(RESEARCH ARTICLE)

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Anamnesis of a patient to evaluate the risk of disease due to environmental alteration

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Abstract

Medical Doctors must repair the damages against human health but, being most of these damages due to environmental alterations going beyond pollution and being the physiology of an organism linked with internal and external/environmental life systems, they must collaborate with internal and external/environmental specialists (i.e., Ecojatra), arriving to an integrated therapy. But, to become an ecojatra, it is necessary to embody the systemic turn due to the scientific Paradigm shift, which can upgrade the impasse due to reductionism, as done by new upgrading disciplines, like Landscape Bionomics.

So, it is possible to propose a first suggestion for widening patient's environmental anamnesis, presenting opportune questions and evaluation methods, derived from the main set of landscape syndromes. We need to measure the Risk of Disease % due to Environmental Stress produced by ethological alarm from environmental and behavioral alterations. This measure needs two or three steps:

- A preliminary value of Risk of Disease (%) given by the answers to 30 questions
- The estimation of the behavioral stress level (%), articulated in three set (family, work, social)
- The increase of Risk of Disease (x 1.5) when the behavioral stress level is more than 35% (cumulative impact): if this increased Risk of Disease goes beyond 60 %, the addition of the Premature Mortality Risk become necessary.

The contribution of Landscape Bionomics to a more systemic medicine emerges, also widening the education on public health and bioethics.

Keywords: Anamnesis; Landscape Bionomics; Assessment Questionnaire; Risk of Disease; Stress; Cumulative Impacts

1. Introduction

The scientist's main answers to the environmental crisis, with its dangerous influence on health alteration, both of natural systems and human body, are Sustainability and One-Health. These concepts need the help of Ecology and Medicine, which both remain mostly reductionistic, so reducing their capacity to fight the crisis. The systemic turn [1, 2] due to the Paradigm shift of science can overstep this impasse by proposing new upgrading disciplines, like Landscape Ecology [3,4,5] and Bionomics, particularly Landscape Bionomics (LB), *sensu* Ingegnoli [6, 7].

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LB profoundly upgrades traditional ecology's main principles by being conscious that *Life on Earth is organized in a hierarchy of interrelated space-time-information levels* (complex living systems), and *it is possible to define a state of health for each level.* The capability of bionomic principles to *evaluate landscape's health* in a very synthetic way and *to relate it with the incidence of human diseases,* findings other correlations besides the conventional ones, has been started, with encouraging results.

A synthesis of landscape/human-health alterations, at different space-temporal scales, was published by Ingegnoli [8,9] and Ingegnoli & Giglio [10,11,12,13], from mortality rate in the Monza-Brianza province (see later Fig.4) to cancer incidence in European Countries (Fig.1): the damage to human health due to landscape degradation is independent of pollution and leads to the need for new paths of prevention and therapy. Cancer incidence (age-standardized rate, ASR) was assessed in these countries following the EU Journal of Cancer and ECIS (EU Cancer Information System) [14, 15]. The correlation of DI and BTC (diagnostic index and biological territorial capacity of vegetation) Vs. the cancer incidence in European countries is evident in this figure and its significance resulted more important than traditional cancerogenic parameters e.g., beef kg/capita, urbanization, pesticides, etc. [16]. Note that BTC is a biological function measuring the bionomic efficiency of vegetation, both natural and human.
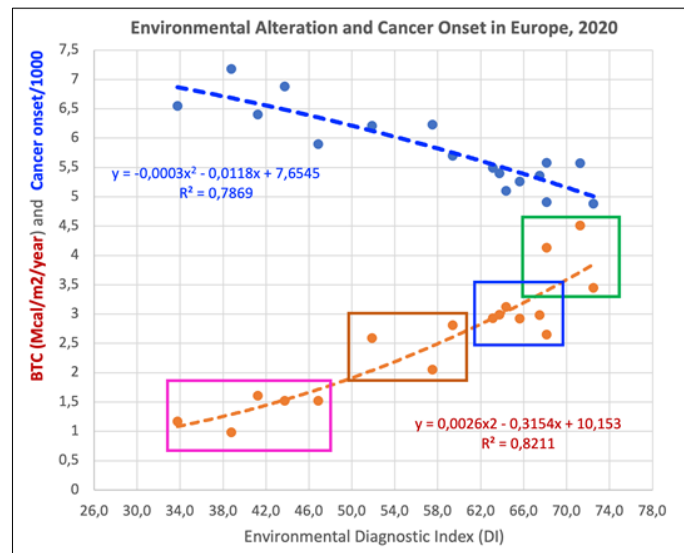
Bionomic parameters Vs. Cancer Incidence in Europe (2020) from Ingegnoli & Giglio, 2021				
	DI	BTC (Mcal/m²/year)		Cancer Onset (x 1000)
1	68-75	3.5-4.5	Finland, Sweden, Austria	4.9-5.4
2	63-70	2.5-3.5	Poland, Romania, Greece, Bayern, Portugal, Spain, Italy	5.2-5.7
3	52-59	1.8-2.8	Germany, Hungary, France, Lombardy reg.	5.7-6.3
4	35-48	0.8-1.8	Denmark, Belgium, Ireland, Nederland, UK	6.3-7.1

Note: the diagnostic index (DI) is a parametric and bionomic evaluation method of landscape health (Ingegnoli, 2015)

Figure 1 The correlation of BTC Vs. the cancer incidence in European countries is evident and its significance resulted more important than traditional cancerogenic parameters (e.g., beef kg/capita, urbanization, pesticides, etc.)

In living organisms, matter, energy, and information flow from the environment to the organism and vice-versa. Since the organism lives in symbiosis with the environment, the two systems must be studied together [5, 17]. As exposed in Fig.2, Medicine Doctor (MD) has to repair the damages against human health but, being most of these damages due to environmental alterations [18, 19] and being the physiology of an organism linked with *internal* and *external (environmental)* life systems, MD must collaborate with *internal* and *external(environmental)* (i.e., *Ecoiatra*) specialists, arriving to an integrated therapy [5, 6].

On the base of those processes, confirmed by the first evidence derived from the cited case studies, for a widening patient's environmental anamnesis we can suggest opportune questions and some evaluation methods. Derived from

the main set of landscape syndromes, we need to measure the Risk of Disease % (RD) due to Environmental Alteration and Ethological alarm from environmental and behavioral stress. This measure needs three steps:

- A preliminary value of RD (%), given by the answers to 30 questions distributed on three columns with different score, inversely proportional to the most favorable environmental parameters (see Tab.1),
- The estimation of Behavioral Stress Level (BSL), articulated in three set (family, work, social), measured with simple scores on three columns available to quantify BSL % (see Tab.2),
- The *cumulative impact*. (c1) If the Behavioral Stress Level is greater than 35%, the Risk of Disease RD must be multiplied per 1.5 (becoming StrRd) (see Tab.2 and Tab.3); (c2) if StrRd is greater than 60 %, it should be necessary to deepen the investigation, taking into account the PMR (Premature Mortality Risk), which needs a deepen analysis of the district (or the town) and, especially, of the landscape unit (LU) within which the patient lives, following principles and methods of LB (Landscape Bionomics) and the correlation MR (Mortality Rate) Vs. BF (Bionomic Functionality).

The contribution of Landscape Bionomics for a more systemic medicine will emerge, also widening the education on public health and bioethics.
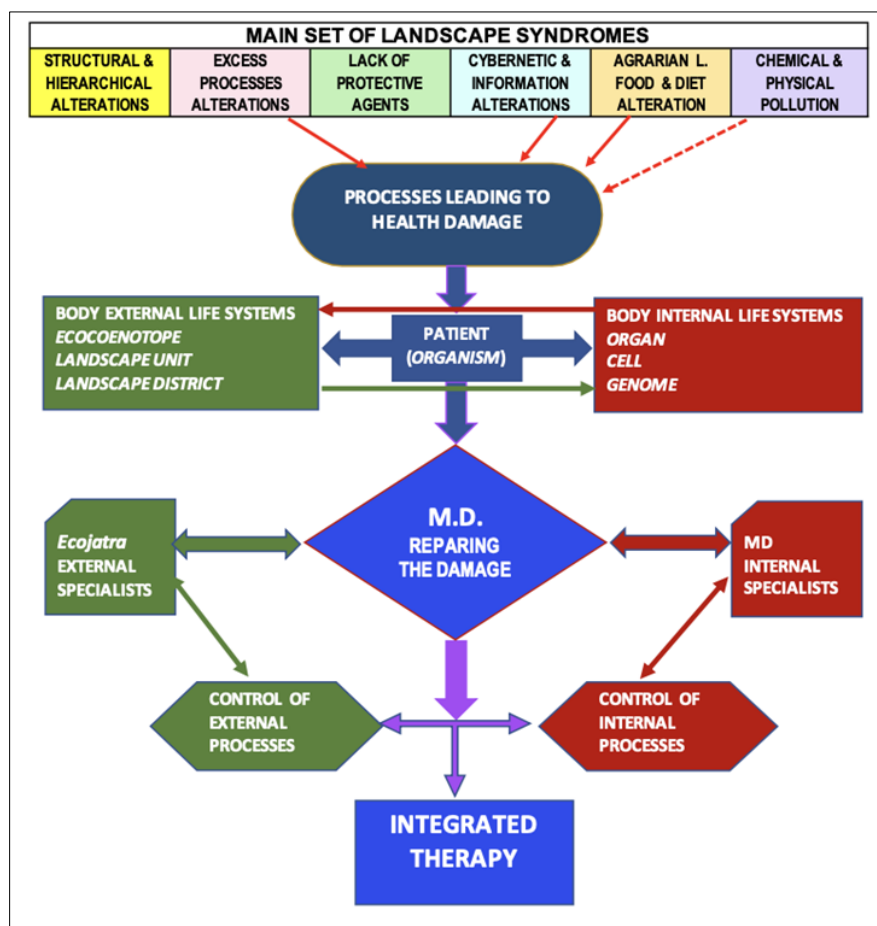
Figure 2 This flow diagram tries to explain that a Medicine Doctor MD has to repair the damages against human health but, being most of these damages due to environmental alterations and being the organism linked with body internal and external life systems, MD must collaborate with internal and external/environmental (i.e. Ecojatra) specialists, arriving to an integrated therapy. [12, 16]

2. Material and methods

2.1. A Questionnaire to Verify the Environmental Condition around the Patient

The questions ranked in Tab.1 try to measure the *Risk of Disease* (RD) due to the *Environmental Alteration* on a patient. They may be improved after a series of applications to real patients, alongside a traditional medical history. The

evaluation of RD (%) is very simple, with scores (0.1, 0.5, 1.0) inversely proportional to the alteration of environmental conditions per each column, to evaluate the risk of disease:

$$RD = (0.1\ A + 0.5\ B + 1.0\ C)\ /\ 30\ [\%]$$

Table 1 preliminary anamnesis of the risk of disease due to environmental alteration (patient …………………………………………………………………………)

		I (0.1)	II (0.5)	III (1.0)
STRUCTURAL AND HIERARCHICAL ALTERATIONS	Where did your mother spend the time she was pregnant with you?	Country	City	Suburban
	Which is the distance between your home and recreation area/park?	< 600 m	600-1200	>1200
	Do rivers or canals near you present riparian vegetation?	yes	partial	no
	Does your neighbourhood/village have a lot of green areas?	yes	partially	no
	Do you live in a tree-lined avenue?	yes	partially	no
EXCESS PROCESSES ALTERATIONS	Is your home/workplace far from the industrial areas?	>1500 m	500-1500	< 500
	Do you often move within congested traffic?	no	seldom	yes
	Is your home in a very noisy area?	no	partially	yes
	How distant are Highways from your home?	>2 km	0,5-2 km	< 0,5 km
	How distant are Highways from your workplace?	>2 km	0,5-2 km	< 0,5 km
LACK OF PROTECTIVE AGENTS	Is your home/workplace far from a natural forest?	< 1 km	1-5 km	>5 km
	Does your home have a garden or at least a green balcony?	garden	balcony	nothing
	How many times in a year do you take walks for a few hours within natural forests (with high ecological efficiency)?	>3	1-3	0
	Can you compensate for the environmental alteration by often going to naturally healthy places?	yes	seldom	no
	Do you often take antibiotics even without a prescription?	no	seldom	yes
CYBERNETIC AND INFORMATION ALTERATIONS	Could you understand if the environment is degraded?	yes	partially	no
	Does it bother you to stay for hours in a degraded environment?	a lot	little	no
	Did you often play in natural environments as a child?	frequently	seldom	never
	Do you play sports or walk in public parks?	frequently	seldom	never
	Do you like living in new artificial/technologic environments?	no	seldom	yes
AGRARIAN LANDSCAPE, FOOD AND DIET ALTERATIONS	How often do you eat red meat or sausages?	1-2	3-4	5-6
	Is the agrarian landscape in your municipality of industrial type (monocultural) or heterogeneous (tree corridors and wooded patches)?	Tree corr. & woods	Only few tree corridors	Agro-industrial
	Are the cattle and sheep whose product you consume raised in an environmentally sound way?	outdoors	mixed	stable
	Do you eat a lot of fruit and vegetables?	yes	seldom	no

	How many times a week do you feed on organically grown food?	5-7	3-4	0-2
CHEMICAL AND PHYSICAL POLLUTION	Is your residence area crossed by high voltage power lines?	no	marginal	yes
	Do you live or work in an area with high presence of fine dust in the air?	no	marginal	yes
	Are there radon gas emissions within your residence area?	no	little	high
	Is the water within the municipal plant hard and with a high ionic charge?	no	little	yes
	Do you spend more than an hour a day in traffic within a car?	no	1-2 h	>2h
	Sum	A	B	C
(RD) Risk of Disease = (0.1 A + 0.5 B + 1.0 C) / 30 = RD %		A x 0.1	B x 0.5	C x 1.0

2.2. A Questionnaire to Verify the Behavioral Stress Level of the Patient

Table 2 considers three behavioral sets of stress, respectively due to family, work, and social conditions. Here, we report only some of the main stress sources, but other cases should be added. The evaluation of the Behavioral Stress Level (BSL) is simple: proportional scores per column, which can be expressed as percentage giving an opportune value to BSL_{high}, here $BSL_{high} = 90$ (five registered stress per column).

$$BSL = (A \times 3 + B \times 6 + C \times 9) / 90 \ (\%)$$

Table 2 Evaluation of behavioral stress levels (BSL) (Patient ....)

Stress	Stress evaluation (last five years)	Low	Medium	High
Family stress	disagreement with wife or children or divorce			
	chronic illness of a relative or of the same patient			
	death of a close relative			
	housing problems			
Work stress	lack of recognition of merit			
	insufficient economic recognition			
	unjust career impediment			
	workplace & office problems			
Social stress	lack of medical centre requirements			
	lack of public transport			
	conflicts or persecutions due to religion			
	socio-cultural marginalization			
Stress level	BSL = A x 3 + B x 6 + C x 9 = .../90 %	A	B	C

NOTES We consider as a serious SL this sequence: $BSL_{max} = 15 + 30 + 45 = 90$.

2.3. The Cumulative Impact

The coexistence of the two different types of risks (environmental and behavioral) must be composed considering a threshold of tolerance for Behavioral Stress Level of about 30-35%.

With the BSL higher than 35%, the Risk of Disease RD must increase 1.5 times, as reported in Tab.3: StrRD= RD x 1.5

If the Risk of Disease for a stressed person StrRD results equal or higher than 60%, it should be necessary to add the evaluation of the Premature Mortality Risk (PMR) of the operative Landscape Unit within which the patient lives (Tab.4). This risk must be analyzed at municipal/landscape unit (LU) scale that is the surroundings of the living and / or working site of the patient, and (potentially) even at a district/provincial scale. Note that some municipalities may be composed by 2-3 LU, and some large cities count as entire district, as a metropolitan area. Note that PMR must be measured at 80%, considering a security coefficient of 20%.

The need to deepen the environmental condition (body's external life system) is analogous to the need to deepen the physiological condition (body's internal life system); so, while the Tab.1 and 2 takes about 1-2 hours, this third step may take two days or more, because the ecologic and bionomic parameters must be elaborated, based on biologic and territorial surveyed data.

Table 3 Evaluation of environmental anamnesis (patient ....)

Level of Environmental Stress	RD (%)	If BSL > 35%	RESULTS
low	6-18	RD x 1.5	
medium	18-30	RD x 1.5	StrRD =
quite high	30-42	RD x 1.5	
alarming	42-54	RD x 1.5	....
dangerous	54-66	RD x 1.5	

Table 4 Risk of premature mortality for patient .... if his/her StrRD > 60 %

District scale: (potential)	Municipality
URB area = ...[Km^2]	URB area = ...[Km^2]
HH = ...[% of LU]	HH = ... [% of LU]
SH/SH* = ...[n°]	SH/SH* = ...[n°]
BTC = ...[Mcal/m^2/a]	BTC = ...[Mcal/m^2/a]
BF = ...[n°]	BF = ...[n°]
PM = ...[death/yr]	PM =............... [death/yr]
PMR = ...(%)	PMR = ...(%)

NOTES: URB = urbanized; HH = Human Habitat; SH/SH*= bionomic carrying capacity; BTC= biological territorial capacity of vegetation; BF = bionomic functionality; PM = Premature Mortality; Bionomic functions and parameters need Landscape Bionomics principles and method (Ingegnoli, 2015, 2019, 2022). Note that PMR must be measured at 80%, considering a security coefficient of 20%.

3. Results

3.1. Proof od Use

The example of application of the proposed environmental anamnesis was done following the case study of a real person, living in Milan (Tab.5). The result of RD is pair to 40%.

$$RD = (0.1 A + 0.5 B + 1.0 C) / 30 = (1.5 + 4.5 + 6.0)/ 30 = 40 \%$$

Table 5 Risk of disease *Patient:* XY, *Born: 1943 (79 years), Work:* Free Professional, *Living:* Milano city (VI municipality) *since 1999.*

		I (0.1)	II (0.5)	III (1.0)
Structural and hierarchical alterations	Where did your mother spend the time, she was pregnant with you?	**Country**	City	SubUrban
	Which is the distance between your home and recreation area/park?	**< 600 m**	600-1200	>1200
	Do rivers or canals near you present riparian vegetation?	yes	**partial**	no
	Does your neighborhood / village have a lot of green areas?	yes	**partially**	no
	Do you live in a tree-lined avenue?	yes	partially	**no**
Excess processes alterations	Is your home/workplace far from the industrial areas?	>1500 m	**500-1500**	< 500
	Do you often move within congested traffic?	no	**seldom**	yes
	Is your home in a very noisy area?	**no**	partially	yes
	How distant are Highways from your home?	>2 km	0,5-2 km	**< 0,5 km**
	How distant are Highways from your workplace?	>2 km	0,5-2 km	**< 0,5 km**
Lack of protective agents	Is your home/workplace far from a natural forest?	< 1 km	1-5 km	**> 5 km**
	Does your home have a garden or at least a green balcony?	**garden**	balcony	nothing
	How many times in a year do you take walks for a few hours within natural forests (with high ecological efficiency)?	**>3**	1-3	0
	Can you compensate for the environmental alteration by often going to naturally healthy places?	**yes**	seldom	no
	Do you often take antibiotics even without a prescription?	no	**seldom**	yes
Cybernetic and information alterations	Could you understand if the environment is degraded?	**yes**	partially	no
	Does it bother you to stay for hours in a degraded environment?	**a lot**	Little	no
	Did you often play in natural environments as a child?	frequently	**seldom**	never
	Do you play sports or walk in public parks?	frequently	**seldom**	never
	Do you like living in new artificial/technologic environments?	**no**	Seldom	yes
Agrarian landscape, food and diet alterations	How often do you eat red meat or sausages?	**1-2**	3-4	5-6
	Is the agrarian landscape in your municipality of industrial type (monocultural) or heterogeneous (tree corridors and wooded patches)?	Tree corr. & woods	**Few tree corridors**	Agro-industrial

	Are the cattle and sheeps whose product you consume raised in an environmentally sound way?	outdoors	mixed	**stable**
	Do you eat a lot of fruit and vegetables?	**yes**	seldom	no
	How many times a week do you feed on organically grown food?	**5-7**	3-4	0-2
Chemical and physical pollution	Is your residence area crossed by high voltage power lines?	**no**	marginal	yes
	Do you live or work in an area with high presence of fine dust in the air?	no	**marginal**	yes
	Are there radon gas emissions within your residence area?	**no**	little	high
	Is the water within the municipal plant hard and with a high ionic charge?	no	little	**yes**
	Do you spend more than an hour a day in traffic within a car?	**no**	1-2 h	>2h
	Tot. Scores	**15** x 0.1	**9** x 0.5	**6** x1.0
RD = (0.1 A + 0.5 B + 1.0 C) / 30 = (1.5 + 4.5 + 6.0)/ 30 = 40 %		1.5	4.5	6

The result of second step (Tab.6) is quite high, because of many sources of stress:

$$BSL = [(3\times3)\ A + (4\times6)\ B + (2\times9)\ C]\ /90 = 56.7\ \%$$

Table 6 Evaluation of behavioral stress levels (B.SL). patient xy

Stress	Stress Evaluation (last 5-10 years)	Low	Medium	High
Family Stress	disagreement with wife or children/sons			
	chronic illness of a relative or of the same patient		X	
	death of a close relative		X	X
	housing problems	X		
Work Stress	lack of recognition of merit		X	
	insufficient economic recognition			X
	unjust career impediment	X	X	
	workplace & office problems			
Social Stress	lack of medical center requirements			
	lack of public transport			
	conflicts or persecutions due to religion	X		
	social marginalization			
Stress Level (SL)	BSL = [(3x3) A + (4x6) B + (2x9) C] /90 = 56,7 %	A = 3	B = 4	C = 2

Given that the Behavioral Stress Level is 56,7 and so higher than 35%, the Risk of Disease RD must be multiplied per 1.5: so, StrRD = 40 x 1.5 = 60%.

Table 7 Evaluation of Environmental Anamnesis Patient XY (Milan, VI Zone)

|			Results
Level of Environmental Stress	RD (%)		StrRD =
low	6-18	RD x 1.5	
medium	18-30	RD x 1.5	
quite high	30-42	RD x 1.5	40 x 1.5
alarming	42-54	RD x 1.5	
dangerous	54-66	RD x 1.5	

StrRD = 60%

Moreover, observed that StrRD = 60%, we must check the Premature Mortality Risk (PMR) of the surroundings. Stated that the patient is living in Milan, the city of a large Metropolitan Area (including about 2/3 of the province of Monza/Brianza and about 5 million people), the evaluation of PMR in this case has been focused to the district scale (the Municipality/City of Milan) and to the Municipal Zone VI, within which patient XY lives: this operative LU is worse respect to Milan, more urbanized (HH = 94.5%) and with a lower BTC (lack of proper urban green).

To evaluate the Risk of Premature Mortality (PMR) due to BF alteration in the municipal Zone VI of Milan, we must refer to fig. 4, where the Correlation between Bionomic Functionality BF and Mortality Rate MR within the territory of Milan and Monza-Brianza is reported. We can note that with BF normal condition (BF = 1.0), the Mortality Rate is 7.6/1000, but when BF = 0.54 (like in Zone VI), the MR becomes 9.2/1000.
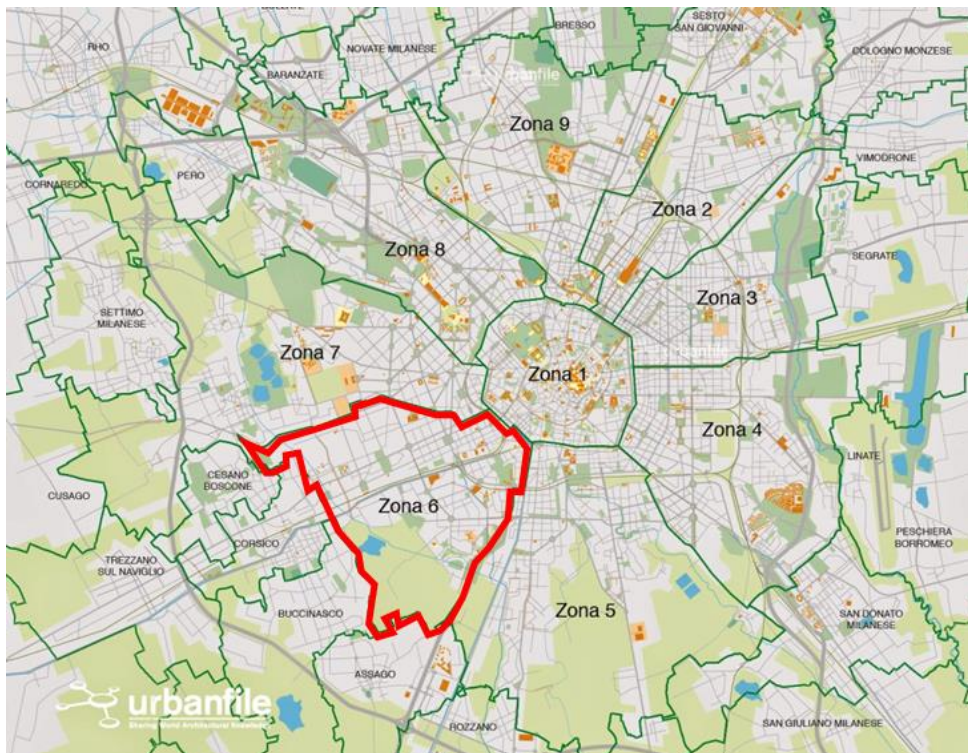
Figure 3 Map of Milan and its municipal Zones. In red, the Zone VI: note that the green patch within it is the "Parco delle Risaie" (Park of the Rice Fields), but it presents a very low BTC, due to its industrial agriculture.
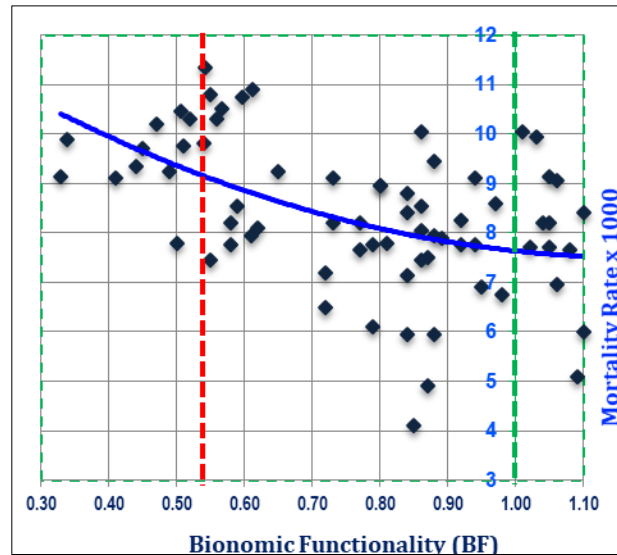
Figure 4 BF/MR Correlation in the territory of Milan and Monza-Brianza (blue line). Note that with BF normal condition (BF = 1.0, green line), the Mortality Rate is 7.6/1000, but when BF = 0.54 (VI Zone, red dotted line), MR is 9.2/1000

Given that, the people's amount within Zone VI is 149,000 the *Premature Mortality (PM)* is 238 death/year:

$$(9.2 – 7.6)/1000 = 1.6/1000 \text{ (increase of MR)}$$

$$(1.6/1000) \times 149,000 = 238 \text{ (death/year)}$$

Thus, the *Risk* of Premature Mortality (PMR) due to BF alteration in the municipal Zone VI of Milan is: 1.6 / 7.6 = 21% (MR increase due to BF degradation) The Premature Mortality Risk of the Zone VI is 21%, (Fig.4), consequently, the Risk of Disease results:

$$RD = 60.0 + 16.8 = 76.8 \text{ %, very high and alarming (Tab.8).}$$

Table 8 Risk of premature mortality for patient xy

Town or district: Milan city	Municipal zone vi
URB area = 181.2 [Km^2]	URB area = 18.3 [Km^2]
HH = 90.8 [% of LU]	HH = 94.5 [% of LU]
SH/SH* = 0.08 [n°]	SH/SH* = 0.08 [n°]
BTC = 0.56 [Mcal/m^2/a]	BTC = 0.41 [Mcal/m^2/a]
BF = 0.67 [n°]	BF = 0.54 [n°]
PM = 1280 [death/yr]	PM = 238 [death/yr]
PMR = 13 x 0.8 = 10.4 (%)	PMR = 21 x 0.8 = 16.8 (%)

URB = urbanized; HH = Human Habitat; SH/SH*= bionomic carrying capacity; BTC= biological territorial capacity of vegetation; BF = bionomic functionality; PM = Premature Mortality; Bionomic functions and parameters need Landscape Bionomics principles and method (Ingegnoli, 2015, 2019, 2022). Note that PMR must be measured at 80%, considering a security coefficient of 20%.

4. Discussion

The main contents of the medical history according to current medicine today [21] divide the anamnesis into several parts, mainly a family and a personal one. The personal medical history is in turn divided into physiological, remote pathological and proximate pathological. The collection of anamnestic data will be different depending on the age and

sex of the person. The *environmental component* is *clearly absent*, if we exclude information on any pollution related to the workplace. But, the medical history sector, linked to the patient / environment relationship, is very rich in questions that can be developed and detailed because of what is reported below (Tab. 9).

Remember that, recently, some medical communities recognized that human alteration of Earth's ecological systems threatens humanity's health. This fact has given rise to One Health and Planetary Health, which are interdisciplinary while, first, they must be systemic and pursue a preferential relationship between advanced Ecology and Medicine [22].

Recalling Fig.1, we can deduce the necessity not to forget the bionomic specialist (ecojatra) when a patient needs a complete anamnesis (both medical and environmental). But today our Academies do not form any ecojatra, so we must underline this necessity.

The University of Milan, Centre for MACH (Multidisciplinary Research in Health Sciences), Department of Pathophysiology and Transplantation, is for the moment the only Academy with at least four hours of lecture in "Agricultural Landscape Health and Global Health", held by Ingegnoli since 2020, thanks to prof. Mario Raviglione: but to develop research on Bionomic Anamnesis, followed by Bionomic Therapy, we need much more, at least a 6 credits course of "Landscape Bionomics and Global Health".

To arrive at a more meaningful version of a patient's anamnesis of environmental conditions, it would be necessary to make numerous other applications of the three proposed tables to have a verification sample of at least 30-60 cases.

Table 9 Effects on humans and damage to health of some groups of environmental syndromes

	Landscape syndromes	Effects on men
1	Structural alterations	
	Deficiency of ecological network in lu territory	Cumulative impacts
	Improper park design and distribution in urbanized LU	Pollution concentration
	Wrong distribution of energy infrastructures near residential ecotopes	Acceleratd toxic effects
	Improper road networks in natural preserves, etc.	Obstacle to bionomic functionality
2	**Excess functional alterations**	
	INSUFFICIENT level of BTC in LU ecotissue	Chronic environmental stress
	Hyper-trophy of human habitat elements in LU	Psychological dysfunctions
	Dysfunctional standard habitat per capita and carrying capacity, etc.	Behavioral changes
	Hyper-homogeneity of landscapes	Impropre land-use
	Dysfunctions in landscape apparatuses	Exalted artificiality
	Heterogeneity destruction	Food security disruption
	Disturbance on landscape apparatuses	Alteration of diets
3	**Transformation syndromes**	
	Abnormal transformation deficit	Destructuring of the environment
	Heterogeneity destruction	Disturbance of ecological services
	Disturbance on landscape apparatuses	Increase of artificialization
4	**Lack of protective agents**	
	Insufficient natural mature forest patches	Insufficient phytoncides
	Loss of interface elements (man/nature)	Zoological reconversion
	Deficiency in zoologic proper habitats	Increase of infections

	Lack of protective ecotopes	Higher morbidity
	Loss of constraints of high level (slow processes)	Loss of recreational systems
	Difficulty in disturbance incorporation	Increase of cumulative impacts
5	**Hierarchical deficiencies**	
	Disruption of agricultural landscapes	Impoverishment of nutrients
	Loss of constraints of high level (slow processes)	Fragility of the environment
	Difficulty in disturbance incorporation	Incapacity of adaptation
	Destruction of tree-hedgerows network in agrarian lu	Decrease of ecological services
	Difficulty in epigenetic modulation of natural & cereal populations	Increase of artificial infrastructures
	Industrialization of agricultural landscapes	Increase of water pollution
6	**Cybernetic alterations**	
	Landscape deep artificialization	Neural pruning effect, wrong behavior vs. Nature
	Loss of governance of its sub-systems	Dysfunction in population structure
	Wrong influence on animal & human environmental fitting processes	Loss of attention to resources
	Distorsion on information pools and transmission webs	Socio-economics alterations
	Loss of ecological memory	Loss of ecological balance capacity
7	**Infections & invasions**	
	Infections in natural populations	Zootic infections
	Infections in human populations	Vegetational destructions
	Insect invasions in natural landscapes	Food contamination
	Insect invasions in agrarian landscapes	Pandemic onsets
8	**Pollutions**	
	Chemical pollution	Respiratory diseases
	Fine dusts	Allergic reactons
	Endocrine disruptors	Toxic diseases
	Complex multiple syndromes	Epigenetic distortions
9	**Catastrofic perturbations**	
	Floods & landslides	Destruction of landscape structure
	Cyclons	Water contaminations
	Earthquakes	Destruction of landscape apparatures
	Wars & terrorism	Acute pollutions
	Industrial & techological disasters	Out of scale fires

These mentioned applications need the reference to the bionomic state of the catchment area of the hospital or medical service in which the environmental anamnesis should be made. This need requires a lot of works and the professional figure of an ecojatra.

5. Conclusion

In conclusion, we must remember that the proposed anamnesis leads to expanding and updating the principles of Health Prevention. As regards the study of Medical Prevention, it is also necessary to update in a bionomic sense the items already present and to add new purely systemic prevention principles, as reported here, after having ascertained that even the best health prevention protocols, such as the one of UK, they are not yet open to systemic principles!

So, to traditional items we must add "systemic expansions", as listed in extreme synthesis:
A- Stress reduction: Expand to the Stress due to Landscape Unit Alterations.

B- Periodic medical check-up: Link with environmental conditioning (ii) and psycho-neuro-environmental relationships.

C- Adequate physical-sporting activity: Relate also with natural trekking.

D- Control of pollution & smog: Link with landscape syndrome evaluation (i) to check cumulative impacts.

E- Correct nutrition & diet: Expand to the Bionomics of Agrarian Landscapes.

Moreover, new systemic items must be added, e.g., (i) Landscape syndrome evaluation, (ii) Environmental conditioning, (iii) Adequate natural activity.

Compliance with ethical standards

Statement of informed consent

This study does not involve any individual (the information on Patient XY reported in the Results is modeled on the Author itself).

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