# Unmet health care need in Turkey after the transformation on healthcare system

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## Background

Health is a universal human aspiration and a basic human need. Improving the health attainment of the population is a main goal in any health care system, together with improving responsiveness to population needs and fairness of financing. Access to healthcare points the ability of people to reach appropriate healthcare services without any obstacle and in a timely fashion. The barriers to healthcare access include financial reasons, unavailability of healthcare providers, long travelling distance to providers, and excessive waiting time to reach care. Access to safe and effective healthcare is an essential determinant of health. Aiming to reduce inequalities in health, many governments have targeted the health system to improve access to healthcare and to more equitably distribute health services across the population.

Turkey's healthcare system has been undergoing a transformation since 2003 and some important changes have occurred both in the provision and the financing of healthcare services. The Health Transformation Program (HTP) was designed to challenge chronic problems in the Turkish health sector: *i)* lagging health outcomes as compared to other OECD and middle-income countries; *ii)* inequities in access to healthcare; *iii)* fragmentation in financing and delivery of health services, which contributes to inefficiency and undermines financial sustainability; and *iv)* poor quality of care and limited patient responsiveness. As it is seen, equity in access to healthcare is one of the core elements of the HTP. Unfortunately, little if any information is available over time on utilisation of services across income groups in Turkey to monitor any changes that have happened. Recent report on Turkey's health system performance assessment indicates the analysis need in this field.

This study aimed to determine the change in access to healthcare in Turkey and to investigate the causes of this unmet need with respect on some socio-demographic variables.

## Methods

The EU Statistics on Income and Living Conditions (EU-SILC) is one of the surveys conducted in Europe that gives us the subjective unmet healthcare need prevalence and reasons. EU-SILC is an instrument

aiming at collecting timely and comparable cross-sectional and longitudinal multidimensional micro data on income, poverty, social exclusion and living conditions. This instrument is anchored in the European Statistical System (ESS). Turkey has been participated EU-SILC since 2006 via the Turkish Statistical Institute (TurkStat).

The country representative data from Turkey SILCs belonging 2006 and 2010 were analysed in this study.  In Turkey, the first implementation of "SILC" was conducted to total 12 872 households in April-June in 2006. The rotational design is used in this survey methodology. In 2010 survey the sample frame has been changed completely. Distribution of socio-demographic characteristics and health status of the individuals were shown in Table 1. A notable difference between the studies years were the slightly but statistically significant improvement in the health status of the individuals.

Self-reported unmet need for medical care in the past twelve months period was asked to the residents of private households aged fifteen years and older in Turkish SILC. The phrasing of the question was as follows:

*Was there any time during the last twelve months when, in your opinion, you personally needed*
*a medical examination or treatment for a health problem but you did not receive it?*

Follow-up question included the reasons for unmet need. In this study, among the possible reasons for 'unmet need', three of them were chosen because of their importance from a policy perspective: *unmet need due to cost, unmet need due to waiting list* and *unmet need due to the distance* to the provider. The reasons that were less clearly relevant to policymakers, (such as that the respondent wanted to wait to see if the problem got better on its own, didn't know any good doctor, fear of doctors, and could not take the time) were not treated as unmet need in this study. This approach was convenient with the studies in the literature. Dependent variable had three categories: no unmet need (responses like "fear of doctors" or "wanted to wait to see if the problem got better on its own" were also included in this category), unmet need due to cost and unmet need due to availability (waiting list and distance problems).

Independent variables were age, gender, health outcomes, income level, education and employment status, and region of residence (rural-urban). Individuals were grouped into three categories according their ages: Less than 35 years old, between 35 and 54, and older than 54. Then, these three groups were divided once more according to gender categories. Therefor six age-gender groups were derived. EU-SILC includes three variables regarding health outcomes: self-assessed health (SAH) status, presence of chronic health condition, and presence of limitation in daily activities. Income quintiles were formed by assigning household disposable equivalent income to individuals. Modified OECD equivalence scale was

used in this calculation. Educational statuses of the individuals were assessed according their graduation and grouped into two categories: lower secondary or less, and upper secondary or more. The self-declared main activity status in EU-SILC questionnaire was the variable captured the person's own perception of their main activity at the interviewing moment. It included full-time or part-time employment as well as unemployment or retiree status besides unpaid housekeeping activities.

Percentage changes in the unmet need between the two time periods 2006 and 2010 were calculated for each category mentioned above. The percentage changes and the 95% confidence intervals (+/- 1.96xSE) for the percent changes were calculated using the formulas below.

$$\%CHG = \frac{(EST\ final\ year\ -\ EST\ initial\ year)}{EST\ initial\ year} * 100$$

$$SE(\%CHG) = \left| \frac{EST_{final\ year}}{EST_{initial\ year}} \right| * \sqrt{\frac{SE^2_{final\ year}}{EST^2_{final\ year}} + \frac{SE^2_{initial\ year}}{EST^2_{initial\ year}}} * 100$$

Predictors of unmet need were assessed by multinomial logistic regression analysis. Chow test result showed that there was a structural break between two survey years. Two separate analyses were conducted for each survey year. Multicollinearity between the independent variables was assessed by Variance Inflation Factor (VIF). No variable had VIF greater than value of five. Also a different diagnostic for the multicollinearity, the condition number, was calculated and it was found as 14.3 which showed a weak dependency.

Cross sectional weights were used in the percentage change calculations but not in the multinomial regression analysis. MS Excel, SPSS 16.0 and econometric package Gretl were used in the conduction of the analyses.

**Results**

Prevalence of unmet need due to "cost" in some socio-demographic groups and percentage change between the years 2006 and 2010 is presented in Table 2. Proportion of individuals experiencing unmet need due to cost was 16.8% in 2006. This proportion fell down by 11.3% during the four years period to 14.9% in 2010. Also in Table 2, proportions of unmet need due to cost were shown for each variable category. Unmet need due to cost was highest in the 35-54 years old female group. There was also no significant change in this group during the study period. Males of 15-34 years old had the least unmet need proportion in 2006 and they had also the highest percentage change by -25.7%. As expected, for

the health status variables, unhealthy groups had the highest level of unmet healthcare need. But they also showed the least improvement as a percentage change during the study period. In the poorest income quintile, the unmet need due to cost was approximately eight fold higher compared to the richest. There were statistically significant falls in all income quintiles except the richest quintile during the study period. Unmet need due to cost was found three folds higher in the lower education group than the higher education group. There was no change in the higher education group while the other showed 11% fall in the period. Population living in the rural area have shown more fall compared to the urban, but also the rural population had higher level unmet need due to cost. Unmet need due to cost was highest among the unemployed persons compared to employed or other employment states. All, but the retirees showed some form of decrease in unmet need between the study years, while retiree population showed a remarkable increase e.g. from 5.1% to 7.6%, a 48.1% change in the period of 2006 to 2010. (Table 2)

Prevalence of unmet need due to "availability" in some socio-demographic groups and percentage change between the years 2006 and 2010 is presented in Table 3. There was a significant fall in almost all groups for the availability caused unmet need. The magnitude of the fall was 37.4% for the total. The remarkable points to be stressed were the relatively small changes in the low income and educational groups. The unmet need due to availability showed changes in opposite directions in the rural and urban settlements. It raised 30.8% in rural while there was a fall as of 56.1% in urban.

In multinomial logistic regression, it was found that elderly males and elderly females were less likely reported unmet need due to cost. Population in poor health status according to three health indicator variables demonstrated a positive relationship with the unmet need due to cost. The only exception was for the chronic condition for the year 2010. There was a very significant difference in unmet need due to cost across the income gradients. Population in poorest income quintile reported seven times more unmet need compared richest quintile in 2006. Income inequality became more prominent in 2010. The difference between the survey years was captured in a pooled regression analysis in which dummy year variable interaction was assessed for all variables in the model (Table 4). This pooled regression result showed that unmet need due to cost was reported significantly more in the poorest quintile in 2010.

Population with lower education and population living in the rural area reported more unmet need due to cost. But this relationship weakened in 2010 (Table 4). Unemployed people reported 40% more unmet need due to cost, while the students, housekeepers and retirees reported less, compared to the reference group in 2006. This relationship was preserved in 2010, but the retirees reported much more unmet need compared to the earlier year (Table 4). Rural population reported significantly higher unmet

need due to availability in 2010 compared with 2006 (Table 4). Part-time employees and retirees tended to report more unmet need due to availability.

**4. Conclusion:** Findings show that access to healthcare is improving in Turkey but this improvement is not evenly distributed between social groups and suggests that further existing inequalities also increases. Inequality must be reduced by applying positive discrimination in efforts for the groups which needs further. Socio-political interventions for reducing the existing socio-economic inequalities will be the basic solution

**Conflicts of interest**

None declarate

**Tables**

Table 1. Socio-demographic characteristics of the samples, SILC-Turkey 2006 and 2010.

| | | 2006 | | 2010 | |
|---|---|---|---|---|---|
| | | % | (S.E.) | % | (S.E.) |
| **Age-sex groups** | Male 15-34 | 23.8 | (0.2) | 22.4 | (0.2) |
| | Male 35-54 | 16.9 | (0.2) | 17.6 | (0.2) |
| | Male 55+ | 8.2 | (0.2) | 9.1 | (0.2) |
| | Female 15-34 | 24.3 | (0.2) | 22.9 | (0.2) |
| | Female 35-54 | 16.9 | (0.2) | 17.4 | (0.2) |
| | Female 55+ | 9.8 | (0.2) | 10.6 | (0.2) |
| **Self-assessed health** | Good | 63.4 | (0.3) | 66.0 | (0.3) |
| | Fair | 21.9 | (0.2) | 20.3 | (0.2) |
| | Poor | 14.7 | (0.2) | 13.7 | (0.2) |
| **Daily Limitation** | Limitation (mild /severe) | 23.6 | (0.2) | 27.5 | (0.2) |
| | No limitation | 76.4 | (0.2) | 72.5 | (0.2) |
| **Having chronic cond.** | Yes | 27.8 | (0.3) | 30.0 | (0.3) |
| | No | 72.2 | (0.3) | 70.0 | (0.3) |
| **Education** | Lower secondary or less | 74.9 | (0.2) | 73.0 | (0.2) |
| | Upper second. Or higher | 25.1 | (0.2) | 27.0 | (0.2) |
| **Settlement** | Rural | 29.3 | (0.3) | 30.4 | (0.3) |
| | Urban | 70.7 | (0.3) | 69.6 | (0.3) |
| **Employment status** | Full time | 39.8 | (0.3) | 41.0 | (0.3) |
| | Part time | 4.5 | (0.1) | 5.1 | (0.1) |
| | Unemployed | 4.2 | (0.1) | 4.5 | (0.1) |
| | Student | 6.6 | (0.1) | 7.5 | (0.1) |
| | Retiree | 7.1 | (0.1) | 8.0 | (0.1) |
| | Housekeeper | 29.7 | (0.3) | 26.5 | (0.2) |
| | Other employment | 8.0 | (0.2) | 7.4 | (0.1) |

**Table 2**. Prevalence of unmet need due to "*cost*" in some socio-demographic groups and percentage change between the years 2006 and 2010.

| | | 2006 | | 2010 | | Percentage change | | |
|---|---|---|---|---|---|---|---|---|
| | | % | (S.E.) | % | (S.E.) | % | Upper bound | Lower bound |
| **Age-sex groups** | Male 15-34 | 14.8 | (0.4) | 11.0 | (0.4) | **-25.7** | -32.1 | -19.4 |
| | Male 35-54 | 18.3 | (0.5) | 17.3 | (0.5) | -5.2 | -12.9 | 2.5 |
| | Male 55+ | 16.6 | (0.7) | 13.0 | (0.6) | **-21.9** | -31.9 | -11.9 |
| | Female 15-34 | 15.8 | (0.4) | 13.9 | (0.4) | **-11.8** | -18.6 | -5.0 |
| | Female 35-54 | 19.7 | (0.6) | 19.1 | (0.5) | -2.9 | -10.3 | 4.6 |
| | Female 55+ | 17.0 | (0.7) | 16.1 | (0.6) | -5.0 | -15.4 | 5.4 |
| **Self-assessed health** | Good | 11.1 | (0.2) | 8.9 | (0.2) | **-19.8** | -24.4 | -15.1 |
| | Fair | 22.1 | (0.5) | 23.0 | (0.5) | 4.0 | -2.6 | 10.6 |
| | Poor | 33.5 | (0.7) | 31.8 | (0.7) | -5.0 | -10.7 | 0.6 |
| **Daily Limitation** | Limitation | 30.7 | (0.5) | 27.1 | (0.5) | **-11.8** | -16.1 | -7.5 |
| | No limitation | 12.5 | (0.2) | 10.3 | (0.2) | **-17.9** | -22.1 | -13.7 |
| **Having chronic cond.** | Yes | 26.1 | (0.5) | 23.8 | (0.4) | **-8.9** | -13.5 | -4.3 |
| | No | 13.2 | (0.2) | 11.1 | (0.2) | **-16.0** | -20.2 | -11.8 |
| **Income quintiles** | Income_q1 | 34.7 | (0.6) | 31.4 | (0.6) | **-9.6** | -14.0 | -5.1 |
| | Income_q2 | 22.5 | (0.5) | 19.6 | (0.5) | **-12.9** | -18.8 | -7.0 |
| | Income_q3 | 14.0 | (0.4) | 12.8 | (0.4) | **-8.9** | -17.0 | -0.9 |
| | Income_q4 | 8.7 | (0.4) | 7.1 | (0.3) | **-18.5** | -28.3 | -8.8 |
| | Income_q5 | 4.0 | (0.3) | 3.6 | (0.2) | -9.7 | -25.5 | 6.2 |
| **Education** | Lower | 20.3 | (0.3) | 18.1 | (0.2) | **-11.0** | -14.3 | -7.7 |
| | Upper | 6.3 | (0.3) | 6.3 | (0.3) | 0.0 | -11.8 | 11.8 |
| **Settlement** | Rural | 24.0 | (0.5) | 20.3 | (0.4) | **-15.7** | -20.3 | -11.2 |
| | Urban | 13.8 | (0.2) | 12.6 | (0.2) | **-8.9** | -13.3 | -4.6 |
| **Employment status** | Full time | 16.2 | (0.3) | 13.8 | (0.3) | **-14.4** | -19.4 | -9.4 |
| | Part time | 24.4 | (1.2) | 23.4 | (1.0) | -4.4 | -16.6 | 7.8 |
| | Unemployed | 26.7 | (1.2) | 23.9 | (1.1) | -10.4 | -22.0 | 1.1 |
| | Student | 7.0 | (0.6) | 5.0 | (0.4) | **-28.1** | -45.0 | -11.2 |
| | Retiree | 5.1 | (0.5) | 7.6 | (0.5) | **48.1** | 14.7 | 81.6 |
| | Housekeeper | 17.5 | (0.4) | 16.1 | (0.4) | **-8.2** | -14.2 | -2.2 |
| | Other employment | 26.4 | (0.9) | 23.2 | (0.9) | **-12.2** | -20.8 | -3.5 |
| TOTAL | | 16.8 | (0.2) | 14.9 | (0.2) | **-11.3** | -14.5 | -8.1 |

**Table 3**. Prevalence of unmet need due to "***availability***" in some socio-demographic groups and the percentage changes between the years 2006 and 2010.

| | | 2006 | | 2010 | | Percentage change | | |
|---|---|---|---|---|---|---|---|---|
| | | % | (S.E.) | % | (S.E.) | % | Upper bound | Lower bound |
| **Age-sex groups** | Male 15-34 | 1.0 | (0.1) | 0.6 | (0.1) | **-36.2** | -60.0 | -12.5 |
| | Male 35-54 | 2.0 | (0.2) | 1.0 | (0.1) | **-52.6** | -68.0 | -37.2 |
| | Male 55+ | 3.4 | (0.4) | 2.5 | (0.3) | **-25.8** | -48.6 | -3.0 |
| | Female 15-34 | 1.1 | (0.1) | 0.6 | (0.1) | **-41.4** | -62.4 | -20.4 |
| | Female 35-54 | 3.3 | (0.2) | 1.8 | (0.2) | **-44.8** | -58.2 | -31.4 |
| | Female 55+ | 3.9 | (0.4) | 2.7 | (0.3) | **-30.0** | -48.8 | -11.3 |
| **Self-assessed health** | Good | 1.2 | (0.1) | 0.7 | (0.1) | **-44.9** | -56.2 | -33.5 |
| | Fair | 3.7 | (0.2) | 1.9 | (0.2) | **-48.4** | -59.4 | -37.4 |
| | Poor | 3.2 | (0.3) | 3.3 | (0.3) | 3.2 | -20.1 | 26.5 |
| **Daily Limitation** | Limitation | 3.7 | (0.2) | 2.6 | (0.2) | **-28.9** | -41.2 | -16.6 |
| | No limitation | 1.5 | (0.1) | 0.8 | (0.1) | **-49.8** | -58.6 | -40.9 |
| **Having chronic cond.** | Yes | 3.6 | (0.2) | 2.6 | (0.2) | **-27.2** | -39.2 | -15.3 |
| | No | 1.5 | (0.1) | 0.7 | (0.1) | **-50.9** | -60.1 | -41.8 |
| **Income quintiles** | Income_q1 | 1.3 | (0.1) | 1.4 | (0.1) | 7.4 | -25.1 | 39.8 |
| | Income_q2 | 1.4 | (0.2) | 1.2 | (0.1) | -17.6 | -43.0 | 7.8 |
| | Income_q3 | 2.4 | (0.2) | 1.3 | (0.1) | **-47.2** | -61.3 | -33.1 |
| | Income_q4 | 2.9 | (0.2) | 1.4 | (0.1) | **-51.1** | -63.2 | -38.9 |
| | Income_q5 | 2.2 | (0.2) | 1.2 | (0.1) | **-46.9** | -61.6 | -32.3 |
| **Education** | Lower | 2.2 | (0.1) | 1.5 | (0.1) | **-31.4** | -40.7 | -22.1 |
| | Upper | 1.7 | (0.1) | 0.7 | (0.1) | **-57.0** | -69.9 | -44.2 |
| **Settlement** | Rural | 1.5 | (0.1) | 1.9 | (0.1) | **30.8** | 1.8 | 59.7 |
| | Urban | 2.3 | (0.1) | 1.0 | (0.1) | **-56.1** | -62.9 | -49.3 |
| **Employment status** | Full time | 1.4 | (0.1) | 0.8 | (0.1) | **-39.6** | -54.1 | -25.1 |
| | Part time | 2.1 | (0.4) | 2.0 | (0.3) | -7.6 | -53.2 | 38.0 |
| | Unemployed | 0.5 | (0.2) | 0.4 | (0.2) | -17.8 | -109.7 | 74.0 |
| | Student | 1.0 | (0.2) | 0.3 | (0.1) | -69.5 | -94.7 | -44.3 |
| | Retiree | 4.6 | (0.5) | 2.7 | (0.3) | -40.8 | -58.5 | -23.2 |
| | Housekeeper | 2.6 | (0.2) | 1.5 | (0.1) | -43.7 | -55.7 | -31.7 |
| | Other employment | 2.6 | (0.3) | 2.6 | (0.3) | -0.5 | -35.0 | 34.0 |
| TOTAL | | 2.0 | (0.1) | 1.3 | (0.1) | **-37.4** | -45.1 | -29.7 |

**Table 4**. Multinomial logistic regression results for the pooled data of 2006 and 2010 Turkey SILC (only the odds ratios for the interaction terms that capture the changes during this period are displayed in this table)

| | | Unmet need (OR) | |
|---|---|---|---|
| | | Cost | Availability |
| **Year** | **2006*** | 1 | 1 |
| | 2010 | $0.52^3$ | $0.57^3$ |
| **Age-sex groups** | **Male 15-34*** | 1 | 1 |
| | Male 35-54 | $1.19^2$ | 0.74 |
| | Male 55+ | $0.83^1$ | 0.84 |
| | Female 15-34 | $1.29^3$ | 1.12 |
| | Female 35-54 | $1.25^2$ | 0.97 |
| | Female 55+ | 1.17 | 0.76 |
| **Self-assessed health** | **Good*** | 1 | 1 |
| | Fair | $1.27^3$ | 0.83 |
| | Poor | $1.51^3$ | $1.57^1$ |
| **Daily Limitation** | **No limitation*** | 1 | 1 |
| | Limitation | 0.90 | 0.79 |
| **Having chronic conditions** | **No*** | 1 | 1 |
| | Yes | $0.87^1$ | 1.32 |
| **Income quintiles** | **Income_q5*** | 1 | 1 |
| | Income_q1 | $1.46^3$ | 0.87 |
| | Income_q2 | $1.25^1$ | 0.98 |
| | Income_q3 | $1.23^1$ | 0.85 |
| | Income_q4 | 1.16 | 0.80 |
| **Education** | **Upper*** | 1 | 1 |
| | Lower | $0.82^2$ | 1.20 |
| **Settlement** | **Urban*** | 1 | 1 |
| | Rural | $0.84^3$ | $2.15^3$ |
| **Employment status** | **Full time*** | 1 | 1 |
| | Part time | 1.10 | 0.93 |
| | Unemployed | 1.15 | 1.86 |
| | Student | 0.84 | 0.57 |
| | Retiree | $1.93^3$ | 0.95 |
| | Housekeeper | 0.98 | 0.83 |
| | Other employment | 0.91 | 0.83 |
| | Number of observation | 63061 | |
| | Log-likelihood | -27848.27 | |
| | Number of cases 'correctly predicted' | 52186 (82.8%) | |
| | Likelihood ratio test: Chi-square(130) | 10671.9 [0.0000] | |

*Ref, $^1p<0.10$, $^2p<0.05$, $^3p<0.01$