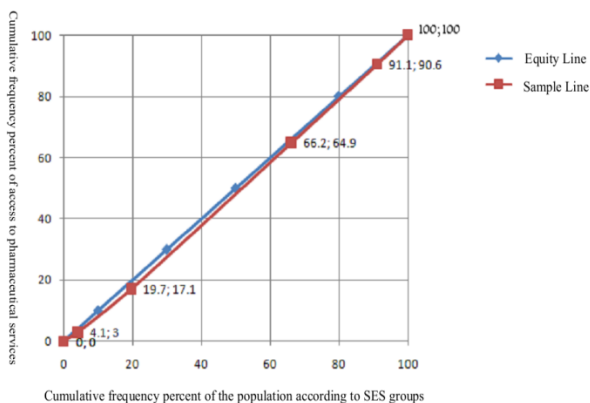

Figure 6. The amount of equity in access to pharmaceutical services in the Khomeynishahr city

The results of the study showed that the greatest amount of access to pharmaceutical services was in Naeen (99.5%) and the least amount was in Natanz (90.5%). The average equity in access to these services was estimated to be 97.1% in Isfahan Province (Table 1).

Figure 7. The amount of equity in access to pharmaceutical services in the Isfahan city

The findings of Lorenz curve showed that the least access was in the first decile (5.9%) and the most access was in the fourth and its next deciles (10.9%) (Figure 9).
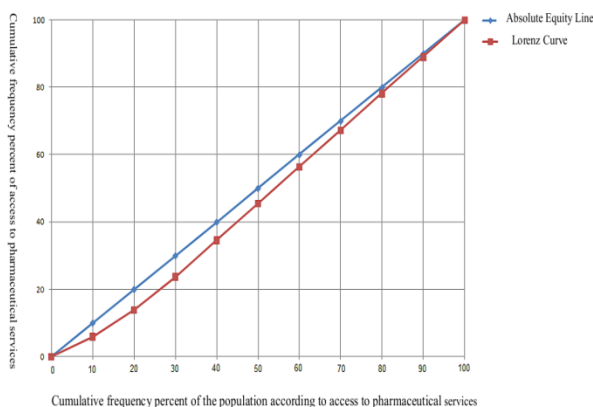

Figure 8. The amount of equity in access to pharmaceutical services in the Isfahan Province

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Table 1. Distribution of the access to pharmaceutical services in selected cities of Isfahan Province, Iran

Selected cities of Isfahan Province	Cumulative percentage of people from moderate-to-extremely poor SES (%)	Maximum access		Minimum access		Concentration index of equity (95% CI)	Equity in access
		%	Group	%	Group		
Fereydounshahr	75	25.0	Extremely poor	5.2	Good	−0.022 (−0.01-−0.03)	97.8
Natanz	54	28.0	Good	9.4	Poor	+0.095 (0.07-0.11)	90.5
Naeen	88	41.1	Extremely poor	7.4	Good and Wealthy	+0.005 (0.001-0.012)	99.5
Tiran and Karvan	90	29.6	Extremely poor	6.3	Good and Wealthy	+0.078 (0.06-0.09)	92.2
Borkhar and Meymeh	74	46.1	Moderate	11.2	Poor	+0.011 (0.005-0.020)	98.9
Khomeynishahr	65	36.7	Moderate	11.8	Poor	+0.018 (0.014-0.020)	98.2
Isfahan	80	36.4	Poor	7.4	Wealthy	+0.028 (0.01-0.04)	97.2
Isfahan Province	66	47.8	Moderate	3.0	Extremely Poor	+0.029 (0.02-0.03)	97.1

SES: Socioeconomic status

Figure 9. The amount of equity in access to pharmaceutical services in the Isfahan Province by using Lorenz curve

4. Discussion

The aim of this study was to evaluate equity in access to pharmaceutical services in selected cities of Isfahan Province, Iran. The comparison of cumulative percentage of people from moderate-to-extremely poor SES indicated that Tiran and Karvan had the highest percentage (the worst situation) and Natanz had the least one (the best situation). The maximum access was found in Borkhar and Meymeh in moderate group and minimum access was in Fereydounshahr in good group. The results of total CI in various cities demonstrated that Naeen had the most equitable access to pharmaceutical services. However, this result could be due to the fact that many of the patients go to Isfahan for getting their prescribed medicines. The absence of some medicines for specific diseases in Naeen pharmacies supports this assumption; nevertheless, further research is needed to confirm this statement.

The positive sign of CI in all cities except Fereydounshahr indicated that the wealthiest people had better access to pharmaceutical services. However, the situation in Fereydounshahr is contradictory. This could be explained by the fact that a considerable number of individuals in this city were covered by Imam Khomeini health insurance committee. Nonetheless, further research is needed to verify this declaration.

In Natanz (Figure 2) and Tiran and Karvan (Figure 4), the CC lies quite below the equity line, particularly for middle SES groups. This means equity in access is in favor of the higher SES groups (wealthiest people).

In Naeen, irrespective of some fluctuations, the CC is very close to the equity line with a difference of 1.5% (Figure 3). However, because of the fluctuation, it is very hard to judge whether this small difference is in favor of low or high SES groups; though the sign of CI is positive which means that inequity exists in favor of high SES groups. Almost the same scenario is repeated for Borkhar and Meyme (Figure 5) and Khomeini Shahr (Figure 6) cities. In the city of Isfahan (Figure 7), the CC has a little distance with equity line and lied out below it.

These findings show that the pattern of accessibility is not significantly different between the cities with various development indicators.

Gathering these entire evaluation data together, we drew the CC for Isfahan Province (Figure 8), which is shown that there is 2.9% inequity among different socioeconomic groups for accessing pharmaceutical services. Although this percent may be considered insignificant difference at the first glance, if this inaccessibility is related to the shortage or lack of essential medicines (for example insulin), this percent will be highly noteworthy. Figure 8 shows that 2.9% inequity in access could be attributed to the variation of SES.

In addition to the evaluation of inequity in access to pharmaceutical services within different socioeconomic classes (Figure 8), the results of Lorenz curve showed that there was 6.7% inequity in access irrespective of SES which is 2.3 times higher than inequity based on SES. This could be considered as one of the positive features of pharmaceutical policy in Iran.

5. Conclusion

The majority of the population was categorized in moderate-to-extremely poor SES. There was little inequity in access to pharmaceutical services among various socioeconomic groups in Isfahan Province. These findings show that the pattern of accessibility is not significantly different between the cities with various development indicators and is not related to various SES. This could be considered as one of the positive features of pharmaceutical policy in Iran.

6. Conflict of Interests
Authors have no conflict of interests.

7. Acknowledgments

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