

Innovation a Hypothesis: Introduce a Formula for Calculation of Human Health

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Abstract

The concept of health has not been measured in terms of quantity yet and international organizations have defined it in the domain of quality. Although such a definition could be considered for health planning for health authorizes not worthwhile for any individual or families to consider improve their health condition anyway. However it is, in this article we attempting to explain how the human health can be calculated mathematically? By proposing a formula for health and its different aspects first and then we would like to mention what is the benefit of a health mathematical code for any individual, family and their respective societies are? And finally, the health mathematical code for any individual, families and any nation could be used for health planning on both a national and international levels scale.

Keywords: Health; Individual; Families; National; International; Formula; Mathematical code

Introduction

The human health has been described by W.H.O. In the past decades health has been defined in terms of a well being of physical, mental and social. [1-3] nowadays, spiritual aspects of health are being considered to complete the definition of human health. In my last paper I described why we could consider the human health in terms of a mathematical code. Now, if it is so ‘ how the human health calculated mathematically? I had a hypothesis ‘Does the health of individuals have a mathematical code? For purpose of that hypothesis just I have a formula which shows as the follows first and I have defended different aspects of health with quantity values. I consider total health as 100. And I have divided that for 4 health aspects (physical, mental, social and spiritual). I have used mathematical formula in order to calculate different health aspects of human by using a formula $HU = P/100 + M/100 + SO/100 + SP/100$.

With regard to this question a formula as the follows should be considered [Table 1]:

Now what we want to do calculate each of above elements.

1. Firstly different physical health elements (i.e., $P = np$; $p1$ =genetic heritage, $p2$ =skeleton, $p3$ =normal heart function, $p4$ =normal lung function, $p5$ =normal brain function, $p6$ =normal GI function, $p7$ =normal skin (without skin disease), $p8$ =normal ENT, $p9$ =normal eye vision, $p10$ =normal Genitourinary Tract, $p11$ =normal teeth, $p12$ =fertility).

$P = p1 + p2 + p3 + p4 + p5 + p6 + p7 + p8 + p9 + p10 + p11 + p12 + \dots / 100$.

2. Secondly different mental health elements (i.e., $M = nm$; $m1$ =genetic heritage, $m2$ =normal mentality, $m3$ =normal behavior, $m4$ =normal sleeping, $m5$ =normal communication, $m6$ =not aggressive, $m7$ =happiness, $m8$ =family relationship, $m9$ =friends relationship, $m10$ =independency, $m11$ =self-motivation).

$M = m1 + m2 + m3 + m4 + m5 + m6 + m7 + m8 + m9 + m10 + m11 / 100$

3. Thirdly social health elements ($SO = nso$; $So1$ =job, $So2$ =life style, $So3$ =income, $So4$ =social support, $So5$ =insurance, $So6$ =nonsmoker, $So7$ =literacy, $So8$ =social activity, $So9$ =access to healthy foods, water and housing, $So10$ =marriage, $So11$ =life expectancy, $So12$ =low incidence of crime, $So13$ =road accident mortality rate, $So14$ =national health score+....)

$SO = so1 + so2 + so3 + so4 + so5 + so6 + so7 + so8 + so9 + so10 + so11 + so12 + so13 + so14 + \dots / 100$

4. Fourthly spiritual health elements ($SP = nsp$; $Sp1$ =belief in God, $Sp2$ =Continuous worship (continuous practice of faith), $Sp3$ =Satisfaction pleasing to God, $Sp4$ =Self-content, $Sp5$ =humanitarian activities, $Sp6$ =other people's consent $Sp7$ =daily best practice, $Sp8$ =stress level, $Sp9$ =Belief in the Day of Judgment, $Sp10$ =dignity, $Sp11$ =Loving others, $Sp12$ =Trust in God, $Sp13$ =patience +....).

$SP = sp1 + sp2 + sp3 + sp4 + sp5 + sp6 + sp7 + sp8 + sp9 + sp10 + sp11 + sp12 + sp13 / 100$

And finally formula of human health could be $HU = P/100 + M/100 + SO/100 + SP/100$

$HU = (P = p1 + p2 + p3 + p4 + p5 + p6 + p7 + p8 + p9 + p10 + p11 / 100) + (M = m1 + m2 + m3 + m4 + m5 + m6 + m7 + m8 + m9 + m10 + m11 / 100) + (SO = so1 + so2 + so3 + so4 + so5 + so6 + so7 + so8 + so9 + so10 + so11 + so12 + so13 + so14 / 100) + (SP = sp1 + sp2 + sp3 + sp4 + sp5 + sp6 + sp7 + sp8 + sp9 + sp10 + sp11 + sp12 + sp13) / 100$.

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Table 1: Elements to consider for human health.**Physical (P)**

P=np, p1=genetic heritage, p2= skeleton, p3=normal heart function, p4=normal lung function, p5=normal brain function, p6=normal GI function, p7=normal skin (without skin disease), p8=normal ENT, p9=normal eye vision, p10=normal Genitourinary Tract, p11=normal teeth, p12=fertility.
 $P = p1 + p2 + p3 + p4 + p5 + p6 + p7 + p8 + p9 + p10 + p11 + p12 + \dots / 100$

Mental Health (M)

M=nm, m1=genetic heritage, m2= normal mentality, m3=normal behavior, m4=normal Sleeping, m5=normal communication, m6=not aggressive, m7=happiness, m8= family Relationship, p9=friends relationship, m10=independency, m11=self-motivation.
 $M = m1 + m2 + m3 + m4 + m5 + m6 + m7 + m8 + m9 + m10 + m11 / 100$

Social health (So)

Nso=So1=job, So2=life style, So3=income, So4=social support, So5=insurance, So6=nonsmoker, So7=literacy, So8=social activity, So9= access to healthy foods, water and housing, So10= marriage, So 11=life expectancy, So12= low incidence of crime, So13= road accident mortality rate, So14= national health score+....

$SO = so1 + so2 + so3 + so4 + so5 + so6 + so7 + so8 + so9 + so10 + so11 + so12 + so13 + so14 + \dots / 100$

Spiritual health (Sp)

Nsp= Sp1=belief in God, Sp2= Continuous worship (continuous practice of faith), Sp3=Satisfaction pleasing to God, Sp4= Self-content, Sp5=humanitarian activities, Sp6= Other people's consent, Sp7=daily best practice, Sp8=stress level, Sp9= Belief in the Day of Judgment, Sp10 = dignity, Sp 11= Loving others, S12=Trust in God, Sp13=patience +....

$SP = sp1 + sp2 + sp3 + sp4 + sp5 + sp6 + sp7 + sp8 + sp9 + sp10 + sp11 + sp12 + sp13 / 100$

Keys: HU=HUMAN HEALTH, P=PHYSICAL HEALTH, M=MENTAL HEALTH SO=SOCIAL HEALTH, SP=SPIRITUAL HEALTH. P=np (number of physical elements), M=nm (number of mental health elements). So =Nso (Number of social health elements), nsp= number of spiritual health elements.

Note 1: you may have calculated only one of the dimensions of the human being.

Note 2: the elements could be reduced or increase as a result of national or international health policies.

Note 3: healthy people may be reduced score as result of temporary or permanently sickness. (Depending on the duration and time of sickness or illness). Nevertheless, any individual Patient may see increased his/her score increased well being.

Note 4: more elements could be created or discovered and added in all different health aspects as quantity value with different range (0-100).

Note 5: the advantage of our formula is you could add value which is available if not you could ignore it (i.e. fertility may unknown until marriage). Thus, when the fertility or infertility were confirmed by doctors that could be considered (infertility =0 fertility =100) anyway.

Let us give you a few examples:

Example 1:

A man from Asia is 40 years old and has no genetic heritage disorder (p1=100), Normal skeleton (p2=100), normal heart function (p3=100), normal lung function (p4=100). Normal brain function (p5=100) normal GI function (p6=100) with abnormal skin disease with cutaneous leishmaniasis (p7=50) abnormal ENT (p8=80) abnormal eye vision (p9=75). Normal Genitourinary Tract (p10=100) and abnormal teeth (p=30). His physical health could be calculated as follows:

$P = 100 + 100 + 100 + 100 + 100 + 100 + 50 + 75 + 100 + 100 + 30 / 100 = 9.55$

Such a man has got the following mental health criteria,

Not genetic heritage disorder m1=100, normal mentality m2=100. Normal behavior m3=100. Abnormal sleeping (m4=50), normal communication (m5=100), not aggressive (m6=100) good happiness (m7=75), excellent family relationship (m8=100), normal friends relationship (p9=100). Independency (m10=80) and poor self-motivation (m11=25).

Thus, his mental health could be calculated as the follows:

$M = 100 + 100 + 100 + 50 + 100 + 100 + 75 + 100 + 100 + 80 + 25 / 100 = 9.30$

With regard to his social health the following elements could be considered job, (jobless) So1=0, life style, So2=60, income So3=0, social support So4=100, insurance So5=100, not smoker (heavy smoker) So6=0, literacy (high school graduate So7=50), social activity (intermediate) So8=50, access to safe foods, water and housing (medium) So9=50, married So10=100, life expectancy So11=40, low incidence of crime So12=75, mortality rate of road accident (high) So13=25, health nationality score (good) So14=75.00

$SO = 0 + 60 + 0 + 100 + 100 + 0 + 50 + 50 + 50 + 100 + 40 + 75 + 25 + 75 / 100 = 7.25$

Finally about his SPIRITUAL condition, the following elements were considered:

Belief in God Sp1=100, Continuous worship Sp2=100, Satisfaction pleasing to God Sp3=100, Self-content Sp4=100, humanitarian activities Sp5=50, Consent of the people Sp6=75, daily best practice Sp7=50, stress level Sp8=75, Belief in the Day of Judgment Sp9=100.00, Dignity Sp10=100, Loving others Sp 11=100, Trust in God S12=100, patience Sp13=100

$SP = 100 + 100 + 100 + 100 + 50 + 75 + 50 + 75 + 100 + 100 + 100 + 100 + 100 / 100 = 11.50$

In that particular example which was mentioned above the Huh=Thus,

$HU = P / 100 + M / 100 + SO / 100 + SP / 100$

$9.55 + 9.3 + 7.25 + 11.50 / 100 = 37.30 / 100$. (This means the man has received a score of 37.30 out of 100 anyway. You could insert different examples and cases into the formula and obtain the data and make judgments about the health score in order to find out what could be done to improve it.

Example 2:

Another example is a women from Western Europe who is 60 years old and has no genetic heritage disorder (p1=100), Normal skeleton (p2=100), normal heart function (p3=100), normal lung function (p4=100). Normal brain function (p5=100) normal GI function (p6=100) with normal skin disease (p7=100) abnormal ENT (p8=50) normal eye vision (p9=100). Normal Genitourinary Tract (p10=100) and abnormal teeth (p=50). Her physical health could be calculated as follows:

$$P=100+100+100+100+100+100+100+50+100+100+p50/100=10.00$$

The women has got the following mental health indices,

Not genetic heritage disorder $m1=100$, normal mentality $m2=100$. Normal behavior $m3=100$. Abnormal sleeping ($m4=25$), normal communication ($m5=100$), not aggressive ($m6=100$) good happiness ($m7=75$), excellent family relationships ($m8=100$), normal friends relationship ($p9=100$). Independence ($m10=80$) and acceptable self-motivation ($m11=75$).

Thus, her mental health could be calculated as follows:

$$M=100 + 100+ 100+25+100+100+75+100+100+80+75/100=9.55$$

With regard to her social health, the following elements could be considered job, (has a permanently job) $so1=100$, life style, $So2=100$, income $So3=75$, social support $So4=100$, insurance $So5=100$, smoker (heavy smoker) $So6=0$, literacy (PhD) $So7=100$, social activity (intermediate) $So8=50$, access to healthy foods, water and housing (excellent) $So9=100$, divorce $So10=50$, life expectancy (Very good life expediency) $So11=75$, low incidence of crime $So12=75$, mortality rate of road accident (low) $So13=75$, health nationality score (good) $So14=75.00$

$$SO=100+100+75+100+100+0+100+50++100+50+75+75+75/100=9.50$$

Finally about her SPIRITUAL condition the following elements were considered:

Belief in God $Sp1=100$, Continuous worship $Sp2=100$, Satisfaction pleasing to God $Sp3=100$, Self-content $Sp4=100$, humanitarian activities $Sp5=100$, Consent of the people $Sp6=75$, daily best practice $Sp7=50$, stress level $Sp8=75$, Belief in the Day of Judgment $Sp9=100$., Dignity $Sp10=100$, Loving others $Sp11=100$, Trust in God $Sp12=100$, patience $Sp13=100$

$$SP=100+100+100+100+100+75+50+75+100+100+100+100+100/100=13.00$$

$$\text{Now } HUH=P+M+SO+SP=100$$

$$Huh=10+9.55+9.50+13=42.05$$

This means that such a women has got 42.05 out of 100.

Example 3:

you suppose that women and her health in next two years later become healthy than before by surgery of ENT and become have a good situation for that as follows:

$$P=100+100+100+100+100+100+100+100+100+50/100=10.50$$

And her mental health is getting better with excellent motivation thus,

$$M=100 + 100+ 100+25+100+100+75+100+100+80+100/100=9.80$$

Her social health by breaking down insurance and job become worse thus,

$$SO=0+75+100+100+0+100+50++100+50+75+75+75/100=8.0$$

Finally her SP is also changed due to no humanitarian activities and love for others thus:

$$SP=100+100+100+100+0+75+50+75+100+100+0+100+100/100=11.00 \text{ therefore}$$

$$\text{Her human health score would be } 10.50 + 9.80 + 8.0 + 11 = 39.30$$

Therefore, the health mathematical code for that woman would be reduced from 42.05 to 39.30 out of 100.0.

Example 4:

A 4 years old female from Africa had the following score:

Had genetic heritage disorder ($p1=0$), Normal skeleton ($p2=100$), normal heart function ($p3=100$), normal lung function ($p4=100$). Normal brain function ($p5=100$) abnormal GI function ($p6=0$) with normal skin disease ($p7=100$) abnormal ENT ($p8=50$) normal eye vision ($p9=100$). Normal Genitourinary Tract ($p10=100$) and normal teeth ($p=100$). Her physical health could be calculated as the follows:

$$P=0+100+100+100+100+0+100+50+100+100+100/100=9.5000$$

That children has got the following mental health criteria,

Not genetic heritage disorder $m1=100$, normal mentality $m2=100$. Normal behavior $m3=100$.

Normal sleeping ($m4=100$), normal communication ($m5=100$), not aggressive ($m6=100$) very good happiness ($m7=100$), excellent family relationship ($m8=100$), normal friends relationship ($p9=100$). Independency ($m10=80$) and good auto motivation ($m11=75$).

Thus, his or her mental health could be calculated as the follows:

$$M=100 + 100+ 100+100+100+100+100+100+100+80+75/100=10.55$$

With regard to her social health the following elements could be considered

job, (no job) $so1=0$, life style, $So2=0$, income $So3=0$, social support $So4=50$, insurance $So5=0$, smoker (no smoker) $So6=100$, literacy ($So7=0$), social activity (intermediate) $So8=0$, access to safe foods, water and housing (low) $So9=25$, divorce (no) $So10=100$, life expediency (low life expediency) $So11=25$, moderate incidence of crime $So12=50$, mortality rate of road accident (moderate) $So13=50$, health nationality score (weak) $So14=25.00$

$$SO=0+0+0+0+0+100+0+0+25+100+25+50+50+25/100=3.75$$

Finally about her SPIRITUAL condition the following elements were considered:

Belief in God Sp1=100, Continuous worship Sp2=100, Satisfaction pleasing to God Sp3=100, Self-content Sp4=100, humanitarian activities Sp5=100, Consent of the people Sp6=75, daily best practice Sp7=50, stress level Sp8=75, Belief in the Day of Judgment Sp9=100.00, Dignity Sp10=100, Loving others Sp 11=100, Trust in God S12=100, patience Sp13=100

$SP=100+100+100+100+100+75+50+75+100+100+100+100+100+100/100=13.00$

$Now=P/100+M/100+SO/100+SP/100$

$Huh=9.50+10.55+3.75+13=36.80/100.0.$

Discussion

Unfortunately, as mentioned in the article, less attention has been paid to this issue. Therefore, the authors have said something new to the world, and after years of research and inspiration, they have succeeded in this, which can add some insight into the definition of human health, and individual, their families and their nations are well informed about their health status, and this is a novelty and a new discovery in the field of health.

Until now, nothing was mentioned about quantity measurement of health. ^[4,5] Few have touched upon the mathematical dimensions of human health. Perhaps, most think the matter is impossible to calculate. At the beginning this hypothesis I shared the same belief. But after thinking for several years I found that the human health could be calculated mathematically and in my first published paper in 2013, ^[6,7] I explain how this is possible, And what are the benefits of using this formula for individual, the family member, and the respective society? ^[7] Now we would like to emphasize that and introduce our formula in order to make calculation of health possible. Of course, our formula could be modified by scientists later on. Because that it is our opinion as basic sciences specialist first, any other specialists could add his or her value to our formula. We believe the human health is measurable by the following formula:

$$HU=(P=p1+p2+p3+p4+p5+p6+p7+p8+p9+p10+p11+.../100)+(M=m1+m2+m3+m4+m5+m6+m7+m8+m9+m10+m11+.../100)+(SO=so1+so2+so3+so4+so5+so6+so7+so8+so9+so10+so11+so12+so13+so14)/100+(SP=sp1+sp2+sp3+sp4+sp5+sp6+sp7+sp8+sp9+sp10+sp11+sp12+sp13)/100.$$

$HUh=P/100+M/100+SO/100+SP/100$

$$Huh=p1+p2+p3+p4+p5+p6+p7+p8+p9+p10+p11/100+m1+m2+m3+m4+m5+m6+m7+m8+m9+m10+m11+.../100+=so1+so2+so3+so4+so5+so6+so7+so8+so9+so10+so11+so12+so13+so14+.../100+sp1+sp2+sp3+sp4+sp5+sp6+sp7+sp8+sp9+sp10+sp11+sp12+sp13+.../100$$

$Huh=P(np/100)+M(nm/100)+so(nso/100)+Sp(nsp/100).$

It should be noted that any health related topic can range from

a minimum of 0 to a maximum of 100. In relation to all the components of health, including physical health, this also holds true. Physical health from zero (at least) to 100, the maximum, can vary statistically in different individuals with health status. However, the physical health of all the components that affect physical health is included in our formula. In fact, any component effective on physical health can be measured from zero to 100. But this is the responsibility of the various disciplines that describe the components affecting human health, including physical, psychosocial, and spiritual, on a small scale from zero to 100. For example, International Health Board experts in the field of health should set this quantitative division from zero to 100. Some of the components that affect their health may conclude that although the fragmentation of this component is from zero to 100, now they cannot count for some diseases, zero and 100, such as genetic topics. Perhaps their feasible division due to human scientific progress makes this possible in the future. And so in this domain, there is an existing zero and 100 measurement. Measurement includes all the factors affecting human health, including physical psychological, social and spiritual. We propose the use of an international board to measure health components in terms of who is categorized as zero to 100 in their view. However, the status of each component is bad in terms of bad quality, from zero to good (100). Therefore, the sub-class of each component is also divided into 100. And that could be considered for the same this is same for M, SO and SP.

Conclusion

In each nation, the government needs to calculate all of populations, mathematical code and could understand what the people state of health says at the present time and how it could be better in the future by planning and allocating funds the budgets to improve the health figures. This is not only is beneficial for governments but also it good news for any individual and family to know their mathematical code is calculated and how could be increased it anyway. The national health services and other governmental and non-governmental organizations could use the data for planning and evaluation as well. In addition, for that as I have mentioned earlier the health situation could be calculated anyway, of course the health of human being depends on several factors and elements and multi-disciplinary experts are required to identify of the elements; however, my formula may be considered as a simple method in order to calculate health. I hope my suggestion will be developed in the future by creating the best way to calculate the health for individual anyway. With regard to 'what is the benefit of health mathematical code for any individual, family and their respective societies? It should be added that anyone, by knowing his or her mathematical score, can decide to increase the score. Not only for himself but also for their family too. Thus, the benefit of this formula is what is the individual's overall health level first? Secondly, how much is the status of each of the components affecting health, that is, physical, psychological, social and spiritual? Not only does this make it possible to measure individual health, but it can also quantify the health of the family and society [Table 2].

The important point is the governments could use the data to make national and international policies and plans. Of course, that would be good news for all population in the world to hear

Table 2: The summary.

Past-present (.....2017)	Future based on Ali Mehrabi Tavana and Mehdi Mehrabi Tavana findings 2017
<ul style="list-style-type: none"> • In the past, health has been defined only from a qualitative point of view. • In the past, human health has included physical and mental health. • In recent years, spiritual well-being has also been added to health definition. • In the past, no one has ever debated health measurements. • The past has not mentioned that human health is quantitatively measurable. • An unattainable patient's health from the patient's point of view. • An unattractive assessment of the patient's health from the doctor's point of view. • Without the health formula, it's unclear how much of the health of the world and every single person is. 	<ul style="list-style-type: none"> • Now, by introducing the ability to measure human health, a slightly quantitative definition of health can be added to the definition of quality of health. • This formula can be the basis for calculating health measurements quantitatively. • In each aspect of the physical, mental, social and spiritual health, other components can be added as a finite set. • Each component can be measured and evaluated from zero to 100. • And that's the formula which was summarized in Table 1. • Better understating of health value. • This type of measurement helps people understand a little about their own family and health. And doctors encounter these concepts with their patients, and they are familiar with the way to health improvement in the addition of little data. Of course, cultural topics can also be considered in these health components. • This formula has this feature that can accommodate hundreds of health indicators in its own heart and keep up to date with the components of health, as well as on the indicators that can be updated within each component and utilizing Computer facilities will calculate the health of the family and even the community for governments.

how they can mathematical health code for himself, families and their respective societies and look for the better health in the future, not to be forgotten in this method which we introduced we may be the first step but other researchers follows my findings in order to improve it hopefully. We think that can range from zero to 100. A: <50 are weak. B: 50-80 intermediate. C: >80 good.

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Conflict of Interest

All authors disclose that there was no conflict of interest.

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