LabHEM LABORATORY OF HEALTH ECONOMICS & MANAGEMENT UNIVERSITY OF PIRAEUS *Decision-making effectiveness for health leaders*

EE609

Economic Evaluation and Return-On-Investment (ROI) of Fostering Physical Activity Policies (Simulation With Two Different Tools)

Efthymiou I, Vozikis A, Sidiropoulos S, Emmanouil-Kalos A

Laboratory of Health Economics and Management (LabHEM), Department of Economics, University of Piraeus, Greece

Introduction

Lack of exercise (physical inactivity) constitutes the fourth health risk factor and represents the 6% of global mortality (WHO, 2010a), while it imposes very high costs on the health sector. The health consequences associated with physical inactivity concern cardio-respiratory health (coronary disease, cardiovascular disease, stroke, hypertension, ischemic episode), metabolic health (diabetes mellitus, obesity), myoskeletal health (bone health, osteoporosis), types of cancer (breast cancer, colon cancer), functional health, fall prevention and finally, depression (WHO, 2010b; Bonner, 2017).

In the 21st century, the need for universal incorporation of physical activity in people's daily life is imperative. It demands large-scale actions effectuated with prudence and coherence by every governmental sector. Each governmental sector must promote the required conditions, so that efforts to orient populations toward adopting the habit of physical activity are successful. Of course, physical activity is not just a habit. It is also a benefactor to human health; it is a policy that promotes public health and can act as a heritage for future generations.

Methods

Two (-2-) simulation models are used for the economic evaluation of public health interventions focusing on physical activity. In particular, the study uses:

1. The Health economic assessment tool (HEAT) for walking and for cycling (WHO): HEAT is a health impact assessment model that is a quantitative tool to calculate the health effects of regular cycling and/or walking as well as the related carbon emissions.
2. The Weight management economic assessment tool (PHE), which enables us to estimate the potential health and economic consequences of weight programmes/interventions management in adults.

The objective of the above health and economic modelling components was to carry out cost-effectiveness analysis and calculate life years gained & health benefits along with net cost saving for various levels of cost of the intervention in Greece.

Results

HEAT Results

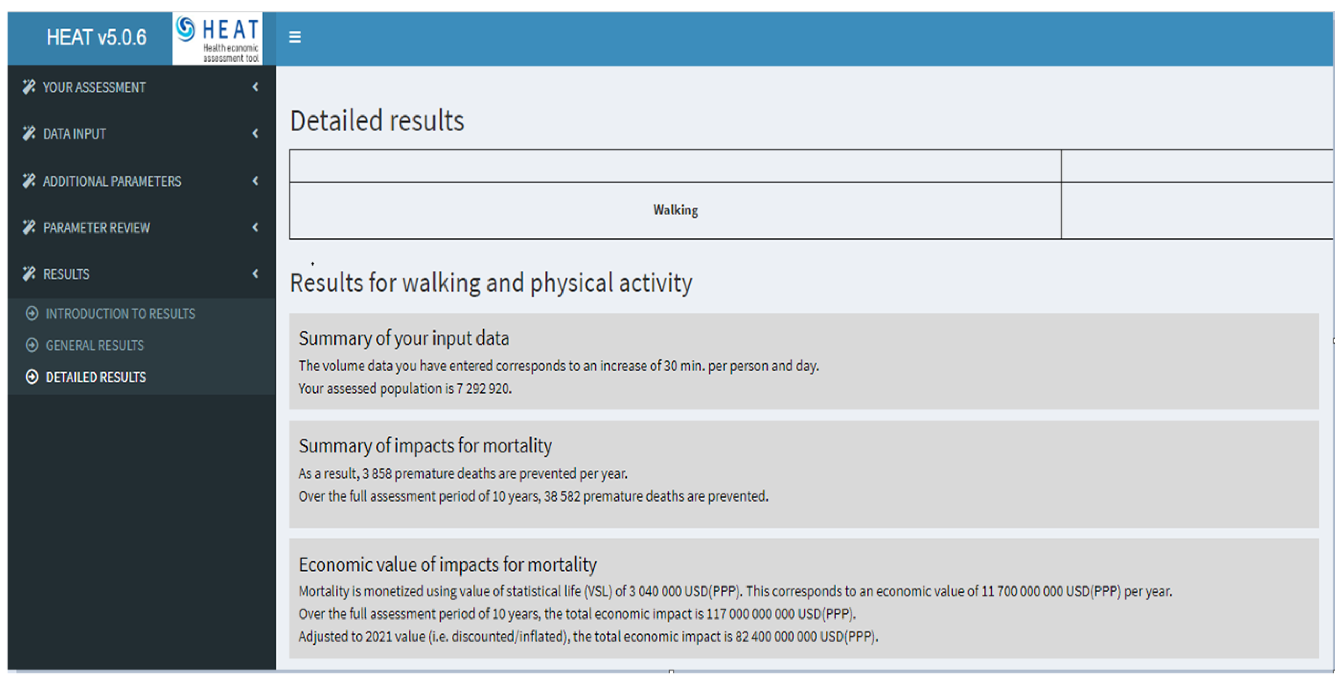
Assuming a 30 minuntes increase in walking per person per day, and by applying the 5% default HEAT discount rate to future benefits, HEAT calculates the following for Greece:

- 3.858 premature deaths prevented per year, with a total 38.582 premature deaths prevented over a period of 10 years.

Assumiung the Value of Statistical Life (VSL) at 3.040.000 USD(PPP), the economic value for a year calculated at 11.700.000.000 USD(PPP).

- Over the full assesment period of 10 years, the total economic impact is 117.000.000.000 USD(PPP), adjusted to 82.400.000.000 USD(PPP) in 2021 values.

Results of the Health Economic Assessment Tool (HEAT) for walking and for cycling



The basic functioning of the physical activity module of HEAT uses the following formula:

1 – RR × (local volume of walking or cycling/reference volume of walking or cycling)

Where:

RR = relative risk of death in underlying studies (walking: 0.89).

Caps for the benefits from physical activity in HEAT

Mode	Applicable age range	Relative risk	Reference volume	Benefits capped at
Walking	20–74 years	0.89 (CI 0.83–0.96)	168 minutes/week	30% (460 minutes/week)

Figure 1. Results of HEAT

PHE Results

- ICERs are small compared with the estimated threshold adopted for Greece (below €20,000 per QALY) for most of the interventions studied whose costs were set at €100, provided that weight regain does not return the cohort to its per-intervention trajectory

- The parameters which have the most impacts on the ICER and consequently on the cost effectiveness of the interventions are the BMI, gender, cost of the interventions, the number of kilograms lost during the intervention and the regain of BMI% per annum.

- For the moderately obese and the morbidly obese groups of both men and women of all age cohorts from 20 to 70 years, even very small losses of weight, such as 0.3 BMI points (or about 1 kg, depending on height) need to be lost for the intervention to be estimated to be cost effective, as long as weight does not return to its pre-intervention trajectory for about 5 years

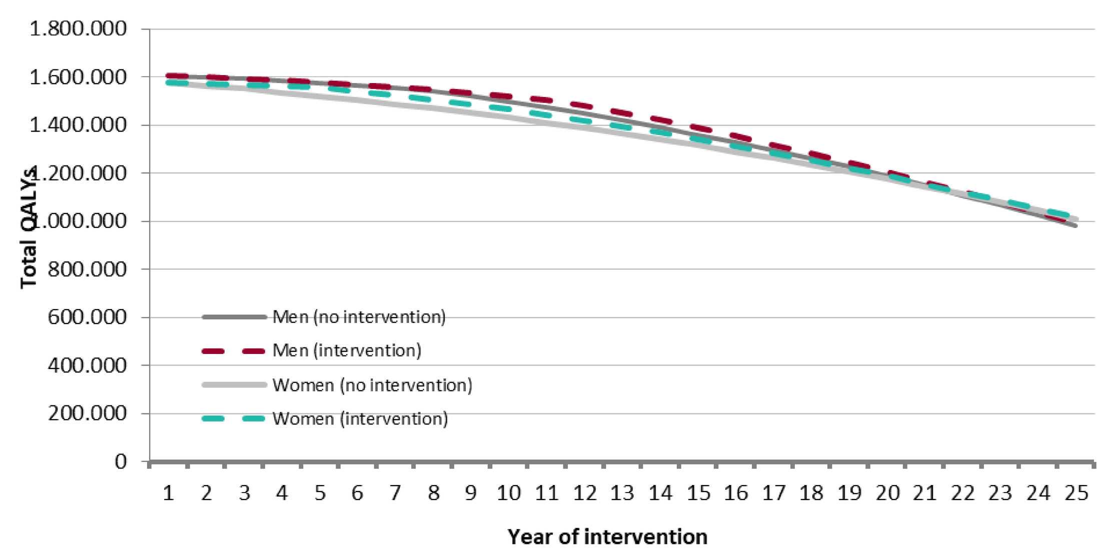


Figure 2. Total QALYs by intervention

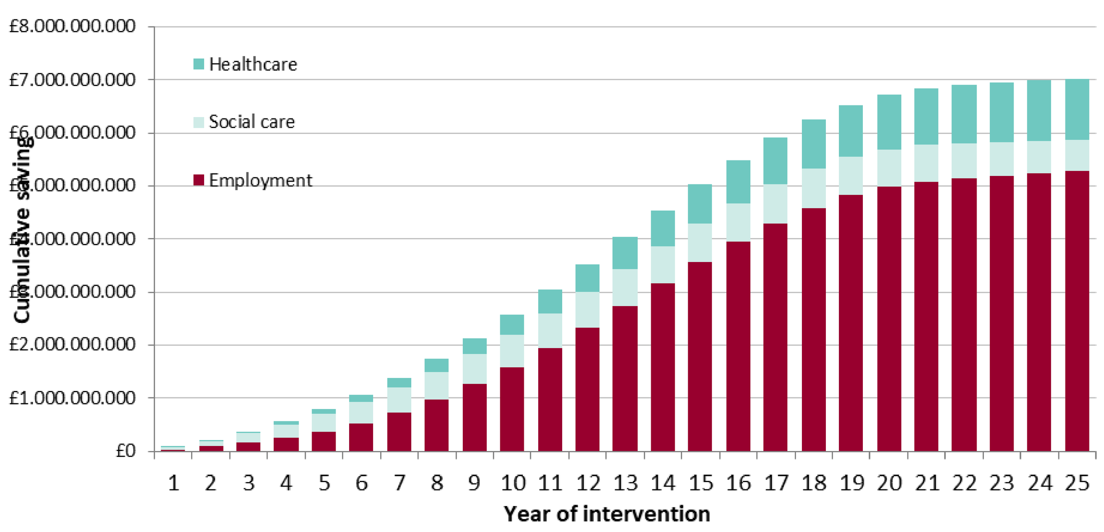


Figure 3. Cumulative savings in costs by type, with discounting

Conclusions

The majority of research around health-related behaviors indicates that minor changes can lead to enormous improvements in people's health and life expectancy. Greece has recently made substantial progress in setting up and implementing a variety of policy measures to address overweight, largely by tackling lack of physical activity. It should be noted at this point that though prevention public health strategies are often cost-effective, budget allocation favours treatment-oriented approaches. The reasons for this are frequently political. However, there should be a transparent and frank debate about long-term viability of public health policies.

Acknowledgments

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