

Twenty years study of solar, geomagnetic, cosmic ray activity links with monthly deaths number (n-850304)

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ABSTRACT

The interrelationship between human life and death at the end of the XX and beginning of the XXI centuries is the topic of this study. The aim of the study is to study links between time, Solar (SA), Geomagnetic (GMA) and Cosmic Ray (CRA) (Neutron) activity and monthly deaths distribution from all and six subgroups of death causes in years 1990-2009 for additional clarification of the role of exogenic factors in human homeostasis. **Methods and patients:** 850304 deaths (44657 men, 400647 woman) and 6 subgroups were studied in 240 consecutive months in the Republic of Lithuania in relation to the months of year (1 - 12), 4 indices of SA (Sunspot number and Solar Flux), 3 indices of GMA (planetary and regional for the Middle Latitudes), and CRA described by Neutron activity on the Earth's surface—remains of crushed atoms in the high space levels and measured by Imp/min. The cosmophysical data came from Space Science Institutions in the USA, Russia and Finland. Statistical analysis of the results for monthly comparison are presented. **Results:** It was a significant and inverse relationship of monthly deaths number for both gender with CRA and SA, less with GMA. It was a significant drop of deaths from IHD and suicides. Oncology deaths also show similarity in their timing with other groups. A strong inverse relationship was seen in monthly death number from IHD and Stroke. ($r = -0.76$, $p < 0.0001$), woman show more seasonality in death's distribution. Most deaths show annual rhythm with acrophase in February. Only Suicide pick appears in the summer months. **Conclusion:** at the beginning of the XXI century, in addition to accepted risk factors, environmental

physical activity is linked to timing of death. Cosmic Ray (Neutron) activity is one of the main regulators of this relationship. Stroke related deaths are becoming a more prominent cause in the collection of cardiovascular deaths. Suicide related deaths show a drop, possibly related to a massive trend for immigration in the high risk group of the population. The precise mechanism of action of the studied physical factors needs additional studies.

Keywords: Deaths; Geomagnetic; Solar; Cosmic Ray; Neutron; Activity

1. INTRODUCTION

Life exists in four power fields: gravitation; electromagnetic; weak nuclear power; strong nuclear power. These factors in different ways influence life, including human homeostasis. Human life has a start-conception, and finish-death, all components of life.

The aim of this study was to explore links between levels of three physical factors related to the mentioned power fields Solar (SA), Geomagnetic (GMA) and, opposite to them, Cosmic Ray (CRA) activity and monthly distribution of human deaths number. The progress in space exploration and computerization of related physical and medical data provide now better opportunities for such study.

2. METHODS

Data of the National Archive of the Republic of Lithuania for twenty years, 1990-2009 (240 consecutive months) was used. Monthly deaths distribution of 850304 persons (449657 men and 400647 women) was analyzed. Smaller groups of deaths—parts of the total group, were also studied: Ischemic Heart Disease (IHD, n-300046),

Stroke (CVA, n-104243) and ratio between these two death groups monthly, Accidents (n-80486), Traffic Accidents (n-18532), Suicide (n-28005), deaths from malignancies (Oncologic deaths) (n-154311), Diabetes Mellitus (DM) (n-5417); an additional, artificial, group of Non Cardiovascular deaths (n-446015) was obtained, excluding from the Total deaths number deaths from IHD and CVA—two major cardiovascular killers.

All comparisons were made for total and both gender death.

The cosmophysical data (SA, GMA and CRA monthly indices) was obtained from the National Oceanic Atmospheric Administration, National Geophysical Data Center, USA, National Space Weather Prediction Center, USA, IZMIRAN Institute of the Russian Academy of Sciences, Russia, Oulu University Neutron Monitoring Station, Finland. For SA and GMA International indices of their activity were studied (1-7)—(Sunspot number, Solar flux), for GMA planetary and regional indices for the Middle Latitude (Ap., Cp., Am.) were used. For CRA Neutron activity in impulses per minute (imp/min) was used. The Neutrons are remains of atoms crushed by Cosmic Rays in the higher Space. The SA and GMA are serving as shields defending the Earth from CRA; their activities are inverse related.

3. STATISTICS

Pearson correlation coefficients (p) and their probabilities (r) for all physical parameters and monthly death numbers were obtained. Probabilities at 95% and higher were described as significant; probabilities of 94% - 90% were included in the Strong trends to significance category. Correlation with probability less than 90% was mentioned as Non Significant (NS). In addition, multifactor analysis was performed building prediction models for total and each pathology related deaths group, including the Intercept and significant factors for each prediction model and their probabilities.

4. RESULTS

First of all we checked the interrelationship between the three main studied physical factors at the 240 months of this study: SA and GMA were correlated at $r = 0.50$, $p < 0.0001$; SA and CRA (Neutron) activity were inverse related at $r = -0.85$, $p < 0.0001$ and, the same way, GMA and CRA (Neutron) activity at $r = -0.66$, $p < 0.0001$, a remembrance that SA and GMA serve as a shield for our planet from CRA.

Tables 1 and **2** present the results for total deaths and all subgroups for all fatalities and, separate, for each gender, and dynamics of IHD/CVA monthly ratio at the studied 240 months. **Table 3** includes data for Oncology deaths. **Table 4**—for deaths related to DM. **Table 5** presents results of multifactor analysis, prediction models.

Some facts emerge observing the results: yearly drop in deaths number from IHD and Suicide.

A growing role of Stroke in Cardiovascular mortality related deaths that is very significant at rise, in comparison with fatalities from IHD.

It's a sudden change in Suicide relationship with studied physical factors that were very clear and impressive from 1990 until 2005, losing significance at 2007-2008. A relative weak relationship of the studied physical factors are seen for IHD (most patients dying at home with poor verification of the event). The IHD relationship is undergoing some change in the multifactor analysis section, but demands attention in the chapter discussing the results of this study.

Between the physical factors studied the role of CRA (Neutron) activity is remarkable. The interaction of CRA with SA is following most of the observed death groups and is emerging as a principal factor of environmental forces regulating role in human homeostasis.

5. DISCUSSION

This long term study confirms results of a number of previous observations on links between timing of human death and environmental physical factors [8-15].

Results of this study are also reflecting the drop in IHD mortality in the last years [16].

IHD relationship with the mentioned physical factors in this study is clearer in the multifactor analysis part of the study. In this study IHD links with the physical factors are less prominent than in many studies related to Acute Myocardial Infarction (AMI), Sudden Cardiac Death (SCD), Cardiac Arrhythmia and other cardiovascular emergencies [17-27]. This can be explained by the fact that most of deaths in this group occurred at home and the verification of the cause of death was not satisfactory. This was confirmed by a group of physicians in the region where the data was collected: a great part of deaths occurred at time of alcohol intoxication; heart failure related deaths were also included in this group [28]. Better controlled studies of deaths in patients admitted to hospital and pathogenesis components of deaths from IHD (AMI, VT, VF related SCD, other forms of Cardiac Arrhythmia and Acute Cardiac Events) show highly significant relationship by timing with the level of CRA (Neutron) activity, SA and GMA [10-12,22-28].

Studies published in the XX century mostly concentrated on SA, GMA [8,10,11,12,14].

CRA activity related studies came later.

It was shown that blood coagulation and inflammation indices are higher on high (active, stormy) GMA levels [14,22,23,25]. But extremely high (stormy) GMA days are a rare phenomena. In the last 25 years they were registered only at 3.5% - 6.5% of days, at average, in 25 years (since 1983) 4.38% of such days yearly (400 days

Table 1. Monthly deaths (n = 850,304) number and cosmophysical activity 240 consecutive months data: pearson correlation coefficients (r) and their probabilities (p). Lithuania, 1990-2009.

Cosmophysical Factors	Total			IHD			Stroke (CVA)			IHD/CVA		
	All	Male	Female	All	Male	Female	All	Male	Female	Ratio-All	Male	Female
1. Sunspot Number	-0.33 p < 0.0001	-0.4 p < 0.0001	-0.23 p = 0.0003	N.S.	N.S.	N.S.	-0.36 p < 0.0001	-0.29 p < 0.0001	-0.36 p < 0.0001	0.32 p < 0.0001	0.28 p < 0.0001	0.295 p < 0.0001
2. Smoothed Sunspot Number	-0.31 p < 0.0001	-0.4 p < 0.0001	-0.205 p = 0.0014	N.S.	N.S.	N.S.	-0.35 p < 0.0001	-0.28 p < 0.0001	-0.35 p < 0.0001	0.34 p < 0.0001	0.27 p < 0.0001	0.24 p = 0.0004
3. Solar Flux 2800 MGH, 10.7 cm	-0.275 p < 0.0001	-0.365 p < 0.0001	-0.16 p = 0.012	N.S.	N.S.	N.S.	-0.29 p < 0.0001	-0.23 p = 0.007	-0.29 p < 0.0001	0.28 p < 0.0001	0.25 p = 0.0001	0.265 p < 0.0001
4. Adjusted Solar Flux	-0.3 p < 0.0001	-0.39 p < 0.0001	-0.195 p = 0.0025	N.S.	N.S.	N.S.	-0.32 p < 0.0001	-0.26 p = 0.0016	-0.31 p < 0.0001	0.27 p = 0.0005	0.24 p = 0.0001	0.25 p < 0.0001
5. GMA Indices:												
Ap.	N.S.	N.S.	N.S.	N.S.	0.16 p = 0.014	N.S.	-0.28 p < 0.0001	-0.17 p = 0.007	-0.32 p < 0.0001	0.39 p < 0.0001	0.36 p < 0.0001	0.39 p < 0.0001
Cp.	N.S.	N.S.	N.S.	0.14 p = 0.038	0.21 p = 0.0012	N.S.	-0.29 p = 0.0002	-0.17 p = 0.01	-0.33 p < 0.0001	0.44 p < 0.0001	0.41 p < 0.0001	0.44 p < 0.0001
Am.	N.S.	N.S.	N.S.	0.123 p = 0.06	0.19 p = 0.0035	N.S.	-0.26 p < 0.0001	-0.16 p = 0.0155	-0.3 p < 0.0001	0.4 p < 0.0001	0.37 p < 0.0001	0.4 p < 0.0001
6. Cosmic Ray Activity (Neutron Monitoring Data)	0.3 p < 0.0001	0.33 p < 0.0001	0.21 p = 0.0012	N.S.	N.S.	N.S.	0.37 p < 0.0001	0.27 p < 0.0001	0.38 p < 0.0001	-0.39 p < 0.0001	-0.36 p < 0.0001	-0.36 p < 0.0001
7. Year (1990-2009)	N.S.	N.S.	N.S.	-0.38 p < 0.0001	-0.38 p < 0.0001	-0.26 p < 0.0001	0.42 p < 0.0001	0.26 p < 0.0001	0.47 p < 0.0001	-0.76 p < 0.0001	-0.68 p < 0.0001	-0.71 p < 0.0001
8. Month (1-12)	-0.2 p = 0.002	-0.12 p = 0.07	-0.26 p < 0.0001	-0.21 p = 0.0013	-0.21 p = 0.0013	-0.31 p < 0.0001	-0.22 p = 0.0005	-0.22 p = 0.0008	-0.2 p = 0.0021	N.S.	N.S.	-0.15 p = 0.022
9. Death Number	850304	449657	400647	300046	137188	162858	104243	39141	65102			

Table 2. Monthly deaths (n = 850,304) number and cosmophysical activity 240 consecutive months data: pearson correlation coefficients (r) and their probabilities (p). Lithuania, 1990-2009.

	Cosmophysical Factors			Noncardiovascular Causes			Accidents			Traffic Accidents			Suicides		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
1. Sunspot Number	-0.48 p < 0.0001	-0.55 p < 0.0001	-0.38 p < 0.0001	-0.41 p < 0.0001	-0.39 p < 0.0001	-0.39 p < 0.001	0.256 p = 0.0001	0.32 p < 0.0001	0.25 p < 0.0001	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.
2. Smoothed Sunspot Number	-0.48 p < 0.0001	-0.56 p < 0.0001	-0.28 p < 0.0001	-0.42 p < 0.0001	-0.412 p < 0.0001	-0.4 p < 0.0001	0.236 p = 0.0005	0.246 p = 0.0003	0.19 p = 0.0042	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.
3. Solar Flux	-0.43 p < 0.0001	-0.53 p < 0.0001	-0.22 p = 0.0007	-0.36 p < 0.0001	-0.35 p < 0.0001	-0.324 p < 0.0001	0.187 p = 0.0059	0.25 p = 0.0001	0.21 p = 0.0012	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.
2800 MGH, 10.7 cm	-0.44 p < 0.0001	-0.54 p < 0.0001	-0.23 p = 0.0003	-0.36 p < 0.0001	-0.35 p < 0.0001	-0.336 p < 0.0001	0.195 p = 0.004	0.26 p < 0.0001	0.21 p = 0.0012	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.
4. Adjusted Solar Flux	-0.44 p < 0.0001	-0.54 p < 0.0001	-0.23 p = 0.0003	-0.36 p < 0.0001	-0.35 p < 0.0001	-0.336 p < 0.0001	0.195 p = 0.004	0.26 p < 0.0001	0.21 p = 0.0012	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.
5. GMA Indices:															
Ap.	-0.145 p = 0.025	-0.154 p = 0.017	-0.105 0.1	N.S. -0.12	N.S. -0.12	N.S. -0.11	0.198 p = 0.0035	0.27 p < 0.0001	0.18 p = 0.005	0.1	N.S.	N.S.	0.1	N.S.	N.S.
Cp.	-0.122 p = 0.059	-0.15 p = 0.02	N.S. N.S.	-0.12 p = 0.07	N.S. p = 0.1	-0.11 p = 0.1	0.182 p = 0.0072	0.26 p < 0.0001	0.21 p = 0.001	0.11	N.S.	N.S.	0.11	N.S.	N.S.
Am.	-0.14 p = 0.03	-0.154 p = 0.017	N.S. N.S.	N.S. N.S.	N.S. N.S.	N.S. N.S.	0.19 p = 0.0053	0.26 p < 0.0001	0.20 p = 0.0016	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.
6. Cosmic Ray Activity (Neutron Monitoring Data)	0.4 p < 0.0001	0.48 p < 0.0001	0.23 p = 0.0004	0.16 p = 0.01	0.15 p = 0.025	0.2 p = 0.003	-0.194 p = 0.0041	-0.205 p = 0.0025	-0.26 p < 0.0001	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.
7. Year (1990-2009)	0.34 p < 0.0001	0.3 p < 0.0001	0.33 p < 0.0001	0.6 p < 0.0001	0.58 p < 0.0001	0.58 p < 0.0001	-0.412 p < 0.0001	-0.47 p < 0.0001	-0.4 p < 0.0001	-0.20	-0.18	-0.22	-0.20	-0.18	-0.22
8. Month (1-12)	N.S.	N.S.	N.S.	0.12 p = 0.076	0.13 p = 0.046	N.S.	0.55 p < 0.0001	0.5 p < 0.0001	0.45 p < 0.0001	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.
Death Number	446015	273328	172687	80486	62487	17999	18532	14106	4426	28005	22997	5008	28005	22997	5008

Table 3. Oncology deaths and monthly cosmophysical activity. Lithuania, 1989-2009 (252 months).

Parameters	Total	M	F
Year	0.67 < 0.0001	0.515 < 0.0001	0.62 < 0.0001
Month /1-12/	0.11 0.08	N.S.	0.133 0.039
Sunspot No.	-0.39 < 0.0001	-0.35 < 0.0001	-0.295 < 0.0001
Smoothed Sunspot No.	-0.39 < 0.0001	-0.35 < 0.0001	-0.3 < 0.0001
Solar Flux	-0.33 < 0.0001	-0.3 < 0.0001	-0.246 0.0001
Adjusted Solar Flux	-0.335 < 0.0001	-0.3 < 0.0001	-0.25 < 0.0001
GMA:			
Ap.	-0.29 < 0.0001	-0.28 0.0001	-0.19 0.003
Cp.	-0.31 < 0.0001	-0.29 0.0001	-0.235 0.0002
Am.	-0.29 < 0.0001	-0.28 0.0001	-0.205 0.0014
Cosmic Ray:			
Moscow	0.33 < 0.0001	0.32 < 0.0001	0.23 0.0029
Oulu	0.34 < 0.0001	0.33 < 0.0001	0.23 0.0023
Deaths No.	154311	86767	67544

of high active-stormy-IV⁰ GMA activity in 25 years). Most of days (about 42%) are at the weakest—Quiet GMA, accompanied by their antagonist-higher CRA (Neutron) activity [1,3].

So, despite the recognition of the “equilibrium paradigm in clinical cosmobiology” [13]—inverse action of SA, GMA and CRA on our planet and humans, most of days (in the last decades) are under low GMA and higher CRA (Neutron) activity influence.

Neutron activity, as it follows from many studies published in recent years, [18-21,28-33] is one of the leading physical powers [34-36] and is linked with the timing of human death.

The universal (not only limited to cardiovascular pathology) role of this factor can be seen in the results of timing of Oncology deaths. Here the heart standstill is only a final step of different groups of different pathologies and localizations [26]; this is also presented as a part of this study related to Oncology.

The group of Total deaths, Stroke related and other death groups also show significant connections with CRA-Neutron activity.

A very strong change is seen in the monthly IHD/Stroke related deaths ratio since 1990. The role of Stroke

is becoming more and more important with the time, and its prevention and treatment needs more and more attention by the health authorities in the coming years. Stroke development includes many pathogenesis mechanisms; some are similar to IHD natural history (the role of lipids, high blood pressure, thrombosis, embolism, atrial fibrillation etc.), but in the Stroke deaths group the correlation with the studied cosmophysical factors are much more clear [10,12,14,17,22-25]. Maybe more deaths taking place in hospital, better medical documentation and less diagnostic errors were factors making the Stroke related data much stronger related to environmental physical activity in this study.

It's remarkable the domination of woman in both (IHD, Stroke) groups, what is not specific for Western countries, but is widely seen in Eastern Europe, where men life expectancy is much shorter than woman [38] (64 for men, 74 for woman in Lithuania), and men deaths are concentrated in specific parts of pathology (accidents, traffic accidents, alcoholism and alcohol overuse related deaths, suicide etc.). [30,31,38]. This study is an additional confirmation of these studies.

We must also put attention on the group of Suicides, a cause of deaths that Lithuania was one of the leaders in the last decades [30,31]. Until year 2005 (since 1990) it was a very clear relationship of monthly Suicide related deaths number and the studied physical factors [30,31]. In the last couple of years it was.

- 1) A yearly drop in the number of Suicides;
- 2) A much weaker link with the studied physical factors;

- 3) All this was occurring together with massive emigration (more than 10% of the total population, first of all, the social unwell, relatively young (18-34 y. old) population—predominantly unemployed, to Western Europe (Ireland, UK, Spain and other). This population was the biggest reserve for Suicide, but not from other causes [39]. In our opinion it can explain some of the observed changes in the last couple of years in this death group. For example at 1990-2005 the yearly Suicide deaths number yearly was still significantly rising ($p = 0.02$), Correlation with SA close to $r = -0.5$, $p < 0.0001$; with CRA (Neutron) activity, $r = 0.31$, $p < 0.0001$. At 1990-2007 not significant yearly relationship of Suicide deaths number was seen, still significant, but weaker, with SA (inverse) and CRA (Neutron) activity. In this study (1990-2009) a yearly drop in death number from Suicides ($r = -0.20$, $p = 0.0019$) and all long time observed relationship with the physical factors disappeared.

Considering the way of Neutron action on the pathways of Cardiac Arrhythmia, the damage of coronary artery plaque's in AMI and some cellular damage in other

Table 4. Monthly deaths distribution from diabetes mellites (dm) links with environmental physical activity. Lithuania, 1990-2009.

Parameter	Deaths of Diabetes Mellites Patients			Lithuania
	Male	Female	All	Total Death Number
Year	0.31 p < 0.0001	0.35 p < 0.0001	0.44 p < 0.0001	N.S.
Month	N.S.	N.S.	N.S.	-0.19 p = 0.0036
Sunspot No.	-0.16 p = 0.01	-0.15 p = 0.02	-0.202 p = 0.0016	-0.35 p < 0.0001
Smoothed Sunspot Number	-0.15 p = 0.01	-0.15 p = 0.02	-0.15 p = 0.02	-0.33 p < 0.0001
Solar Flux 2800MGH 10.7 cm	-0.15 p = 0.1	-0.12 p = 0.059	-0.15 p = 0.02	-0.29 p < 0.0001
Adjusted Solar Flux	-0.11 p = 0.08	-0.13 p = 0.04	-0.16 p = 0.01	-0.32 p < 0.0001
GMA Indices:				
Ap.	N.S.	N.S.	N.S.	N.S.
Cp.	N.S.	N.S.	N.S.	N.S.
Am.	N.S.	N.S.	N.S.	N.S.
CRA—Neutron Activity (imp./min.)				0.32
Oulu	N.S.	N.S.	N.S.	p < 0.0001
Moscow	N.S.	N.S.	N.S.	0.3 p < 0.0001
Death Number	2152	3134	5417	850304 1990-2009

Table 5. Prediction of monthly deaths distribution links with environmental physical activity. Lithuania, 1990-2009.

Variable	Estimate	Std. Error	p-Value	Variable	Estimate	Std. Error	p-Value
Total				Suicide			
Intercept	29273.0	8572.5	0.0008	Intercept	3057.6	805.9	0.0002
Year	-12.914	4.296	0.0029	Year	-1.4	0.55	0.0008
Month	-21.0823	5.889	0.0004	Sunspot No.	0.407	0.17	0.018
Sunspot No.	-9.387	1.818	< 0.0001	Solar Flux	-0.688	0.161	< 0.0001
Solar Flux	6.485	1.74	0.0002	Cosmic Ray	0.07	0.0178	< 0.0001
IHD				Non Cardiovascular			
Intercept	71735.0	7337.4	< 0.0001	Intercept	-33714.0	7504.1	< 0.0001
Year	-35.39	3.68	< 0.0001	Year	17.83	3.75	< 0.0001
Month	-14.67	3.74	0.0001	Sunspot No.	-2.13	0.29	< 0.0001
Sunspot No.	5.945	1.002	< 0.0001	Ap.	7.62	2.39	0.0017
Solar Flux	5.37	0.96	< 0.0001	Diabetes Mellitus			
Stroke				Intercept	-833.5	124.3	< 0.0001
Intercept	-4947.7	1286.2	0.0002	Year	0.44	0.062	< 0.0001
Year	2.527	0.641	0.0001	Sunspot No.	-0.025	0.011	0.0223
Month	-3.738	0.858	< 0.0001	Cosmic Ray	-0.0043	0.0013	0.0007
Sunspot No.	-0.89	0.272	0.0013				
Solar Flux	0.997	0.257	0.0001				
Cosmic Ray	0.061	0.023	0.01				
Accidents							
Intercept	-15737.0	1734.6	< 0.0001				
Year	8.505	0.868	< 0.0001				
Month	3.308	1.24	0.0086				
Sunspot No.	-1.24	0.153	< 0.0001				
Cosmic Ray	-0.145	0.017	< 0.0001				
Traffic Accidents							
Intercept	4529.1	469.5	< 0.0001				
Year	-2.205	0.239	< 0.0001				
Month	4.045	0.3569	< 0.0001				
Cosmic Ray	-0.011	0.0033	0.0009				

cases, we can presume one of the Neutron acting ways is ability to invade human tissue proportional to hydrogen atoms presence there, interaction with H^+ (41) (a radical that lipids and vulnerable atheroma's—plaque's are rich) and transformation of Neutrons to Protons, that attack cell nuclei and damage tissues [40,41,42].

An additional way of SA effects can be particles arriving with the Solar wind and their effects on enzymes and their function [43]. Changes in the enzyme function can also change the normal metabolism and provoke unexpected reaction of the human body, immunologic changes that are described for changes in SA and GMA [44,45]. This can bring to pathologic responses of the human organism to usually “normal” triggers. The way GMA is affecting blood coagulation (platelet aggregation, count, fibrinogen level etc.), inflammation (C- Reactive Protein) and many immunologic mechanisms (immunoglobulins, phospholipids) are published [14, 22,23,44,45].

The World epidemics of Diabetes Mellitus (DM) is sober represented by death number in this study. An explanation for the relative small numbers of DM related victims can be a long complications list. in the natural history of DM. They often serve as immediate cause of death-Hypertension, Renal failure, Vascular occlusions in the heart, brain, Peripheral vascular disease and diminish the number of DM related deaths.

It's also known about circannual rhythms in deaths distribution concentrating (in the Middle Latitudes of the Northern hemisphere): most IHD and CVA deaths occur in the winter (February) months, traffic accidents victims at the late autumn-start of winter and suicide acrophase in the summer (June-July) [46]. This is shown in the monthly deaths disposition (1-12) included in this study.

A great step forward understanding the origin of high energy CRA was made in recent publications (2007), connecting them with close to our galaxy, but extragalactic, black hole radiation [47].

It seems that life is optimal when the environment is at moderate activity level that prevents the mentioned factors not to achieve critical levels for human health. It's especially important for the sick and elderly population.

100 years after A. Tchizhevsky formulated the possibilities of Solar influences on human life [48], Clinical Cosmobiology, using the achievements of Space exploration and data computerization presents new data for understanding the nature of physical environment effects on human life and death—a part of life. Here we can quote A. Einstein words “The Human will be free only in bounds of a determined cosmic system” [49].

6. CONCLUSION

Solar and Cosmic Ray (Neutron) activity remain significantly connected with monthly deaths distribution in

the last two decades.

The role of Stroke related deaths is rising. Prevention and treatment deserve more attention.

Geomagnetic activity, remarkable at daily account at extreme levels is less important in monthly studies because rare high level activity occurrence.

Gender differences are seen. In woman seasonality of death is more expressed than in men.

The clarification of the mechanisms of action of cosmophysical factors on humans and biological objects deserve additional studies.

The presented data support the view that the optimal situation for human health is concomitant with moderate levels of antagonistic environmental physical forces.

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