

Improving Health Status in Turkey: Combating Pollution

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About the authors

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In a nutshell

- According to the statistical analysis conducted based on the Income and Living Conditions Survey of Turkey, during the period 2006-2012 people who claimed that they were exposed to air and noise pollution were more likely to report worse health and to suffer from chronic illnesses, such as asthma and bronchitis.
- Pollution also causes health inequalities among people in Turkey, due to environmental disparities between polluted and less polluted areas. In addition to pollution, income and educational gaps are other important determinants of health inequalities. There is a high and persistent degree of health inequality in Turkey, especially disfavoring the poor and those with low education.
- For better citizen health status and a reduction in health inequalities, health policies and reforms should be designed considering these factors.

Health is one of the components of human capital formation and therefore labor productivity. A lower health status level leads to lower productivity and therefore lower earnings. Health inequalities put vulnerable groups at a further disadvantage, diminishing their opportunities to be productive (WHO, 2008). Focusing on the social determinants of health means tackling the causes of illness and poor health. The social determinants of health consist of key factors of people's social, economic and physical environments. The income, education and health system of a country and its environmental factors, such as air quality, are the main determinants responsible for health inequalities among people. Poor people are more vulnerable to chronic diseases and their risk factors. Education is the most basic determinant of health status, as it provides knowledge and life skills that allow better-educated individuals to gain more ready access to information and resources to promote health. More educated people are better able to understand and use health information, and are better placed to benefit from the healthcare system.

In addition to well-known determinants of health, such as income and education, the effect of noise and air pollution on the health and life quality of people has recently become a major research topic throughout the world (WHO, 2008). This is in terms of air pollution especially, as it leads to the worst health outcomes and an increased death probability. Outdoor air pollution causes over half a million premature deaths per year in Asia and millions more suffer from respiratory illnesses, especially children and the elderly. It is estimated that 3.7 million premature deaths in 2012 can be attributed to exposure to ambient air pollution, while in 2050 outdoor air pollution will be the top cause of environmentally related deaths. In Turkey, almost 29,000 people died prematurely from exposure to ozone and particulate matter in 2010 (HEAL, 2015). The poor are also particularly at risk, having fewer opportunities to avoid exposure to damaging pollutants (WHO, 2008).

Air Pollution and Noise Pollution in Turkey

Increasing trends in energy consumption and car ownership in Turkey are the two main responsible factors for the increased air and noise pollution in the country. As Turkey continues to develop its economy, the problem will likely be exacerbated unless precautionary actions are undertaken. Turkey's recent economic growth since the mid-1990s has caused a jump in industrial production, together with fears of increased environmental deterioration. In particular, high domestic consumption levels of energy have forced Turkey to import larger amounts of oil and gas, which raises alarms of even more air and water pollution. In addition, a continuously rising population and its movement to greater cities in Turkey, disorderly planned city developments, and increasing use of motor vehicles have exacerbated noise pollution and other environmental problems.

There are health costs and productivity losses because of air and noise pollution and these are attributable to the combined effects of population growth, urbanization, motorization and increased energy use. In addition, high volumes of coal, increasingly used in households for heating and cooking purposes, cause indoor air pollution that is known to cause respiratory diseases.

The Link between Health and its Determinants in Turkey

There has been limited research that analyzes and measures the effects of air or noise pollution on health and their associated health costs and productivity losses in Turkey. This policy brief is written based on the results of our empirical scientific research (Ozdamar, 2014) that highlights the role of air pollution, noise pollution and some social determinants on the health status of people and the chronic illnesses they suffer from. Therefore, the policy brief itself and its implementation might be an essential step for the improvement of people's health and, therefore, human capital development in Turkey. The recommendations in this policy brief do not only address Turkish policy makers and the public at large in Turkey but also countries that struggle with similar problems.

Our main finding suggests that noise pollution, air pollution and inequalities in education and income have negative effects on health, resulting in lower labor productivity and lower wages. More specifically:

- Air and noise pollution in Turkey harm the health of people. According to the Income and Living Conditions Survey of Turkey (2006-2012), people who claim exposure to air and noise pollution report worse health status than people who are not exposed. Moreover, these people are willing to pay more than 8.5% and 9.2% of their household income for reduction of air and noise pollution respectively. This corresponds to the amount of TL 160 and TL173 per month respectively. Air and noise pollution are both significant in urban and rural areas, emanating from traffic, industry and farms.
- Income and education are the most important determinants of health status in Turkey. The analysis shows that a minimum annual household income equaling TL 14,700 is necessary in order to see health improvements. Almost 25% of the people report an annual household income less than TL 15,000, while roughly 8.5% have a household income higher than TL 50,000 in 2012 prices, representing significant health inequality between people in Turkey.
- Individuals with poor health status and chronic

diseases work less, earn less and are less productive. These negative effects are exacerbated due to the harmful impact of air and noise pollution. Individuals who suffer from chronic illnesses prefer to stay at home and work 1.5 hours (per week) less than individuals with no chronic illnesses. Furthermore, individuals with poor health status work 4.5 hours (per week) less compared to those with good health status. The reason for this is the receipt of medical care services in hospitals or relevant health centers. Moreover, the study suggests that the wage level of individuals with poor health status is 12.45% lower than the wage level of people with better health status, because of the lower productivity and the time lost during medical care and treatment. The contribution of air and noise pollution to this 12.45% lower wage is 1.25% and 1.39% respectively. Similarly, people who suffer from chronic illnesses earn 9% less than individuals who do not have any chronic disease, and 0.92% and 1.02% of this 9% come from air and noise pollution respectively.

- The study confirms the negative effects of air and noise pollution on house rents. More precisely, the findings show that those who claim they are exposed to air and noise pollution pay 4-5% less rent than those who are not exposed. A household selects the dwelling that maximizes its utility subject to its income and the rent of each dwelling. Thus, poorer people reside in high-polluted areas. Even though they are willing to move to areas with cleaner air and without noise pollution, they are not able to afford the higher costs implied by higher dwelling rents and moving expenses. This is further confirmed by the research that household income is negatively correlated with air and noise pollution, indicating that richer households live in cleaner areas.
- The analysis shows that couples with or without dependent children are healthier than single persons. Moreover, the analysis provides evidence on the importance of having more family members, in the sense that family support can be protective and beneficial to people with a chronic illness and poor health status.

- Findings also point to the existence of health inequalities between men and women in Turkey. Women, in general, have lower health and physical functioning levels. Moreover, job status is associated with inequality, disfavoring the poor, women, the unemployed, retired individuals and people with low education. Moreover, widowed and divorced individuals are less healthy than couples. Indoor toilet flushing and piped water in the dwelling are associated with higher levels of health status. People who use wood, coal and dried cow dung have poorer health than households who use natural gas and electricity. Therefore, indoor air pollution is another determinant that causes health inequalities.

Policy Recommendations

Following these findings, the first recommendation to policy-makers is to develop systematic measures of the costs and benefits associated with the reduction of air and noise pollution. Secondly, measuring benefits associated with an increase in labor productivity and decreases in health costs (e.g., medical care, visits to doctors, inpatients to hospitals) as a result of air and noise pollution reduction would be useful in conducting a cost-benefit analysis for policy implementation.

Second, further efforts are needed to improve the quality of oil products. Additional investments in the environmental control system, as well as further promotion of switching from high-sulphur lignite coal to natural gas for fuel, are needed. Assistance to poor people in the form of coal (15.4 million tons coal were delivered between 2002-2013) should be replaced with other kinds of assistance or benefits that offer better and healthy lives for society while reducing poverty (WHO, 2008; HEAL, 2015; Ozdamar, 2014). Recently, in 2014, five Turkish medical organizations, led by the Turkish Medical Association (TTB), recognized and declared their concerns about the negative effects of coal power plants on public health (HEAL, 2015).

This research (Ozdamar, 2014) shows that understanding health inequalities is crucial for the development of policies, interventions and cost-effective

health reforms. In addition, this study suggests that air and noise pollution are very important factors that cannot be ignored by national governments and local authorities. Thus, recognizing the determinants of health, including individual lifestyle factors like diet, smoking and physical activity; social factors like crime, unemployment and social exclusion; socio-economic factors like poverty, income, education and living and working conditions; air, water and noise pollution and housing conditions and quality is essential to designing proper health reforms. Regarding air and noise pollution, the following policies can be followed:

The Turkish government, in collaboration with local authorities and health experts, needs to recognize the importance of integrated strategies and regulations in addressing the environmental health impacts of indoor and outdoor air and noise pollution. Doctors and health experts should communicate with the public that air pollution is a cause of adverse health effects. Also, health experts, in collaboration with local and national authorities, should be engaged in policies that reduce air and noise pollution.

A policy option is to inform the public through health alerts. More specifically, if specific thresholds of air pollution are exceeded, which are at risk levels for public health, they should be highlighted by local authorities and media. In addition, events promoting the importance of clean air should be organized. In this context, another policy is to raise awareness of the health risk effects that coal power plants have.

Educating and encouraging the public to use alternative transportation modes, including public transport, vanpool, carpool, biking and walking can be beneficial to air and noise pollution reduction.

Knowledge and awareness about health determinants and approaches to tackling health issues are limited. There is lack of information, evidence and training about the health determinants. Based on the research conducted (Ozdamar, 2014), in addition to international experience (International Energy Agency, 2010; Kelly 2011) related sectors and public institutions

should increase public awareness using media, conferences and seminars particularly for women, children and the elderly who are more at risk.

In addition, surveys based on detailed individual-level data should be conducted, such on the city or post-code level. This will allow for more precise noise and air pollution geographical mapping and more precise measurements of pollution's adverse effects on health. On the other hand, local and national authorities' taking into account the cost of air pollution reduction will help policymakers take decisions based on the cost-benefit analysis of pollution reduction, and its effects on health outcomes.

Traffic congestion charge policies should be implemented for the most crowded or congested city roads to encourage people to use public transportation instead of their own cars to reduce both air and noise pollution. Istanbul can be a starting point to implement this policy, which, for instance, has been working efficiently in central London since its implementation there in 2003 (Kelly, 2011).

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References

- HEAL. (2015). Air Pollution and Health in Turkey Facts, Figures and Recommendations. Health and Environmental Alliance, Promoting environmental policy that contributes to Good Health.
- International Energy Agency. (2010). Energy Policies

of IEA Countries, Turkey 2009 Review.

Kelly, F. Ross, R.A., Armstrong, B., Atkinson, R., Barratt, B., Beevers, S., Derwent, D., Green, D., Mudway, I. and Wilkinson, P. (2011). The Impact of the Congestion Charging Scheme on Air Quality in London. Health Effects Institute, Research Report, No. 155.

Ozdamar, O. and Giovanis, E. (2014). Valuing the Effects of Air and Noise Pollution on Health Status in Turkey. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2525824.

World Health Organization (WHO). (2008). Closing the Gap in a Generation: Health Equity Through Action on the Social Determinants of Health, Report of the Commission on Social Determinants of Health. Geneva: World Health Organization.

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