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# Socioeconomic Inequality in Health Care Utilization: A Study of Service Utilization in Yazd, Iran

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### A R T I C L E   I N F O

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### A B S T R A C T

**Background:** Determining the inequality in health and the gap level among various socio-economic groups and factors affecting it were always concerns of most politicians and social scientists. This study investigated inequality in utilization of health care among Yazd residents in 2014.

**Methods:** This analytic and cross-sectional study was conducted in 2014. The participants were all households of Yazd. The data were collected through a three-part questionnaire including demographic factors, socio-economic factors, and utilization of health services. The number of samples was estimated to be 1037 households selected by random stratified sampling. After administrating the questionnaire in the form of interview, data were entered into the SPSS software. Later, factor analysis method was carried out and participants were categorized based on their social and economical status. Afterwards, using the logistic regression method, the correlation among variables was calculated and finally, for measuring the concentration index, the stratified data were fed into Stata software version 12/SE and analyzed.

**Results:** According to the findings, there was no meaningful inequality in the distribution of contagious and non-contagious decreases in the population under study. Inequality in utilization of services for inpatient and outpatients during the past 6 months in the five socio-economic groups was significant (P-value = 0.000). This shows that accumulation of visits occurred in richer groups of society. Also, it can be claimed that self-treatment has greater accumulation in the poorer quintiles (CI = -0.09).

**Conclusion:** Inequality in benefitting from health services reflects the economical situation of households. As a result, it is expected that by taking steps to improve the living conditions, the equity in service utilization will be increased.

**Key words:** Socio-Economic Inequality, Benefit, Health Care

### Citation

## Introduction

In the past decades, equality in health was just considered as a humane activity, a concept in researches, and an important element in major policies. But today, it is considered as an important basis in improving the health and developing a country (1). The most important part of the 20-year prospect of the Islamic Republic is dedicated to utilization of health with good life quality and by considering equality as an important management and strategic factor in such a way that utopia is possible in near future. The ever increasing complexity of health system as one of the most important effective factors on welfare and justice, expresses that managers of all sectors should pay more attention to this issue (2,3). Equality in health is defined as lack of any systematic difference in one or more aspects of the health situation regarding social, demographic, and geographic differences of populations (1). Determining inequality in health as well as the gap among various socio-economic groups and factors affecting it were always concerns of most politicians and social scientists (4). This is because in Iran's current system of health the largest portion of health care costs are paid by patients and so the greatest part of the burden is imposed on the poor. These payments create problems for access to services and as a result they suffer more (5). So, it can be stated that for determining the extent of justice, there are judging measures based on the scale of equality. For measuring inequality in health, one needs to find out how these differences are distributed in population and also determine whether this distribution is socially acceptable or not (6).

Social factors are considered to be the most salient reason of health or lack of it. Because of them, chronic diseases have increased and increasing pressure has been imposed on health in the world. The most effective way for decreasing this load is paying attention to these social factors. The role of social factors in people's health is directly or indirectly understood via their effects on environments, behavior, and the extent of access to health services (3).

In order to improve equality in health access and decrease distances in individuals' health situation, it is necessary to measure the health condition separately based on socio economic factors. This needs calculating the health indices based on injustice factors, that is, social determinants of health, which in turn promotes such relevant researches. Lack of equality indices in health is a problem in determining inequalities and forming effective efforts for decreasing or eliminating them in health. The solution to this problem is establishing a system for equality in health. Numerous studies show that the lower social classes have higher death rates compared to higher ones and these differences have increased in recent decades. Therefore, gathering information and evidence about the distribution of health to determine the root of these problems and making efforts to improve the health system are necessary.

Although the average of national and universal health level is increasing, inequality in health is evident in many countries of the world (8). Numerous studies have indicated that the lower classes of society had more death rates compared to higher social and economical classes and these differences have been increasing in recent decades. In the same way, Giashuddin (7) reported that inequality in death due to infectious diseases is more. Siminoff and Ross (9) mentioned that CI for distribution of death was negative (-0.43). This index was -0.22 in 1992 which represents increase in inequality. Ranjbar et al. (10), concluded that outpatient services utilized in accidents are affected by economical factors like higher education, salaries, and more coverage of these services. This study was conducted in Yazd in 2014 regarding the importance of determining distances and differences among various socio-economical groups in health services' access. Another aim was to determine the reasons that have resulted in differences and inequalities and decreased access to health services. Finally, the current study targeted at determining the socio-economical inequalities in having access to health and medical services of Yazd residents.

## Materials and Methods

This analytic and cross-sectional study was conducted in 2014. The population under the study consisted of all households of Yazd. The number of samples was calculated by the following formula:

$$N = \frac{z^2 s^2}{d^2}, \alpha = 0.95, s = 0.3, d = 0.2$$

The resulted N was 864 that was multiplied by a factor of 1.5 due to cluster sampling method. At last, the number of samples was estimated as 1037. Thus, based on the districts of municipality, 14 strata were chosen and from each a random household was selected. Afterwards, 75 households of the right side of the selected house were studied. The data collection instrument was a three-part questionnaire including questions about demographic factors and socio-economical ones (based on SES standard questionnaire). The questionnaire's items were about benefitting from health services. The socio-economical situation questionnaire was derived from the study carried out by Khemati (11) in Tehran, entitled as "Determining socio-economical inequalities of psycho-health" by analysis of cumulative equality index. The health services' utilization questionnaire was derived from the study about inequality in utilization and expenses of health services for situations of various health service agents conducted by Onwejekwe in 2011 (5). The socio-economic situation of households' questionnaire was answered by interviewers after interviewing the head of households. In order to complete the Health Problems and Health Services' Utilization questionnaire, a family health issues' expert was interviewed. After gathering questionnaires, data were fed into SPSS$_{16}$ and by using the factor analysis method, the population under the study was categorized based on its social and economical situations. Afterwards, the logistic regression was used to calculate the correlation among variables. Finally, for calculating the concentration index, the categorized data were entered in Stata software version 12/SE and analyzed.

Further, in the current study all ethical issues were observed based on the Helsinki Declaration.

## Results

According to the findings, 89.9% of individuals were male, 30.7% had high school education, 84.3% had governmental insurance, 64.7% had complementary insurance, and 44.7% had a salary range of 19-26 \$ (1\$ = 264120 Rials).

Regarding the results of Table 1, the P-value was more than 0.05 for most quintiles and as a result, CI was not calculated because it shows lack of significant inequality in distribution of total contagious and non-contagious diseases which needed services. Also, the range of certainty was from -1 to +1 which indicates that meaningful inequality does not exist.

The unequal distribution of outpatients and hospitalization of Yazd residents' visits shows that the CI index of total inpatient and outpatient received services for the population under the study was 0.32 in the last 6 months (Table 2) and regarding that the curve is under the equality line, it can be deduced that inpatients and outpatients visits had further accumulation for richer quintiles (Figure 1). Regarding the findings, CI of household's self-treatment in the last month was -0.09 (Table 3). Since the curve is above the equal line, self-curing is more in poorer groups (Figure 2).

**Table 1.** Distribution of contagious and non-contagious diseases based on economic situation in 2014

| Distribution of contagious and non contagious diseases/ Economic situation | Standard Deviation | Z | P > Z | [95% Confidence. Interval] | |
|---|---|---|---|---|---|
| The poorest quintile | 0.2 | 0.9 | 0.35 | -0.22 | 0.61 |
| Almost poor quintile | 0.2 | 0.6 | 0.49 | -0.27 | 0.56 |
| Moderate quintile | 0.2 | 1.2 | 0.2 | -0.14 | 0.69 |
| Almost rich quintile | 0.2 | 1.1 | 0.2 | -0.18 | 0.65 |
| The richest quintile | 0.1 | -5.44 | 0.006 | -1.14 | 0.53 |

**Table 2.** Distribution of inpatient and outpatients inequality of Yazd residents in the last 6 months based on economical situation in 2014

| Inpatient and Outpatients visit | Coefficient | Standard Error | T | P > |t| | [95% Confidence. Interval] | |
|---|---|---|---|---|---|---|
| _nl_1 | 0.32 | 0.00 | 35.16 | 0.00 | 0.3 | 0.34 |

**Table 3.** Distribution of inequality despite the need for medical services, based on economical situation in 2014

| Self-treatment | Coefficient | Standard Error | T | P > |t| | [95% Confidence. Interval] | |
|---|---|---|---|---|---|---|
| _nl_1 | -0.09 | 0.02 | -3.97 | 0.00 | -0.14 | -0.04 |
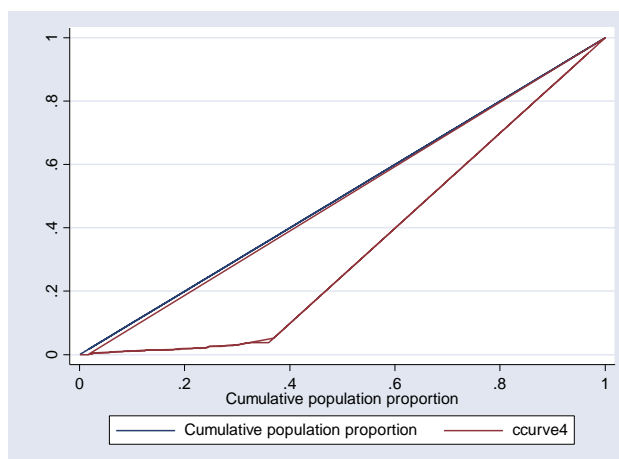


**Figure 1.** Cumulative curve of services for inpatients and outpatients in the last 6 months of Yazd residents in 2014.
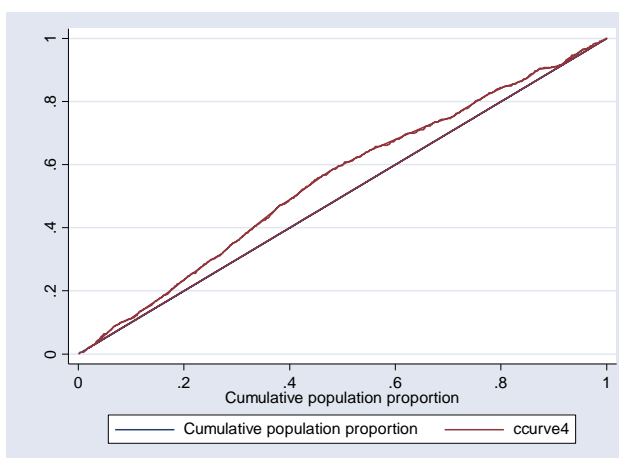


**Figure 2.** Cumulative curve of self-treatment despite the need to medical services in Yazd , 2014

## Discussion

The investigation on inequality in benefitting from health services in Yazd showed that there is no meaningful inequality in the contagious and non-contagious diseases. In other words, there was meaningful equality in utilizing all the services for outpatients, hospitalization, and self-treatment. This study is one of the few studies on inequality in utilizing health services in socio-economical groups via CI index. Recently, CI has become important in socio-economic inequality studies due to recognition of inequality, accumulation of health variable in rich and poor groups, and especially analysis of inequality based on socio-economical factors. P-value calculated for CI distribution of contagious and non-contagious diseases in each economic situation was more than 0.05 and the range of certainty dominion was from -1 to +1. So, it can be concluded that meaningful inequality does not exist in the distribution of total contagious and non-contagious diseases in the population under the study. This issue has refuted the researcher to draw the CI curve and analyze inequality in the distribution of contagious and non-contagious diseases.

Emamiyan's study indicated that there isn't any meaningful inequality in distribution between patients with diabetes and high cholesterol which are non-contagious in the current study (12). This is while the studies of Faggiano (13) and Bouchardy (14) confirmed the socio-economical inequality in distribution of colon, cervical, prostate, and esophageal cancers. Giashuddin (7) stated that there is a meaningful inequality for distribution of accidents, infectious, and chronic diseases whose CIs are respectively -0.24, -0.4 and -0.32. Lorant 15) also confirmed the inequality distribution of heart diseases, cancers, and flu .Finally, Kim (16) stated inequality in distribution of cancer.

Inequality in benefitting from services to outpatients and hospitalized patients in the past 6 months in five social groups showed that the richer groups of the society had more visits to doctors (P-value = 0.000). The CI of using outpatient services and hospitalizations was 0.3227 and positive. The cumulative curve of this variable was under the line of 45 degrees. Onwujekwe (5), Kim (16), and Ferry (17) investigated inequality in benefitting from health services and reached similar results. They stated that using hospitalization and outpatient services were more among richer groups of the society. This is while Leu (2004) stated that CI for the beds of hospitalization per day was negative (18). Damiani (15) and Lorant (19) reported that the socio-economical factors were effective on inequality in suing outpatient and hospitalization services especially in receiving preventive and screening services. Also, Hong (20) pointed out the inequality in households' utilization of health services because of their different socio-economical situations and argued that this issue depends on rural or urban lives and salaries of households.

Regarding the conclusion, it seems that there is a meaningful inequality in self-treatment inequality (P-value = 0.00). CI of households' self-treatment studied in the past month, despite of the need for health and medical services, was -0.09. The cumulative number achieved was negative, therefore, it can be said that self-treatment was more in poorer groups. There has been no study conducted on inequality in self-treatment, but Kim (16) and Damiani (19) investigated the effects of socio-economical inequalities, higher educations, and more professional jobs on using primary health services and prevention which can show their reverse effect on self-treatment.

In other words, self-treatment is less among higher educated individuals or those with more professional jobs. It is also stated in literature that paying direct expenses of health by households also has increased. Therefore, choosing a wrong strategy in the health section not only decreases some services but also stops some of them completely. However, the salient point was that this decrease of service occurs for poor people because people with more salaries are less sensitive to price fluctuations, instead people with less salary are more sensitive to changes in prices. Attempts to decrease differences in health of population clearly showed that providing services is not enough and socio-economical development is known as one of the most salient instruments of

decreasing socio-economical and gender inequality in having access to health, using services, and getting results from them (21).

## Conclusion

Some of the strategies for increasing socio-economical equalities can be recommended as follows:

- Improvement of health knowledge and national studies' per capita assisted by national and social participations in education and cooperation of sections.
- Control of health services' unnecessary payments (luxurious and suggestive payments) in spite of province officials' views of justice.
- Improvements of health information management system according to government's efforts on electronic government plans and increase internet and media's influence.
- Improvement of insurance coverage for poorer people assisted by integrated funds.
- Decrease of increasing health expenses' financial load assisted by the government efforts for eliminating concentration.
- Improvement of cooperation between public and private sections, philanthropic institutions, NGOs, societies, and people for improvement of health situations in the province.
- Improving the screening plan in weaker districts of the society.

Regarding the one-month call period for gathering information on outpatient visits and the six-month period for gathering information on hospitalization of households, accurate data collection was impossible. Therefore, cohort studies can be more responsive for such researches, but they of course have risk of loss. Although, other studies have also had such restriction in their study period, but this period was the best choice for decreasing this risk. The other limitation of the current study was on providing medical and economical information by households which can cause a little mistake in the study.

## Conflict of interests

The authors of this study did not report any contradiction in their interests.

## Authors' contributions

Baghian N and Ranjbar M designed research; Tayefi E conducted research; baghian N and Ranjbar M analyzed data; and Baghian N, Eftekhari A and Tayefi E wrote the paper. Ranjbar M had primary responsibility for final content. All authors read and approved the final manuscript.

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