ΠΑΝΕΠΙΣΤΗΜΙΟ ΚΡΗΤΗΣ

ΤΜΗΜΑ ΜΕΤΑΠΤΥΧΙΑΚΩΝ ΣΠΟΥΔΩΝ

ΓΕΝΙΚΗ-ΟΙΚΟΓΕΝΕΙΑΚΗ ΙΑΤΡΙΚΗ ΚΑΙ

ΠΡΩΤΟΒΑΘΜΙΑ ΦΡΟΝΤΙΔΑ ΥΓΕΙΑΣ

ΜΕΤΑΠΤΥΧΙΑΚΗ ΕΡΓΑΣΙΑ

ΚΟΙΝΩΝΙΚΕΣ ΑΝΙΣΟΤΗΤΕΣ ΣΤΗΝ ΥΓΕΙΑ: Η ΣΥΜΒΟΛΗ ΤΟΥ ΠΑΝΕΠΙΣΤΗΜΙΟΥ ΤΩΝ ΟΡΕΩΝ ΗΡΑΚΛΕΙΟ, ΚΡΗΤΗ

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Αφιερωμένο στους γονείς μου Ιωάννη και Μαρία,

που με έμαθαν να αγωνίζομαι για τις αρχές και τα πιστεύω μου…

Ευχαριστίες

Με την ολοκλήρωση αυτής της Μεταπτυχιακής Εργασίας θα ήθελα να ευχαριστήσω τα άτομα που συνέβαλαν στην ολοκλήρωση της. Ένα μεγάλο Ευχαριστώ στον αξιότιμο Καθηγητή, Κύριο Χρήστο Λιονή που είχα την τιμή να γνωρίσω πριν αρκετά χρόνια και αποτέλεσε έκτοτε για μένα πρότυπο Επαγγελματικής και Ακαδημαϊκής σταδιοδρομίας, Ανθρώπου και Ήθους. Παρά τις αντίξοες συνθήκες λόγω της μονίμου κατοικίας μου στο εξωτερικό έδειξε αμέριστη συμπαράσταση και κατανόηση ώστε να καταφέρω να ολοκληρώσω τον κύκλο σπουδών μου. Είμαι ευγνώμων για τις ώρες που αφιέρωσε να με συμβουλεύει και να συμπαραστέκεται στις πολλαπλές δυσκολίες που αντιμετώπισα.

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Ευχαριστώ ολόψυχα όλους τους συνεργάτες του κυρίου Λιονή που εξ αρχής με υποστήριξαν και διατήρησαν άψογη επαγγελματική επικοινωνία και συνεργασία.

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Την περίοδο της χειρότερης οικονομικής κρίσης στην Μεταπολεμική Ελλάδα, ένας σημαντικός αριθμός ασθενών με χαμηλό βιοτικό επίπεδο και εισόδημα πάσχει από χρόνια νοσήματα και δεν έχει πρόσβαση στις υπηρεσίες υγείας. Αυτοί η ομάδα των πολιτών έχει αυξημένες ανάγκες ιατρικής φροντίδας και επίβλεψης ή και παρακολούθησης. Ο σκοπός αυτής της μελέτης είναι να παρουσιάσει τις ανάγκες υγείας κατοίκων ορεινών περιοχών τις οποίες κατέγραψε η ομάδα υγείας του Πανεπιστημίου Ορέων, να αναδείξει την ανάγκη των παροχών υγείας και τη συμβολή μιας συντονισμένης προσπάθειας της στην Πρωτοβάθμια Φροντίδα Υγείας.

Οι ασθενείς με χαμηλό εισόδημα, χωρίς άμεση πρόσβαση στις υπηρεσίες υγείας στον τόπο διαβίωσης τους, κατόπιν γραπτού αιτήματος εξετάσθηκαν και έλαβαν ιατρικές υπηρεσίες από μια ομάδα της Κλινικής Κοινωνικής και Οικογενειακής Ιατρικής του ΠΑ.ΓΝΗ. Την ομάδα πλαισίωναν νοσηλεύτριες, κοινωνικοί λειτουργοί, διαιτολόγος και ψυχολόγος και όλοι τους προσέφεραν εθελοντικά στην ολιστική προσέγγιση των προβλημάτων υγείας της κοινότητας.

Μετά την πρώτη τους ιατρική επίσκεψη, οι ιατρικές τους επισκέψεις καταγράφηκαν από τον Απρίλιο μέχρι και τον Σεπτέμβριο του 2011. Η συμπλήρωση του ιατρικού φακέλου περιελάμβανε συστηματική καταγραφή των δημογραφικών και των βιομετρικών τους στοιχείων, τα χρόνια νοσήματα από τα οποία έπασχαν και την ιατρική τους θεραπεία. Τα δεδομένα αυτά καταγράφηκαν στην πορεία σε ηλεκτρονική βάση δεδομένων και αναλύθηκαν. Τα αποτελέσματα της έρευνας έδειξαν ότι οι ασθενείς οι οποίοι διαμένουν σε υποβαθμισμένες περιοχές έχουν μείζονα προβλήματα λόγω της οικονομικής ύφεσης, τα οποία θα αναλυθούν διεξοδικά στη συνέχεια.

Αυτό που προκάλεσε ιδιαίτερο ενδιαφέρον ήταν ο φυλετικός διμορφισμός (οι χαρακτηριστικές διαφορές μεταξύ αρρένων και θηλέων) στον πληθυσμό που εξετάστηκε. Ένα επίσης σημαντικό στοιχείο της έρευνας ήταν οι συσχετισμοί μεταξύ των δυο ομάδων όσον αφορά στα καρδιαγγειακά νοσήματα. Οι ασθενείς ήταν υπό την κατάλληλη φαρμακευτική αγωγή και έγινε συσχετισμός διαφόρων παραγόντων καρδιαγγειακού κινδύνου.

Προσπαθήσαμε επιπρόσθετα να αποδείξουμε συσχετισμούς μεταξύ διαφόρων μυοσκελετικών παραμέτρων. Σε αυτή την περίπτωση για άλλη μια φορά ο φυλετικός διμορφισμός των αποτελεσμάτων ήταν εμφανής, με το γυναικείο πληθυσμό να μην εμφανίζει κανένα συσχετισμό. Παρόλα αυτά, στον αντρικό πληθυσμό υπήρξε σημαντικός θετικός συσχετισμός μεταξύ οστεοαρθρίτιδας και καπνίσματος, ρευματοπάθειας και μυοσκελετικών συνδρόμων. Όταν αναλύθηκαν οι ψυχο-συναισθηματικοί δείκτες, ο μόνος θετικός συσχετισμός στους άντρες ήταν μεταξύ διαταραχών ύπνου και του αριθμού των κρίσεων πανικού. Στις γυναίκες αντίστοιχα υπήρξαν πολυάριθμοι συσχετισμοί.

Οι κοινωνικές ανισότητες οι οποίες προκλήθηκαν από την οικονομική ύφεση μπορούν να προκαλέσουν επιδείνωση κάποιων νοσημάτων περισσότερο από ότι τη συχνότητα τους. Η μη έγκαιρη αναγνώριση αυτών των νοσημάτων μπορεί να οδηγήσουν στην αύξηση της θνητότητας και θνησιμότητας, εν συγκρίσει με αυτούς που ζουν σε ένα ανώτερο βιοτικό επίπεδο. Οι ανισότητες μπορεί να προκύψουν λόγω των πολιτικών εφαρμογών στον τομέα της υγείας, των τύπων των συστημάτων υγείας και τη γεωγραφική κατανομή των υποβαθμισμένων κοινωνικών ομάδων.

1. ABSTRACT

During the period of the worse financial crisis after the post-war years in Greece, there is a significant number of patients with low social-economic status who suffer from chronic diseases and have no access to medical services. This group of people has increased demands in medical care and follow up. The aim if this study is to gain better insight in the needs of medical services towards those with low income who suffer from chronic diseases.

The patients with low income and without the possibility of having regular medical access near their residence, after a written request they were examined and reviewed by General Practitioners (GPs) and trainee doctors in a Primary Care Unit at the area of the district hospital of Herakleion, Crete.

They were also supported by nurses, a health care assistant, a dietician and a psychologist and all of them volunteered to offer a holistic approach of the health problems of the community.

After the first medical appointment, their medical visits were registered from April till September 2011. The completion of their medical folder included systematic registration of their demographic and biometrical indexes, their chronic diseases and their medical therapy. The data were registered as electronic data and were analyzed later on. The results of the research showed that the patients who live in deprived areas will suffer significantly more from the recession.

What is interesting throughout this investigation is that there is a sexual dimorphism (is the characteristic differences in form between males and females) in our population. A second rather important section was that of correlations relating to cardiovascular disease. In female or male population heart rate was positively correlated with body mass index (BMI), and diastolic blood pressure and negatively correlated with O2 saturation levels. BMI was also negatively correlated with O2 saturation levels.

Finally, we tried to identify any correlations between numerous musculoskeletal indexes. Again sexual dimorphism in the responses was evident, with females demonstrating no correlations at all. However, in males, there was a significant positive correlation between osteoarthritis with: smoking, rheumatic disease and musculoskeletal syndromes. When we looked at psycho-emotional indexes the only significant positive correlation in males was between sleep disorders and the number of panic attacks whereas in females there were numerous correlations.

The health inequalities caused by recession can increase the severity of some diseases rather than their frequency. The lack of capacity to recognize the problems in health inequalities could produce increased morbidity and mortality compared to those who are financially in a more beneficial situation. There can be inequalities depending on the politics applied on the health system, the type of health system and the geographical distribution of the deprived population.

2. INTRODUCTION

Health inequalities

News of the world economic crisis has been widespread since the fall of 2008, and comparisons of current financial and economic problems to those occurring during the Great Depression of the 1930s are common (Tapia Granados and Diez Roux, 2009). The economic situation affects numerous others health indicators like life expectancy, morbidity, and mortality. The rise in unemployment is also associated with increased daily alcohol consumption, suicides, increase in mental disorders (depression) as well as an increase in domestic violence incidents. So, why might economic downturns worsen health?

The social determinants of health are the conditions, in which people are born, grow and live, work and get old. These are shaped by the distribution of money and power and other resources.

The social determinants of health are mainly responsible for the health inequalities in local and national level. The health inequalities are the unfair and possible avoidable differences in health status and care within countries and between them.

At this point, we may introduce the term "*inequity*", instead of "inequality", to describe the presence of remediable differences among population groups (Starfield, 2011). The standard health indicators cannot directly measure *inequity* but only indirectly through population stratification. Considering the equity as one of the most serious challenges nowadays, we should move to a "whole-patient oriented" view of diseases and develop guidelines for providing patient-focused care and not illness focused care.

Life expectancy

In a recent study, the impact of exposure to higher unemployment rates in the pre-retirement years on subsequent mortality was examined (Coile and Levine, 2007). The authors of the study concluded that "our results indicate that experiencing a recession in one's late 50s leads to a reduction in longevity. We also find that this exposure leads to several years of reduced employment, health insurance coverage, and health care utilization which may contribute to the lower long-term likelihood of survival" (Coile and Levine, 2007). However, a previous study based on the "Great Depression" has shown that the recessions of 1921, 1930–1933, and 1938 coincided with declines in mortality and gains in life expectancy (Tapia Granados and Diez Roux, 2009). Life expectancy generally increased throughout the period of study (Figure 1). However, it oscillated substantially throughout the 1920s and 1930s with important drops in 1923, 1926, 1928–1929, and 1936 coinciding with strong economic expansions (Tapia Granados and Diez Roux, 2009).

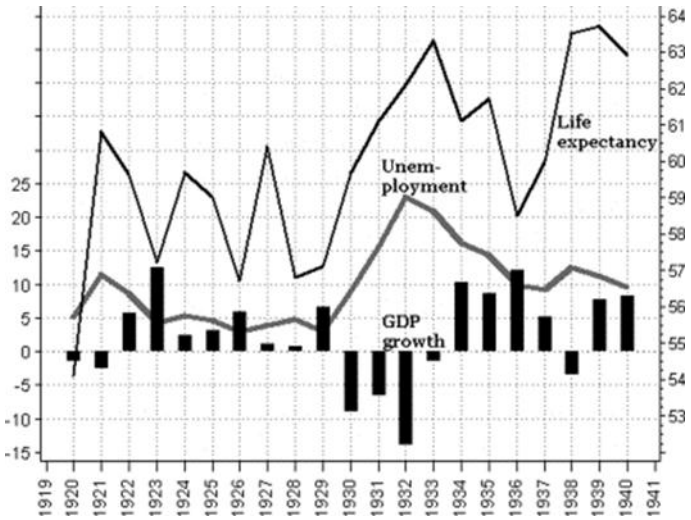


Figure 1 Life expectancy at birth (years, right scale), unemployment rate (percentage unemployed among the civilian labor force, left scale), and economic growth (annual percentage growth of real GDP, left scale), United States, 1920–1940 (from Tapia Granados and Diez Roux, 2009)

Birth rates

The U.S. birth rate slid by 8% in recent years, reaching 63.2 births per 1,000 women of childbearing age in 2011 (Pew Research Center Report 2012). That is half the peak birth rate recorded in 1957. This is the lowest rate since at least 1920, the earliest year for which there are reliable numbers (Figure 2).

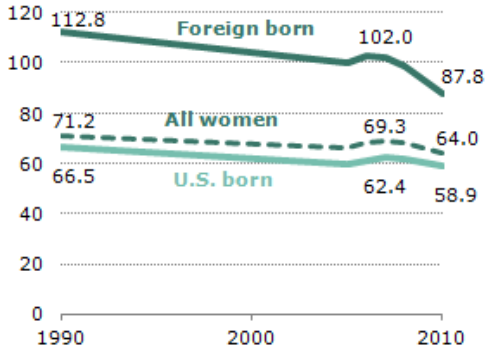


Figure 2 Decline in birth rates in USA (taken from: http://www.pewsocialtrends.org/2012/11/29/u-s-birth-rate-falls-to-a-record-low-decline-is-greatest-among-immigrants/#src=prc-newsletter)

The recession has also a negative effect in Europe as well. In a recent analysis of 15 countries that have reported figures, 11 saw falls in their fertility rates in 2011 (the fertility rate is the number of children a woman can expect during her lifetime). Some of the biggest declines occurred in countries hardest-hit by the euro crisis. Spain's fertility rate fell from 1.46 in 2008 to around 1.38 in 2011. Latvia's fell from 1.44 to below 1.20 (Bongaarts and Sobotka, 2012). Recession has affected the marriage and birth rates of native-born citizens, too. If young couples wait until they have a secure income before setting up home and having children, there will be a link between family formation and unemployment (especially male unemployment).

Alcohol consumption

In a recent study led by Michael T. French, a health economist and director of the Health Economics Research Group at the University of Miami, it was shown that people drink more during an economic downturn. The researchers also found that as unemployment rates rise, risky and excessive drinking behaviors also increase among those who still had a job (Popovici and French, 2013). Analysis of these data suggested that whites and middle-age adults, who were identified as those between the ages of 25 and 59, displayed the largest drunk-driving effect, or drunk driving as a direct reaction to unemployment rates (Popovici and French, 2013).

However, UK a different picture was portrayed. A drop in consumer spending during the recession has led to fewer people drinking alcohol, a charity said today. New data from the Office for National Statistics (ONS) shows men in the UK drank 16.3 units of alcohol a week on average in 2009, down from 17.4 in 2008. Meanwhile, women drank eight units a week on average, down from 9.4 in the previous year. The figures also showed a drop in the number of people dying, with 8,664 alcohol-related deaths in 2009, 367 fewer than in 2008.

Depression and Suicides

There is widespread concern that suicide rates might increase in countries affected by the global economic crisis, in view of evidence that economic downturns, and associated rises in unemployment, are followed by increases in suicide. For example, it is estimated that the 1997 economic crisis in Japan, South Korea, and Hong Kong resulted in over 10,000 excess suicides (Chang et al., 2009). Previous research has found that economic downturns tend to have the greatest effects on men of working age; rises in suicide were larger in men than in women and in adults of working age than older people during the Russian economic crisis in the early 1990s and the 1997 Asian economic crisis (Chang et al., 2009). In a very recent study, suicide data from 54 countries were analyzed. There were an estimated 4884 (95% confidence interval 3907 to 5860) excess suicides in 2009 compared with the number expected based on previous trends (2000-07). The increases in suicide mainly occurred in men in the 27 European and 18 American countries; the suicide rates were 4.2% (3.4% to 5.1%) and 6.4% (5.4% to 7.5%) higher, respectively, in 2009 than expected if earlier trends had continued. For women, there was no change in European countries and the increase in the Americas was smaller than in men (2.3%). Rises in European men were highest in those aged 15-24 (11.7%), while in American countries men aged 45-64 showed the largest increase (5.2%). Rises in national rates in men seemed to be associated with the magnitude of increases in unemployment, particularly in countries with low levels of unemployment before the crisis (Chan et al., 2014).

The authors of the study concluded that "after the 2008 economic crisis, rates of suicide increased in the European and American countries studied, particularly in men and in countries with higher levels of job loss" (Chan et al., 2014).

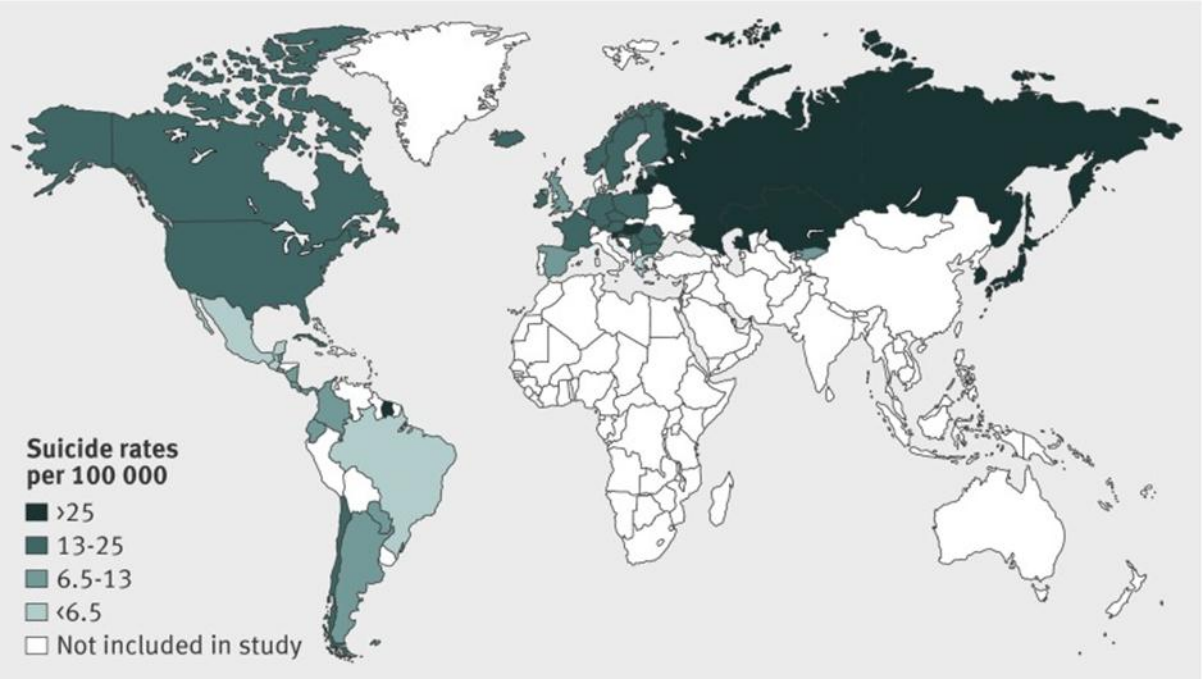


Figure 3 Map of study countries and their suicide rates in 2009 (Chan et al., 2014)

Moreover, a period of economic recession may be particularly difficult for people with mental health problems as they may be at higher risk of losing their jobs and not being able to support their families, and more competitive labor markets can also make it more difficult to find a new job. Another recent study assessed unemployment rates among individuals with mental health problems before and during the current economic recession (Evans-Lacko et al., 2013). Since the start of the recession, the rate of unemployment for people with mental health problems has risen more than twice as much than for people without mental health problems. The authors warned that, across Europe, people with mental health problems have been disproportionately affected by the economic crisis, further increasing social exclusion amongst this vulnerable group (Evans-Lacko et al., 2013).

It is clear from these studies that economic crises pose considerable suicide risks; though previous studies suggest that these risks are not inevitable. Future research should determine whether active labor market programs can help to offset the impact of economic recession on suicide, and in some cases eliminate mental health risks of job loss.

Deterioration of the Greek health care system as a result of the recession: a brief overview

How does economic recession affect the health and healthcare provision of the people of Greece? There is not a single hospital in Greece that is not under severe strain. For example, there are shortages in drugs, medical devices, even bandages in some cases! According to the head of "Medecins Sans Frontieres" Greece, following "health service cuts, including heavy job losses and a 40% reduction in funding for hospitals, Greek social services were under very severe strain, if not in a state of breakdown". Doctors with 20 or 30 years of service are struggling financially seeing their salaries reduced year after year. The scale of the cuts is accompanied by severe shortages of staff, medical supplies, and even food for patients as companies fed up with not being paid stop delivery of goods. Job losses are followed by recruitment freezes (commonly only one job post can be recruited for every five lost), while those who remain in work have to accept significant pay cuts – when they eventually get paid (Royce, 2013).

In 1983, Greece established a national health service; however, social funds, linked primarily to employment, have always played a significant role in covering the costs of certain types of care – ambulatory care in particular. Patients who depend purely on the public health system increasingly find that the care they require is not available, or at best they face significant delays (Royce, 2013). As a result, there has been a 24% increase in demand for hospital services since people cannot afford to go privately.

However, private practices are struggling as well and many of them are shutting down; whilst at the same time there is massive exodus of medical doctors from Greece abroad for a better future in the medical field. But the deterioration of the health service is not the only casualty. It has been estimated that incidence of HIV among intravenous drug users in Athens increased exponentially by 1,250% in the first 10 months of 2011 compared with the same period the previous year (source: Médecins sans Frontières Greece), while malaria is becoming endemic in the south for the first time since 1974. In addition, there has been an increase in tuberculosis, particularly in the immigrant population.

Naturally, the domino effect doesn't stop there. Thousands of Greeks are now unable to obtain supplies of life-saving drugs and pharmaceutical firms say they are limiting supplies to Greece over unpaid debts. Even thousands of diabetics are in despair, and have stopped purchasing insulin as they cannot afford it as social care insurance repayments are in disarray. A lot of Greeks are seeking to obtain prescription medication from so called "social pharmacies" where patients return unwanted drugs so they can be "recycled" to other patients.

More importantly, suicides increased by 45 percent during the first four years of Greece's financial crisis. Reports suggest that the doubling of the number of suicides in Greece in the three-year period between 2009 and 2011 represents a trend that shows no sign of abating this year. Combined data by the Hellenic Statistical Authority (ELSTAT), the Citizens' Protection Ministry and the European statistical agency Eurostat show that Greece went from being one of the countries with the smallest number of suicides in the world to seeing suicides double in the three years between 2009 and 2011.

The number of deaths by suicide rose from 2.5 per 100,000 of the population before 2009 to over five per 100,000, or 1,245 in the three-year period during which the country was hit by a combination of deep recession and tough austerity measures. Meanwhile, the data also show that the ratio in deaths by suicide between men and women is at 6:1 (source: ELSTAT). In Crete, where our study took place, is leading the league of suicides in Greece according to ELSTAT with a ratio male to female of 82% to 18%.

The fertility rate in Greece has also fallen from 2.33 children per woman in 1975 to 1.4 in 2011. The replacement rate, the number of births at which the population remains stable, is 2.07 children. Moreover the rate of miscarriages has doubled to four percent in the last two years, whereas births have gone from 118,000 in 2008 to 101,000 in 2012 (source: ELSTAT).

World Happiness Report and Greece

The latest World Happiness Report, released in 2013, drew international attention as a landmark first survey of the state of global happiness. The Report shows significant changes in happiness in countries over time, with some countries rising and others falling over the past five years. Emerging analyses provide a grim picture for the countries of Southern Europe and in particular Greece. Among the countries who have suffered well-being losses from 2005-2007 to 2010-2012, Greece ranks second, Spain sixth, Italy eighth and Portugal twentieth. Greece stands out from the other countries in having the largest changes in life evaluations and affect measures, beyond what can be explained by average responses to the economic crisis. Indeed, the European Social Survey (ESS) life evaluations, both for life satisfaction and happiness with life as a whole, mirror the Gallup World Poll in showing well-being losses that are greater in Greece than in the other countries. This Report places Greece 70th in the overall world rankings falling below

countries like Vietnam, Albania, Angola, Uzbekistan, Turkmenistan Croatia and Kazakhstan to name a few. Using specific scales The Report demonstrated that in Greece, average positive affect fell from 0.71 to 0.60, while negative affect grew from 0.24 to 0.32. In Spain, positive affect fell from 0.77 to 0.71, and negative affect grew from 0.25 to 0.35 (source: World Happiness Report 2013).

University of The Mountains (Greece)

The University of the Mountains is a non-governmental organization which was founded on the 18th of January 2008 as a movement and educational organization in the Holy Monastery of Vossakou, in Crete. The Head and Founder was the Professor of Ophthalmology, Dr Ioannis Palikaris.

His main oration was not to create another classical university to teach but also a place to be taught and stimulate initiatives.

He called several people of science to achieve a united knowledge and experience in order to support the community and its needs. It was an act of integral intervention towards the society. The intervention of this movement would focus on the daily needs, to stimulate new interest to improve the quality of life, would stimulate development with the restoration of human relationships and the cultural identity. One of the aims was to protect the environment and reinforce the exploitation of traditional resources. Another great inspiration was to redefine apart from the human relationships, the human satisfaction which would lead to the feeling of completion and happiness.

All the above would promote global interest and joint projects, share knowledge and attract more visitors to express their interest in the island of Crete.

Since 2008 the University was focusing its actions on the rural and mountain areas of Crete and also some islands of the northern Aegean Sea.

Research questions

1. How we may demonstrate a full health care needs profile of our sample, including a wide set of health indicators?
2. What are the major health services needs for the residents of hill country and the degree to which social inequalities exist among this population?
3. Could University of Mountains intervene efficiently to address the need mentioned above?

AIMS

The overall aim was to assess the healthcare needs of the study population. We focused on those people who live in distal or rural areas of Crete. The objectives of this observational study were:

- To identify most common illnesses of the population.
- To explore to what extent health promotion and diseases prevention activities have been implemented.
- To emphasize the vaccination needs of the population.
- To explore to what extent the interventions undertaken by the Mountainous University could cover some of the identified health care needs.

3. METHODOLOGY

We carry out a set of correlational statistical analyses in order to track any possible relationship between the indicators mentioned above and a group of diseases. More specifically, we split our sample in males and females, and examine the impact of psycho-emotional stress, cardiovascular and musculoskeletal on various indicators of health condition.

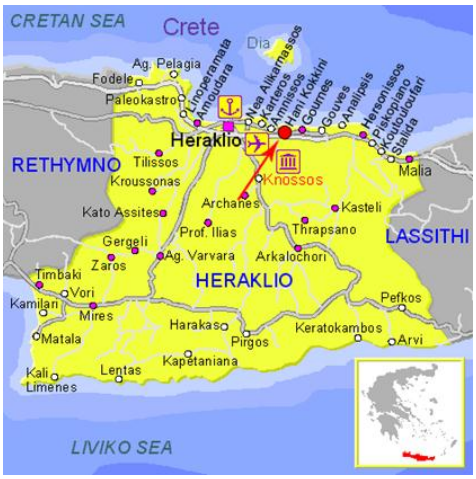
The team

In Crete, there are a significant number of people with extremely low income who live in deprived areas and cannot benefit from health care services and primary care. These people need quite often higher level of care and follow up in the community. A group of doctors, mainly GPs from the University of Crete, Medical School, volunteered to assess and follow up a group of these people at the community in a Primary Health Centre. The group of volunteers consisted of: three GPs including Professor Christos Lionis, the Head of Department of General Practice and the Family Care at the University of Crete.

The team was working in a Health Centre in Herakleion, Crete, were patients had easy and free access. The health center also had two nurses, a healthcare assistant, a psychologist and a dietician. The campaign was supported by the local Council and the Mayor, who invited the socio-economically weaker citizens, without benefits to join the cause.

Delivery of questionnaire

The questionnaire was delivered primarily in the prefecture of Herakleio (yellow in the map below), Crete, Greece in the following areas: Rodovani, Monastiraki, Kera, Gonies and Akoumia.



The questionnaire

The questionnaire was decided to be rather simplistic in nature, given that the vast majority of the targeted population would not be able to engage otherwise.

The first group of questions was dealing with the demographics of the sample, including information about sex, age, marital status, profession and education. The following questions were used in order to build the medical profile of patients. More specifically, we asked about flu and pneumococcal vaccination, Pap test, PSA, mammogram and colonoscopy. The final part included the main somatometric, such as weight, height, SBP, DBP, cholesterol and glucose. Also, the medical history of each patient was recorded, concerning a series of chronic diseases (asthma, osteoarthritis, thyroid disease, etc.)

Statistical analysis

The software package we used for the statistical analysis was the IBM SPSS. We performed the Student t-test and ANOVA, regarding $p<0.05$ as significant. We have also used Pearson correlations to track relationships among our variables.

All the tables and graphs were created separately for males and females. We calculated the descriptive statistics of the main biometric indexes and created pie charts for our demographics.

Furthermore, we tried to trace any possible correlation, through Pearson's test, among our variables, regarding three different scopes, psycho-emotional stress, cardiovascular and musculoskeletal system.

4. RESULTS

Demographics

We have decided to dissect the data in terms of gender. The total number of participants were 93 out of which 34 were men (37%) and 59 were women (63%).

Male Population

Mean age of the sample population was 73.4 ± 14.4 years while systolic blood pressure was 146.7 ± 21.3 mmHg and diastolic blood pressure was 77.4 ± 9 mmHg. The saturation of O2 was measured on 31 people with a mean 97.4 ± 1.7%, while heart rate was 74.45 ± 12.3 beats per minute. Body mass index was measured in 25 patients and it was 28.4 ± 5.5. Glucose was 100 ± 38 gr/l in a sample og 19 patients. Demographics are demonstrated in detail in the supplement.

The majority of the population (62%) had graduated primary school while 14% graduated university. 60% of the population were farmers while 27% pensioners. The majority also (44%) were nonsmokers, did not drink any alchohol (61%) and exercised (73%) (Supplement).

When we correlated the values within different subsections, in male population, there was a significant positive correlation between sleep disorders and panic attacks as well as a positive correlation between BMI and HR. There was also an inverse correlation of the sleeping disorders with the well-being score. In cardiovascular evaluation, there was a significant positive correlation between heart rate and body mass index, a positive correlation between heart rate and diastolic blood pressure, a negative correlation between diastolic blood pressure and oxygen saturation and a negative correlation between body mass index and oxygen saturation. In musculoskeletal section, there was a significant positive correlation between osteoarthritis and smoking, rheumatic disease and musculo-skeletal symptoms (Supplement).

Female Population

Mean age of the sample population was 74.4 ± 10 years while systolic blood pressure was 148 ± 21.5 mmHg and diastolic blood pressure was 78.1 ± 13.3 mmHg. The saturation of O2 was measured on 54 women with a mean 97.5 ± 1.8%, while heart rate was 75.8 ± 12.5 beats per minute. Body mass index was measured in 48 patients and it was 29 ± 4.6. Glucose was 98 ± 26 gr/l in a sample of 32 patients. Demographics are demonstrated in detail in the supplement.

The majority of women (74%) had graduated primary school while 19% did not reply. 28% of the population were farmers while 45% pensioners. The majority also (93%) were nonsmokers, did not drink any alchohol (69%) and exercised (75%) (Supplement).

When examining the psycho-emotional stress correlations in the female population, there was a positive correlation between sleeping disorders and panic attacks, positive correlation between sleeping disorders and well-being score, positive correlation between panic attack and depression, negative correlation between migraine and exercise. In cardiovascular section, Positive correlation between HR and BMI, positive correlation between systolic blood pressure, diastolic blood pressure and BMI, positive correlation between HR and oxygen saturation. Finally, in musculoskeletal correlations, we did not identify any statistically significant correlations.

5. DISCUSSION

5.1 Main findings

Most common diseases to be found in this thesis were the following: hypertension, dyslipidemia, lung disease, osteoarthritis, panic attacks.

In this thesis we investigated a number of correlations and anthropometric data taken from remote villages in the prefecture of measures in Greece will become a significant driver of stress. Stress is defined as "a state of physiological or psychological strain caused by adverse stimuli physical, mental, or emotional, internal or external, that tend to disturb the functioning of an organism and which the organism naturally desires to avoid". Widely accepted as being a complex construct, stress, is divided into several stages: 1) the stressors which are the event leading to the clinical features associated with stress, 2) the mediators which can involve the appraisal, of as well as coping with, the stressor, 3) the moderators where this can include the social support being available as well as the personality of the individual and finally, 4) the stress response itself which includes innervations of the hypothalamic-pituitary-adrenal (HPA) axis and the sympathetic nervous system (Gidron and Ronson, 2008).

What is interesting throughout this investigation is that there is a sexual dimorphism (is the characteristic differences in form between males and females) in our population. For example, when we looked at psycho-emotional indexes the only significant positive correlation in males was between sleep disorders and the number of panic attacks whereas in females there were numerous correlations. For example sleep disorder in our cohort correlated significantly and positively with: a) number of panic attacks, b) degree of depression and inversely with the Wellbeing score. Moreover, panic attack episodes correlated positively with depression. It should be emphasized that the average age of our cohort of females was 73 years and sleep disorders in the menopausal women are common. Indeed, a number of studies have shown that the most commonly encountered sleep disorders in menopausal women include insomnia, nocturnal breathing disturbances and the associated sleep disorders that accompany the restless leg syndrome, periodic leg movement syndrome, depression and anxiety (Guidozzi, 2013). Moreover, sleep disturbance (e.g., sleep loss,

oversleeping, and schedule shift) is an acute headache trigger for migraine and tension-type headache (Rains and Poceta, 2012).

Interestingly, incidents of migraine were negatively correlated with degree of exercise only in the female cohort. Exercise is often noted as a trigger for migraine but research suggests that moderate aerobic exercise can have a therapeutic effect on migraine and may prevent an attack. Headache researchers are now finding evidence that suggests that moderate exercise can reduce the frequency and severity of migraine attacks in some people. They have found that regular exercise can be effective in preventing migraine. Recent studies have shown that exercise changes the levels of a wide range of body chemicals. Exercise stimulates the human body to release natural pain controlling chemicals called endorphins and natural anti-depressant chemicals called enkephalins. This could mean that embarking on a well-planned exercise program could enable even elderly to reduce their drug intake, particularly drugs taken daily to prevent migraine (source: Migraine Trust)

A second rather important section was that of correlations relating to cardiovascular disease. In female or male population heart rate was positively correlated with body mass index (BMI), and diastolic blood pressure and negatively correlated with O2 saturation levels. BMI was also negatively correlated with O2 saturation levels. In women a different picture emerged. Systolic blood pressure was positively correlated with diastolic and BMI, whereas HR was positively correlated with O2 saturation levels. Finally, in the same female group smoking was negatively correlated with HR. Again, in this section there are some distinct sex-related differences. These findings corroborate previous studies demonstrating different measurements in systolic chamber function and diastolic compliance in women than in men. Within the range of chamber dimensions seen in patients with normal LV function, a strong relationship was found between cardiac size and end-systolic elastance (Hayward et al., 2001). Interestingly HR was correlated with BMI only in males. Again this tends to agree with data regarding the heart rate variability (HRV) in females that showed higher HRV than males during resting condition. The authors of this study concluded that: "The results demonstrate that, in healthy adolescents, the parasympathetic activity is higher in females than in males during the rest period. Exercise induced sympathetic activity lasts longer in females with higher BMI and lower age, resulting in decreased HRV".

With regards to saturation 02 levels and certain discrepancies between male and female population, more research is clearly needed as it is evident that there is a relationship between arterial oxygen saturation and heart rate variability at high altitudes (Saito et al., 2005), and certain places that measurements were taken were of moderate to high altitude. The same study has also shown variability of oxygen saturation (SpO2) levels in patients, and have also indicated that deterioration of autonomic function measured by HRV might be more sensitive to hypoxia than clinical symptoms at high altitudes (Saito et al., 2005). Therefore geographical disposition could be an important factor determining O2 levels and subsequent cardiovascular measurements.

The research also showed the following:

1. Significant increase at the HIV cases due to the increased number of intravenous drug users the period of time 2009-2012.
2. The cases of tuberculosis among the drug users mainly were doubled in 2013 compared to the data of 2012.
3. The government reduced the financial support in the health system with 55% between 2011 and 2012.
4. Depression has increased at least two and a half times between 2008 and 2011.
5. The suicides have increased at least 45%.
6. The infantile mortality has increased with 43% between 2008 and 2010. Also the births of underweight babies have increased with 19%.
7. Malaria has been diagnosed after 40 years.

Finally, we tried to identify any correlations between numerous musculoskeletal indexes. Again sexual dimorphism in the responses was evident, with females demonstrating no correlations at all. However, in males, there was a significant positive correlation between osteoarthritis with: smoking, rheumatic disease and musculoskeletal syndromes. Again regarding gender, our study is in agreement with previous observations. For example, a study very recently demonstrated gender differences in prevalence of musculoskeletal disorders among the rice farmers of West Bengal, India (Das, 2013). Moreover, in another study in south India the authors assessed the prevalence and factors related to rheumatic musculoskeletal disorders (RMSD) in a cohort of 5,000 people. They found that the predictors for RMSD in the population were female sex, age, illiteracy, married status, low-income group, vegetarian diet, current alcohol consumption, current tobacco use, history of injury or accidents, diabetes and hypertension (Paul et al., 2013). The authors proposed that there is an urgent need to introduce lifestyle modifications in high-risk groups and start rehabilitation for those affected. In a similar fashion, a "high risk" cohort in Crete can be identified based on these data and introduce certain changes in diet and exercise in order to improve the overall prognosis. An interesting correlation between osteoarthritis (OA) and smoking was also noted as mentioned above. This finding was rather surprising and it appears that there is some controversy as to the effect it can exert. In a recent very comprehensive meta-analysis of sixteen studies (976,564 participants) it was concluded that there is no compelling evidence that smoking has a protective effect on the progression of OA. The results concur with a previous meta-analysis published by this group that showed no association between smoking and incidence of OA. Taken together, smoking does not appear to reduce either the incidence or progression of OA (Pearce et al., 2013).

5.2 Limitations

Our study has certain limitations since our sample included small numbers in certain categories as not all males or females provided a full list of answers. It should also be emphasized that in the present study, we included a homogeneous cohort of Mediterranean patients from Crete. Despite these limitations, this study provided some interesting insights into gender differences regarding psycho-emotional, cardiovascular or musculoskeletal indexes. Should these findings be replicated in a much wider cohort, given the simplicity in assessing such attitudes (using a questionnaire and clinical data) these findings may have significant implications for public health and prevention of certain disorders.

The research calls the European Union to take under serious consideration the consequences of their strict measures against the Greek society and how that has affected their lives. The cuts and lack of resources within the Greek national health system are the worst among the rest of the Eurozone.

While writing this thesis a recent publication at Lancet focused on the recession and the dramatic impact on in the Greek society and health (Kentikelenis et al., 2014). Scientists from Oxford and Cambridge mention the inability of the Greek citizens to have access at health services and mainly primary care, the necessary medication, the significant increase in the infectious diseases and the dramatic worsening of the psychiatric, emotional and cognitive functions. The analysis showed that at least 47% of the Greeks feel that they do not get adequate health care services.

5.3 Conclusions

In conclusion, the team of The Mountain University focused on Health, Society/Civilization, Economy/Finances/Environment and Education and the impact of its actions in a vast area. The study has more direct actions based on public lectures, meetings, seminars and education especially at local schools and medical expeditions. The results can be appreciated with the implication of the volunteers and support in depth of the citizens and their problems of the

above mentioned areas. The appreciation of the way they survive and how they feel about the recession and the impact on their lives.

The scientists wish to highlight that the Greek national health system needs changes and renovations due to the inefficiency and corruption which have major impact on population's health.

Specific recommendations we could make is exercise and lifestyle modification which can improve the quality of life, to raise awareness regarding metabolic diseases and the impact they have on the financially deprived people as their nutritional and exercise status have changed.

This kind of researches can raise awareness also at the European community, to seek assistance at the Greek government for European assistance and budget for the financially deprived groups. It would be appreciated the input of epidemiologists, sociologists and other specialists to map out the outbreaks of infectious diseases as their incidence is skyrocketing.

It is a renovation the social pharmacies for those who have low income and cannot afford to buy their monthly medications. This kind of initiatives should be supported by the government.

The aim of this study is to highlight these problems and show that despite the recession and financial crisis there are still people who volunteer and offer their services to the community. These people with a spirit of humanism help deprived areas and co-citizens who do not have access at health care services. That shows that the society has increased needs and with a team spirit we can offer a lot.

The results of this study can guide us towards the basic needs of primary care and the most common diseases that can be found in the community. It would be ideal if we could establish new strategies to fight the health inequalities and support the deprived or distant rural areas of Crete and other similar areas of Greece.

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7. APPENDIX

Questionnaire

Sex: Male ☐ Female ☐

Age (years):

Marital Status:

Single	Married/living with partner	Divorced	Widow/er	Insufficient data
☐	☐	☐	☐	☐

Education:

University/Higher degree	High school	Elementary school	Insufficient data
☐	☐	☐	☐

Profession:

Farmer	Public sector employee	Private sector employee	Housewife	Pensioner	Unemployed	Insufficient data
☐	☐	☐	☐	☐	☐	☐

Smoking:

Non-smoker	Smoker	Ex-smoker
☐	☐	☐

Alcohol consumption:

Non-alcohol consumption	Alcohol consumption
☐	☐

Exercise:

Exercising	Non-exercising
☐	☐

Flu Vaccination:

Never vaccinated ☐ Vaccinated ☐

Pneumococcal Vaccination:

Non-vaccinated ☐ Vaccinated ☐

Mammogram:

Never ☐ Investigated ☐

Pap test:

Never ☐ Investigated ☐

Colonoscopy:

Never ☐ Investigated ☐

PSA:

Never ☐ Investigated ☐

Prostate U/S:

Never ☐ Investigated ☐

The Biometric indexes have been reported as following:

- SBP (systolic BP, mmHg)
- DBP (diastolic BP, mmHg)
- Saturation O2 (%)
- HR(bpm)
- Weight (kg)
- Height (m)
- Waist circumference (cm)
- Hb (mg/dl)
- Glucose (mg/dl)
- Cholesterol (mg/dl)

Medical History

Next to each disease we recorded:

No disease	Disease/Disease in the past (eg. malignancies)
☐	☐

The diseases we investigated are the following:

HTN	Anaemia	Migraine/Headaches
CAD	Vertigo	Muscular disorders
COPD	Osteoporosis	Hepatopathy
Asthma	Uric Acid	Sinusitis/
Dyslipidaemia	Visual disturbances	Otitis
Thyroid disease	Glaucoma	Prostatitis
Osteoarthritis	Cataract	UTI
Rheumatic Disease	Auditive disturbances	Malignancies
Peptic Disease	Sleeping disorders	WHO-well being Score
Allergy	Stress/panic attacks	
Dermatitis	Depression	

7.1 Supplement

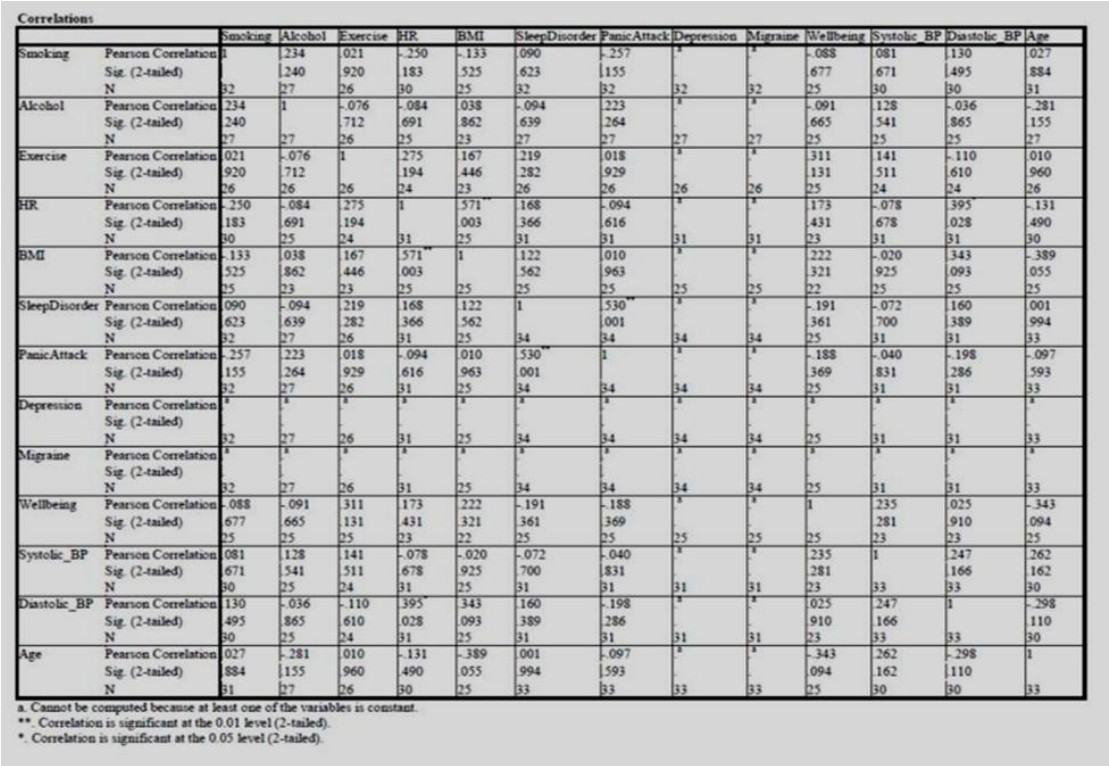
Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
O2	31	92.00	100.00	97.4194	1.70830
HR	31	58.00	97.00	74.4516	12.30674
BMI	25	22.15	47.83	28.3831	5.50165
Glucose	19	52.00	195.00	100.0526	38.38326
Wellbeing	25	9.00	25.00	20.1200	4.92714
hb	16	9.90	17.70	14.2000	1.93666
Age	33	37.00	94.00	73.9394	14.41557
Systolic_BP	33	105.00	200.00	146.7576	21.28237
Diastolic_BP	33	61.00	100.00	77.3939	9.09993
Valid N (listwise)	16				

Table 1: Demographics for the male sample of the population

Study population	Percentage of the population
Education Primary School	62%
Secondary School/Lyceum	24%
University	14%
Profession Farmer	60%
Civil Servant	10%
Private Sector	3%

Pensioner	27%
Smoking Non smoker	44%
Smoker	34%
Ex-smoker	22%
Alchool	30%
No alchool	61%
Exercise	73%
No exercise	27%

Table 2: Demographics for male population



Correlations

		Smoking	Alcohol	Exercise	HR	BMI	SleepDisorder	PanicAttack	Depression	Migraine	Wellbeing	Systolic_BP	Diastolic_BP	Age
Smoking	Pearson Correlation	1	.234	.021	-.250	-.133	.090	-.257	a	a	-.088	.081	.130	.027
	Sig. (2-tailed)		.240	.920	.183	.525	.623	.155	a	a	.677	.671	.495	.884
	N	32	27	26	30	25	32	32	32	32	25	30	30	31
Alcohol	Pearson Correlation	.234	1	-.076	-.084	.038	-.094	.223	a	a	-.091	.128	-.036	-.281
	Sig. (2-tailed)	.240		.712	.691	.862	.639	.264	a	a	.665	.541	.865	.155
	N	27	27	26	25	23	27	27	27	27	25	25	25	27
Exercise	Pearson Correlation	.021	-.076	1	.275	.167	.219	.018	a	a	.311	.141	-.110	.010
	Sig. (2-tailed)	.920	.712		.194	.446	.282	.929	a	a	.131	.511	.610	.960
	N	26	26	26	24	23	26	26	26	26	25	24	24	26
HR	Pearson Correlation	-.250	-.084	.275	1	.571**	.168	-.094	a	a	.173	-.078	.395*	-.131
	Sig. (2-tailed)	.183	.691	.194		.003	.366	.616	a	a	.431	.678	.028	.490
	N	30	25	24	31	25	31	31	31	31	23	31	31	30
BMI	Pearson Correlation	-.133	.038	.167	.571**	1	.122	.010	a	a	.222	-.020	.343	-.389
	Sig. (2-tailed)	.525	.862	.446	.003		.562	.963	a	a	.321	.925	.093	.055
	N	25	23	23	25	25	25	25	25	25	22	25	25	25
SleepDisorder	Pearson Correlation	.090	-.094	.219	.168	.122	1	.530**	a	a	-.191	-.072	.160	.001
	Sig. (2-tailed)	.623	.639	.282	.366	.562		.001	a	a	.361	.700	.389	.994
	N	32	27	26	31	25	34	34	34	34	25	31	31	33
PanicAttack	Pearson Correlation	-.257	.223	.018	-.094	.010	.530**	1	a	a	-.188	-.040	-.198	-.097
	Sig. (2-tailed)	.155	.264	.929	.616	.963	.001		a	a	.369	.831	.286	.593
	N	32	27	26	31	25	34	34	34	34	25	31	31	33
Depression	Pearson Correlation	a	a	a	a	a	a	a	a	a	a	a	a	a
	Sig. (2-tailed)													
	N	32	27	26	31	25	34	34	34	34	25	31	31	33
Migraine	Pearson Correlation	a	a	a	a	a	a	a	a	a	a	a	a	a
	Sig. (2-tailed)													
	N	32	27	26	31	25	34	34	34	34	25	31	31	33
Wellbeing	Pearson Correlation	-.088	-.091	.311	.173	.222	-.191	-.188	a	a	1	.235	.025	-.343
	Sig. (2-tailed)	.677	.665	.131	.431	.321	.361	.369	a	a		.281	.910	.094
	N	25	25	25	23	22	25	25	25	25	25	23	23	25
Systolic_BP	Pearson Correlation	.081	.128	.141	-.078	-.020	-.072	-.040	a	a	.235	1	.247	.262
	Sig. (2-tailed)	.671	.541	.511	.678	.925	.700	.831	a	a	.281		.166	.162
	N	30	25	24	31	25	31	31	31	31	23	33	33	30
Diastolic_BP	Pearson Correlation	.130	-.036	-.110	.395*	.343	.160	-.198	a	a	.025	.247	1	-.298
	Sig. (2-tailed)	.495	.865	.610	.028	.093	.389	.286	a	a	.910	.166		.110
	N	30	25	24	31	25	31	31	31	31	23	33	33	30
Age	Pearson Correlation	.027	-.281	.010	-.131	-.389	.001	-.097	a	a	-.343	.262	-.298	1
	Sig. (2-tailed)	.884	.155	.960	.490	.055	.994	.593	a	a	.094	.162	.110	
	N	31	27	26	30	25	33	33	33	33	25	30	30	33

a. Cannot be computed because at least one of the variables is constant.
**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Figure 1: Psychometric factors and correlations in the male population

Correlations

		Smoking	Alcohol	Exercise	HR	BMI	Systolic_BP	Diastolic_BP	Age	Dislipidemia	O2
Smoking	Pearson Correlation	1	.234	.021	-.250	-.133	.081	.130	.027	-.208	-.242
	Sig. (2-tailed)		.240	.920	.183	.525	.671	.495	.884	.253	.197
	N	32	27	26	30	25	30	30	31	32	30
Alcohol	Pearson Correlation	.234	1	-.076	-.084	.038	.128	-.036	-.281	-.238	-.004
	Sig. (2-tailed)	.240		.712	.691	.862	.541	.865	.155	.231	.984
	N	27	27	26	25	23	25	25	27	27	25
Exercise	Pearson Correlation	.021	-.076	1	.275	.167	.141	-.110	.010	.029	.202
	Sig. (2-tailed)	.920	.712		.194	.446	.511	.610	.960	.889	.345
	N	26	26	26	24	23	24	24	26	26	24
HR	Pearson Correlation	-.250	-.084	.275	1	.571**	-.078	.395*	-.131	.058	-.207
	Sig. (2-tailed)	.183	.691	.194		.003	.678	.028	.490	.755	.263
	N	30	25	24	31	25	31	31	30	31	31
BMI	Pearson Correlation	-.133	.038	.167	.571**	1	-.020	.343	-.389	-.126	-.403*
	Sig. (2-tailed)	.525	.862	.446	.003		.925	.093	.055	.547	.046
	N	25	23	23	25	25	25	25	25	25	25
Systolic_BP	Pearson Correlation	.081	.128	.141	-.078	-.020	1	.247	.262	-.109	-.074
	Sig. (2-tailed)	.671	.541	.511	.678	.925		.166	.162	.560	.694
	N	30	25	24	31	25	33	33	30	31	31
Diastolic_BP	Pearson Correlation	.130	-.036	-.110	.395*	.343	.247	1	-.298	-.169	-.035
	Sig. (2-tailed)	.495	.865	.610	.028	.093	.166		.110	.363	.853
	N	30	25	24	31	25	33	33	30	31	31
Age	Pearson Correlation	.027	-.281	.010	-.131	-.389	.262	-.298	1	.007	-.202
	Sig. (2-tailed)	.884	.155	.960	.490	.055	.162	.110		.967	.285
	N	31	27	26	30	25	30	30	33	33	30
Dislipidemia	Pearson Correlation	-.208	-.238	.029	.058	-.126	-.109	-.169	.007	1	.052
	Sig. (2-tailed)	.253	.231	.889	.755	.547	.560	.363	.967		.782
	N	32	27	26	31	25	31	31	33	34	31
O2	Pearson Correlation	-.242	-.004	.202	-.207	-.403*	-.074	-.035	-.202	.052	1
	Sig. (2-tailed)	.197	.984	.345	.263	.046	.694	.853	.285	.782	
	N	30	25	24	31	25	31	31	30	31	31

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Συσχέτιση –πίνακας καρδιαγγειακά νοσήματα (♂)

	Κάπνισμα	Αλκοόλ	άσκηση	HR	BMI	Συστολική πίεση	Διαστολική πίεση	Ηλικία	Δυσλιπιδαιμία	O2
Κάπνισμα		0.24	0.92	0.18	0.52	0.67	0.49	0.88	0.25	0.19
Αλκοόλ	0.24		0.7	0.69	0.86	0.54	0.86	0.15	0.23	0.85
Άσκηση	0.92	0.7		0.19	0.44	0.51	0.61	0.96	0.89	0.34
HR	0.18	0.69	0.19		0.003	0.68	0.028	0.49	0.75	0.26
BMI	0.52	0.86	0.44	0.003		0.92	0.093	0.055	0.54	0.46
Συστολική πίεση	0.67	0.54	0.51	0.67	0.92		0.16	0.16	0.56	0.69
Διαστολική πίεση	0.49	0.86	0.61	0.028	0.093	0.16		0.11	0.36	0.85
Ηλικία	0.88	0.15	0.96	0.49	0.055	0.16	0.11		0.96	0.28
Δυσλιπιδαιμία	0.25	0.23	0.88	0.75	0.54	0.56	0.36	0.96		0.78
O2	0.19	0.98	0.34	0.26	0.046	0.69	0.85	0.28	0.78	

Figure 2: Cardiovascular factors and correlations in the male population

Correlations

		Smoking	BMI	Age	Osteoarthritis	Rheumatic_Disease	Osteoporosis	MSK	Exercise
Smoking	Pearson Correlation	1	-.133	.027	.398*	.302	-.256	.257	.021
	Sig. (2-tailed)		.525	.884	.027	.099	.164	.163	.920
	N	32	25	31	31	31	31	31	26
BMI	Pearson Correlation	-.133	1	-.389	-.170	-.183	-.256	-.242	.167
	Sig. (2-tailed)	.525		.055	.428	.392	.227	.255	.446
	N	25	25	25	24	24	24	24	23
Age	Pearson Correlation	.027	-.389	1	.160	.106	.162	-.101	.010
	Sig. (2-tailed)	.884	.055		.389	.570	.385	.590	.960
	N	31	25	33	31	31	31	31	26
Osteoarthritis	Pearson Correlation	.398*	-.170	.160	1	.560**	-.078	.530**	.230
	Sig. (2-tailed)	.027	.428	.389		.001	.662	.001	.268
	N	31	24	31	34	34	34	34	25
Rheumatic_Disease	Pearson Correlation	.302	-.183	.106	.560**	1	-.044	.477**	.127
	Sig. (2-tailed)	.099	.392	.570	.001		.807	.004	.544
	N	31	24	31	34	34	34	34	25
Osteoporosis	Pearson Correlation	-.256	-.256	.162	-.078	-.044	1	-.091	.184
	Sig. (2-tailed)	.164	.227	.385	.662	.807		.608	.379
	N	31	24	31	34	34	34	34	25
MSK	Pearson Correlation	.257	-.242	-.101	.530**	.477**	-.091	1	.029
	Sig. (2-tailed)	.163	.255	.590	.001	.004	.608		.890
	N	31	24	31	34	34	34	34	25
Exercise	Pearson Correlation	.021	.167	.010	.230	.127	.184	.029	1
	Sig. (2-tailed)	.920	.446	.960	.268	.544	.379	.890	
	N	26	23	26	25	25	25	25	26

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Συσχέτιση –πίνακας μυοσκελετικά νοσήματα (♂)

	Κάπνισμα	BMI	ηλικία	οστεοαρθρίτιδα	Ρευματική νόσος	οστεοπόρωση	MSK	άσκηση
Κάπνισμα		0.52	0.88	0.027	0.099	0.16	0.16	0.92
BMI	0.52		0.055	0.42	0.39	0.22	0.25	0.44
Ηλικία	0.88	0.055		0.38	0.57	0.38	0.59	0.96
Οστεοαρθρίτιδα	0.027	0.42	0.38		0.001	0.66	0.001	0.26
Ρευματική νόσος	0.099	0.39	0.57	0.001		0.8	0.004	0.54
Οστεοπόρωση	0.16	0.22	0.38	0.66	0.8		0.6	0.37
MSK	0.16	0.25	0.59	0.001	0.004	0.6		0.89
Άσκηση	0.92	0.44	0.96	0.26	0.54	0.37	0.89	

Figure 3: Myosceletal factors and correlations in the male population

Female population:

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
O2	54	93.00	100.00	97.5000	1.85055
HR	57	56.00	108.00	75.8070	12.57753
BMI	48	18.26	38.71	28.9759	4.64321
Glucose	32	65.00	198.00	98.1875	25.75873
Wellbeing	48	.00	25.00	18.2292	5.85368
hb	23	9.80	17.00	13.0913	1.68197
Age	55	50.00	95.00	74.4182	9.99016
Systolic_BP	48	98.00	196.00	147.9792	21.25077
Diastolic_BP	48	51.00	118.00	78.1667	13.31825
Valid N (listwise)	21				

Table 3: Demographics for the female sample of the population

Study population	Percentage of the population
Education Primary School	74%
Secondary School/Lyceum	7%
Did not reply	19%
Profession Farmer	28%
Did not reply	11%
Housewife	16%

Pensioner	45%
Smoking Non smoker	93%
Smoker	3%
Ex-smoker	5%
Alchool	31%
No alchool	69%
Exercise	75%
No exercise	25%

Table 4: Demographics for the female sample of the population

Correlations

		Smoking	Alcohol	Exercise	HR	BMI	Systolic_BP	Diastolic_BP	SleepDisorder	PanicAttack	Depression	Migraine	Wellbeing
Smoking	Pearson Correlation	1	.216	-.013	-.092	-.057	.018	.090	-.096	-.108	.073	.248	-.019
	Sig. (2-tailed)		.113	.931	.495	.701	.902	.543	.469	.416	.583	.059	.896
	N	59	55	48	57	48	48	48	59	59	59	59	48
Alcohol	Pearson Correlation	.216	1	-.130	-.167	.037	.187	.200	-.204	-.230	-.188	-.003	.047
	Sig. (2-tailed)	.113		.379	.231	.803	.204	.173	.134	.092	.170	.983	.752
	N	55	55	48	53	48	48	48	55	55	55	55	48
Exercise	Pearson Correlation	-.013	-.130	1	-.152	.037	-.083	-.067	.119	-.159	.209	-.285*	.151
	Sig. (2-tailed)	.931	.379		.314	.815	.596	.669	.421	.281	.155	.050	.327
	N	48	48	48	46	43	43	43	48	48	48	48	44
HR	Pearson Correlation	-.092	-.167	-.152	1	-.025	-.009	.104	.104	.202	.085	.004	-.240
	Sig. (2-tailed)	.495	.231	.314		.870	.954	.493	.440	.133	.530	.975	.108
	N	57	53	46	57	46	46	46	57	57	57	57	46
BMI	Pearson Correlation	-.057	.037	.037	-.025	1	.305*	.163	-.215	-.183	-.254	.018	.008
	Sig. (2-tailed)	.701	.803	.815	.870		.035	.269	.143	.214	.082	.906	.957
	N	48	48	43	46	48	48	48	48	48	48	48	47
Systolic_BP	Pearson Correlation	.018	.187	-.083	-.009	.305*	1	.432**	-.170	-.112	-.124	.111	-.186
	Sig. (2-tailed)	.902	.204	.596	.954	.035		.002	.247	.450	.401	.451	.211
	N	48	48	43	46	48	48	48	48	48	48	48	47
Diastolic_BP	Pearson Correlation	.090	.200	-.067	.104	.163	.432**	1	-.105	-.053	-.049	.236	-.275
	Sig. (2-tailed)	.543	.173	.669	.493	.269	.002		.477	.719	.739	.106	.061
	N	48	48	43	46	48	48	48	48	48	48	48	47
SleepDisorder	Pearson Correlation	-.096	-.204	.119	.104	-.215	-.170	-.105	1	.428**	.415**	.132	-.298*
	Sig. (2-tailed)	.469	.134	.421	.440	.143	.247	.477		.001	.001	.318	.040
	N	59	55	48	57	48	48	48	59	59	59	59	48
PanicAttack	Pearson Correlation	-.108	-.230	-.159	.202	-.183	-.112	-.053	.428**	1	.573**	.232	-.236
	Sig. (2-tailed)	.416	.092	.281	.133	.214	.450	.719	.001		.000	.077	.107
	N	59	55	48	57	48	48	48	59	59	59	59	48
Depression	Pearson Correlation	.073	-.188	.209	.085	-.254	-.124	-.049	.415**	.573**	1	.217	-.197
	Sig. (2-tailed)	.583	.170	.155	.530	.082	.401	.739	.001	.000		.099	.179
	N	59	55	48	57	48	48	48	59	59	59	59	48
Migraine	Pearson Correlation	.248	-.003	-.285*	.004	.018	.111	.236	.132	.232	.217	1	-.155
	Sig. (2-tailed)	.059	.983	.050	.975	.906	.451	.106	.318	.077	.099		.293
	N	59	55	48	57	48	48	48	59	59	59	59	48
Wellbeing	Pearson Correlation	-.019	.047	.151	-.240	.008	-.186	-.275	-.298*	-.236	-.197	-.155	1
	Sig. (2-tailed)	.896	.752	.327	.108	.957	.211	.061	.040	.107	.179	.293	
	N	48	48	44	46	47	47	47	48	48	48	48	48

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Συσχέτιση –πίνακας (1)
ψυχοσυναισθηματική ένταση (♀)

	Κάπνισμα	Αλκοόλ	άσκηση	HR	BMI	Συστολική πίεση	Διαστολική πίεση	Διαταραχές ύπνου	πανικός	κατάθλιψη	ημικρανίες	Ποιότητα ζωής
Κάπνισμα		0.1	0.93	0.49	0.7	0.9	0.54	0.47	0.42	0.58	0.59	0.89
Αλκοόλ	0.1		0.38	0.23	0.8	0.2	0.17	0.13	0.09	0.17	0.98	0.75
Άσκηση	0.93	0.38		0.31	0.81	0.59	0.66	0.42	0.28	0.15	0.05	0.32
HR	0.49	0.23	0.3		0.87	0.95	0.49	0.44	0.13	0.53	0.97	0.1
BMI	0.7	0.8	0.81	0.87		0.035	0.26	0.14	0.21	0.082	0.9	0.96
Συστολική πίεση	0.9	0.2	0.59	0.95	0.035		0.002	0.24	0.45	0.4	0.45	0.21
Διαστολική πίεση	0.54	0.17	0.67	0.49	0.27	0.02		0.47	0.71	0.74	0.1	0.06
Διαταραχές ύπνου	0.47	0.13	0.21	0.44	0.14	0.25	0.47		0.01	0.01	0.32	0.04
Πανικός	0.41	0.09	0.28	0.13	0.21	0.45	0.72	0.001		0.000	0.07	0.1
Κατάθλιψη	0.58	0.17	0.15	0.53	0.08	0.4	0.74	0.001	0.000		0.1	0.18
Ημικρανίες	0.06	0.98	0.05	0.97	0.9	0.45	0.1	0.32	0.08	0.1		0.29
Ποιότητα ζωής	0.89	0.75	0.33	0.1	0.96	0.21	0.06	0.04	0.1	0.18	0.29	

Figure 4: Psychometric factors and correlations in the female population

Correlations

		Smoking	Alcohol	Exercise	HR	BMI	Systolic_BP	Diastolic_BP	Age	Dislipidemia	O2
Smoking	Pearson Correlation	1	.216	-.013	-.092	-.057	.018	.090	-.381**	-.189	-.036
	Sig. (2-tailed)		.113	.931	.495	.701	.902	.543	.004	.151	.795
	N	59	55	48	57	48	48	48	55	59	55
Alcohol	Pearson Correlation	.216	1	-.130	-.167	.037	.187	.200	-.029	-.210	-.081
	Sig. (2-tailed)	.113		.379	.231	.803	.204	.173	.839	.123	.569
	N	55	55	48	53	48	48	48	52	55	52
Exercise	Pearson Correlation	-.013	-.130	1	-.152	.037	-.083	-.067	-.181	.000	.104
	Sig. (2-tailed)	.931	.379		.314	.815	.596	.669	.235	1.000	.493
	N	48	48	48	46	43	43	43	45	48	46
HR	Pearson Correlation	-.092	-.167	-.152	1	-.025	-.009	.104	.011	.050	.286*
	Sig. (2-tailed)	.495	.231	.314		.870	.954	.493	.938	.711	.034
	N	57	53	46	57	46	46	46	53	57	55
BMI	Pearson Correlation	-.057	.037	.037	-.025	1	.305*	.163	.050	.056	-.080
	Sig. (2-tailed)	.701	.803	.815	.870		.035	.269	.743	.708	.596
	N	48	48	43	46	48	48	48	46	48	46
Systolic_BP	Pearson Correlation	.018	.187	-.083	-.009	.305*	1	.432**	.200	.076	-.121
	Sig. (2-tailed)	.902	.204	.596	.954	.035		.002	.182	.606	.424
	N	48	48	43	46	48	48	48	46	48	46
Diastolic_BP	Pearson Correlation	.090	.200	-.067	.104	.163	.432**	1	-.107	.004	.292*
	Sig. (2-tailed)	.543	.173	.669	.493	.269	.002		.479	.976	.049
	N	48	48	43	46	48	48	48	46	48	46
Age	Pearson Correlation	-.381**	-.029	-.181	.011	.050	.200	-.107	1	-.169	-.271
	Sig. (2-tailed)	.004	.839	.235	.938	.743	.182	.479		.219	.055
	N	55	52	45	53	46	46	46	55	55	51
Dislipidemia	Pearson Correlation	-.189	-.210	.000	.050	.056	.076	.004	-.169	1	.204
	Sig. (2-tailed)	.151	.123	1.000	.711	.708	.606	.976	.219		.136
	N	59	55	48	57	48	48	48	55	59	55
O2	Pearson Correlation	-.036	-.081	.104	.286*	-.080	-.121	.292*	-.271	.204	1
	Sig. (2-tailed)	.795	.569	.493	.034	.596	.424	.049	.055	.136	
	N	55	52	46	55	46	46	46	51	55	55

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Συσχέτιση –πίνακας καρδιαγγειακά νοσήματα (♀)

	Κάπνισμα	Αλκοόλ	άσκηση	HR	BMI	Συστολική πίεση	Διαστολική πίεση	Ηλικία	Δυσλιπιδαιμία	O2
Κάπνισμα		0.11	0.93	0.49	0.7	0.9	0.54	0.004	0.15	0.79
Αλκοόλ	0.11		0.38	0.23	0.8	0.2	0.17	0.84	0.12	0.57
Άσκηση	0.93	0.38		0.31	0.81	0.59	0.67	0.23	1	0.49
HR	0.49	0.23	0.31		0.87	0.95	0.49	0.94	0.71	0.034
BMI	0.7	0.8	0.81	0.87		0.035	0.27	0.74	0.7	0.59
Συστολική πίεση	0.9	0.2	0.59	0.95	0.035		0.002	0.18	0.6	0.42
Διαστολική πίεση	0.54	0.17	0.67	0.49	0.27	0.002		0.48	0.97	0.049
Ηλικία	0.004	0.84	0.23	0.94	0.74	0.18	0.48		0.21	0.055
Δυσλιπιδαιμία	0.15	0.12	1	0.71	0.7	0.6	0.97	0.22		0.13
O2	0.79	0.57	0.49	0.034	0.59	0.42	0.049	0.055	0.13	

Figure 5: Cardiovascular factors and correlations in the female population

Correlations

		Smoking	Exercise	BMI	Age	Osteoarthritis	Rheumatic_Disease	Osteoporosis	MSK
Smoking	Pearson Correlation	1	-.013	-.057	-.381**	-.082	.039	-.089	-.113
	Sig. (2-tailed)		.931	.701	.004	.535	.770	.502	.393
	N	59	48	48	55	59	59	59	59
Exercise	Pearson Correlation	-.013	1	.037	-.181	.164	.119	-.011	-.231
	Sig. (2-tailed)	.931		.815	.235	.266	.421	.939	.114
	N	48	48	43	45	48	48	48	48
BMI	Pearson Correlation	-.057	.037	1	.050	.167	-.026	-.176	-.153
	Sig. (2-tailed)	.701	.815		.743	.257	.861	.231	.299
	N	48	43	48	46	48	48	48	48
Age	Pearson Correlation	-.381**	-.181	.050	1	.173	.076	.026	.133
	Sig. (2-tailed)	.004	.235	.743		.205	.581	.852	.334
	N	55	45	46	55	55	55	55	55
Osteoarthritis	Pearson Correlation	-.082	.164	.167	.173	1	.047	-.081	-.019
	Sig. (2-tailed)	.535	.266	.257	.205		.724	.543	.887
	N	59	48	48	55	59	59	59	59
Rheumatic_Disease	Pearson Correlation	.039	.119	-.026	.076	.047	1	.040	-.133
	Sig. (2-tailed)	.770	.421	.861	.581	.724		.762	.314
	N	59	48	48	55	59	59	59	59
Osteoporosis	Pearson Correlation	-.089	-.011	-.176	.026	-.081	.040	1	.047
	Sig. (2-tailed)	.502	.939	.231	.852	.543	.762		.722
	N	59	48	48	55	59	59	59	59
MSK	Pearson Correlation	-.113	-.231	-.153	.133	-.019	-.133	.047	1
	Sig. (2-tailed)	.393	.114	.299	.334	.887	.314	.722	
	N	59	48	48	55	59	59	59	59

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 6: Musculosceletal factors : no significant correlations