



Healthy lifestyles and their association with personal factors in UNAN-Managua students 2017.

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ABSTRACT

Objective: To determine whether there is an association between lifestyles and personal factors in UNAN- MANAGUA university students.

Methodology: A sample of 753 university students from 16 to 29 years of first to fifth year of 2012-2016 was analyzed. An analytical design with statistical methods of chi square association testing was used to determine the association of variables and logistic regression analysis to determine the strength of association using the Odds Ratios (OR) of the risk factors and to know the predictive value of each of the dimensions of the lifestyles.

Results: The average age of female students is 19 and for the male is 20 years, the body mass index of the students is overweight, the male in obesity grade 1. 74% of students in the

urban area, 52.5% of students in study do not have any type of student scholarship, 90% of students do not report self-informed illness, and 60% of students of both sexes have inadequate lifestyles. No difference was found in the lifestyle according to sex. Bivariate analysis does not reflect statistical association (p-value greater than 0.05) between the variables age, sex, body mass index, provenance, height and lifestyle. In the logistic regression analysis the most significant covariates found in the model were nutrition, exercise, health responsibility, stress management, self-realization and student lifestyle.

Conclusion: Most students have inadequate lifestyles. The personal factors age, sex, body mass index, provenance and height of students are not associated with the lifestyle of these. On the other hand, there is a strong association between the dimensions of nutrition, exercise, responsibility in health, stress management, self-realization and student lifestyle.

INTRODUCTION

According to the World Health Organization (WHO, 1986) lifestyle is defined as a general way of life that is based on the mutual influence of personal, social and cultural factors. In this sense lifestyles refer to the way of life of people, a concept that is closely related to motivational and behavioral components, and which is influenced by customs, habits, fashions and values that exist in a certain moment and context, factors that are learned and, therefore, modifiable during the course of life (Cala M. L., 2010).

In this way, lifestyles are structured with the contributions of the different social contexts in which is developed the daily life such as family, school, friends, the media, the church, among others. As a result, these factors influence the choices young people make about their lives. (García V. E., Salazar Arango, Docal Millán, Aya Gómez, & Ardila Chacón, 2014).

Similar studies have made it clear that these factors have an impact on lifestyle formation in young students. For example, in Spain, Peru and El Salvador these factors were studied in aspects of lifestyle such as initiation of sexual activity, use of toxic substances, use of free time and interpersonal relationships (García V. E., Salazar Arango, Docal Millán, Aya Gómez, & Ardila Chacón, 2014).

Nationally, studies have shown the prevalence of risk factors in young university students as a result of lifestyles such as: risks of Chronic Noncommunicable Diseases (NTSCs), tobacco use, alcohol among young people without distinction of social class, with a growing tendency to be adopted by young women.

The initiative of this study arose in the because of the need to recognize two situations; first, that adolescence is a decisive stage in the acquisition and consolidation of lifestyles. In this period, young people face new responsibilities in the process of acquiring autonomy by

practicing values, imaginary relationship models and the cultural heritage learned throughout life, while incorporating new elements from the contexts of influence, (Rodrigo, and others, 2004).

Secondly, the accelerated changes they go through in their physical, emotional and social development can give them ambivalences and contradictions in the process of finding balance with themselves and with society, so they need to develop capacities that enable them to be responsible adults in their duties and rights, (Acute, 2014).

MATERIAL AND METHOD

It is a cross-sectional and analytical study whose universe was constituted by all undergraduate students of the university, between 16 and 29 years, enrolled in 2016, who entered in 2012 and to date represented N = 17,982 students.

A stratified sample with optimal proportional sharpening was calculated. This sample was distributed according to the weight of each stratum corresponding to faculties, being the sample size of 753 students. The selection of the sample was random, by major and year of entry in such a way that the representativeness of the entire universe was ensured.

The study's ethical considerations were informed consent, the participant was given the opportunity to ask questions and was encouraged to do so, and the researcher respected the integrity of the participant. Moreover, the results of the research will not be used for purposes other than to identify the lifestyle of the students of the Rubén Darío University Campus (RURD) 2017, no data is collected without the prior authorization.

The data was analyzed using the Statistical System (SAS) program. Chi Square Association Tests were conducted to determine the association of variables and logistic regression analysis to determine the strength of association using the risk factors ORs and to understand the predictive value of each of the lifestyle dimensions.

RESULTS

Table 1. Personal characteristics per sex. RURD UNAN- Managua 2017 students.

		Sex	
		Female	Male
Age in years	Minimum	14	16
	Mean	19	20
	Maximum	29	29
	Standard Deviation	3	3
Current weight in Kilos	Minimum	40.00	45
	Mean	58.14	67.26
	Maximum	100.00	136.81
	Standard Deviation	9.69	13.45
Height in meters	Minimum	1.10	1.00
	Mean	1.58	1.69
	Maximum	1.90	2.23
	Standard Deviation	.10	.12
Body Mass Index	Minimum	15.61	14.69
	Mean	23.43	23.74
	Maximum	42.1	54.28
	Standard Deviation	4.09	4.84

Source: Students survey

In Table 1 the personal characteristics of students in study can be seen, we see for example, that the average age of those of female students is 19 and for the male sex is 20 years; in both the standard deviation (SD) is 3, indicating that 68.27% of the female sex is entered younger than the male sex. As for weight, there is a clearly difference, because men’s weights are higher than those of women. Women’s weights were between 40 to 100 kg. The average weight was 58.14 ± 9.69 DE, indicating that 68.27% of the weights are grouped between 48.45 and 67.83 kg. Men’s weights were higher between 45 and 136.81 kg, indicating a difference in averages of 9.13 kg from the average weight of women. The average weight of men was 67.26 ± 13.68 DE reflecting that 68.27% of men’s weights are grouped between 53.81 to 80.73 kg. In

height it reflects that both males and women have a short height. The height in the women was between 1.10 to 1.90 meters. The average height was $1.58 \pm .010$ SD, indicating that 68.27% of the heights are grouped between 1.48 and 1.68 meters. As for males the height is between 1.00 and 1.69 meters, the average height of males was 1.69 ± 0.12 DE indicating that 68.27% of the height in meters of males are grouped into 1.57 and 1.81 meters in height. As for the body mass index in women it was between 15.61 and 42.1kg, with an average of 23.43 ± 4.09 SD so it can be inferred that 67.27% body mass index (BMI) is grouped between 19.34 and 27.52 being overweight. In relation to the BMI of males under study were between 14.69 and 54.28 kg, with an average of 23.74 ± 5.27 DE, so 68.27% of BMI are grouped between 18.47 and 29.01 Kg considering obesity grade 1.

The lifestyle with respect to the sex of the students surveyed in the RURD, we find that 55.64% (419) of the respondents belong to the female sex and of these 34.5% (260) presents an inadequate lifestyle.

Table 2. Lifestyle regarding to student gender. RURD UNAN- Managua 2017

Lifestyle regarding to student gender			
Gender	Lifestyle		Total
	Adequate	Non-adequate	
Female	159 (21.11%)	260 (34.5%)	419 (55.64%)
Male	143 (18.99%)	191 (25.36%)	334 (44.35%)
Total	302 (40.10%)	451 (59.86%)	753 (100%)

Source: Students survey

With regard to lifestyle and provenance, 59% of respondents for 332 students in the urban area have an inadequate lifestyle, so it can be observed that of 119 students in the rural area representing 61% have an inadequate lifestyle.

Table 3. Lifestyle with regard to origin. RURD UNAN- Managua 2017

Lifestyle with regard to origin			
	Lifestyle		Total
Geographical Origin	Adequate	Non-adequate	
Urban	226 (41%)	332 (59%)	558 (100%)
Rural	76 (39%)	119 (61%)	195 (100%)

Source: Students survey

In relation to self-informed illness and lifestyle, it is appreciated that 60% of university students surveyed for a total of 404 who do not have self-informed illness but have an inadequate lifestyle.

Table 4. Lifestyle and self-informed illness. RURD UNAN – Managua 2017

Lifestyle and self-informed illness			
	Lifestyle		Total
Self-informed illness	Adequate	Non-adequate	
Yes	32 (41%)	47 59%	(79) 100%
No	270 (40%)	404 (60%)	(674) 100%

Source: Students survey

Table 5. Tests of association, Pearson Chi-squares on lifestyle and personal factors. RURD UNAN- Managua students.

Variables	Chi-Square Pearson Correlation	gl	P-Value
Gender	1.833	1	0.176
Provenance	0.14	1	0.708
Self-informed illness	0.006	1	0.939

Source. Students survey

As it can be seen in the lifestyle association test and personal factor variables: gender, provenance and self-informed illness of RURD students, these reflect that the P value is greater than the significance value 0.05 so it can be said that the variables presented in the table are not dependent on the lifestyle of students.

As for BMI as a personal variable of the students surveyed, we find that 93% of respondents have inadequate health responsibility even if 61% have an adequate BMI, this does not mean that in the near future they will continue to retain it. It should be considered that health responsibility includes self-observation behaviors, information and education about health, exercise timely use of health services and informed consumerism when applying for professional assistance.

Table 6. IMC regarding to health responsibility. RURD UNAN- Managua students.

IMC regarding to health responsibility			
Categories	Adequate	Non-adequate	Total
Low weight	1%	8%	9%
Adequate	4%	61%	65%
Over weight	2%	18%	19%
Obesity level 1	0%	4%	4%
Obesity level 2	0%	2%	2%
Total	7%	93%	100%

Source: Students survey.

The BMI's association test with respect to health responsibility as a lifestyle dimension shows a higher P value than significance, so it can be concluded that there is no dependence between BMI and health responsibility.

Table 7. Tests of association Pearson Chi-square on IMC regarding to health responsibility of RURD UNAN- Managua students.

IMC regarding to health responsibility		
Tests of association Pearson Chi-square		
Chi-square test	Freedom levels	P value
2.809	1	0.729

Source: Students survey.

To perform the multivariate analysis in this study the logistic regression model was used, the model reveals the probability of occurrence of a RURD student possessing an inadequate lifestyle by meeting certain characteristics, these traits we know them through the personal factors of each of the students and the explanatory variables involved in the lifestyle, defined in the University Students Lifestyle Questionnaire (EVEU).

A first logistic regression model was created consisting of variables of personal factors including age, gender, provenance, self-informed disease, child tenure, and BMI, as well as the dimensions of lifestyles: nutrition, exercise, health responsibility, stress management, interpersonal support, self-realization and self esteem. To explain the model we will do so by taking as reference the P value of the Wald statistic that indicates whether the explanatory variables included in the model provide information to explain the model-dependent variable, in our case the lifestyle.

As can be seen in Table 8, the Wald's P statistic value of genders, age, provenance, self-reported disease, child tenure, BMI and self-esteem have an associated P value greater than 0.05, therefore we say that the variables of personal factors do not provide information to the logistic regression model to predict the lifestyle of RURD students.

Table 8. Logistic regression model of students RURD UNAN-Managua 2017

Variables in the equation						
Variables in the equation	B	Estándar error	Wald	gl	Sig.	OR
Gender	-.138	.256	.293	1	.588	.871
Age	-.023	.055	.179	1	.672	.977
IMC_Dummy	-.182	.297	.378	1	.539	.833
Nutrition	2.441	.285	73.253	1	.0001	11.482
Work out	2.143	.419	26.178	1	.0001	8.526
Health responsibility	4.472	1.091	16.817	1	.0001	87.550
Stress management	2.596	.356	53.192	1	.0001	13.412
Interpersonal support	2.643	.374	50.050	1	.0001	14.058
Self-updating	4.072	.720	31.988	1	.0001	58.694
Self esteem_Dummy	.472	.333	2.011	1	.156	1.603
Provenance	.023	.270	.007	1	.932	1.023

Variables in the equation						
Variables in the equation	B	Estándar error	Wald	gl	Sig.	OR
Self-informed illness	.057	.378	.023	1	.881	1.058
Children	-.964	.716	1.814	1	.178	.381
Constant	-9.484	2.007	22.332	1	.0001	.0001

Source: Students survey.

In our first model, with thirteen covariates introduced in the model (in addition to the constant), a single block and step, the three values match. The statistical significance (0,001) tells us that the model when built with these variables, allows a good fit, since the coefficients of the model are different from zero.

Table 9. Model coefficient Omnibus test

	Chi-square	gl	Sig.
Step	595.035	13	.0001
Block	595.035	13	.0001
Model	595.035	13	.0001

Table 10. Model summary

Model summary		
Logarithm of likelihood -2	Cox y Snell R square	Nagelkerke R square
419,165	.546	.738

Source: Students survey

The proportion of lifestyle variance of students explained by the variables that make up the model according to the Generalized Determination Coefficient Cox and Snell is 54.6% for the logistic regression model.

The variance explained with the correction of R squared Nagelkerke is 73.8%, adjusting the variance of the model better so we will proceed to create a adjusted logistic regression model where that variable is not included.

Table 11. Fit model of logistic regression

Fit model of logistic regression								
	B	Estandar error	Wald	gl	Sig.	OR	Confidence interval	
							Bottom	Top
Nutrition	2.380	.277	73.658	1	.000	10.803	6.274	18.602
Work out	2.221	.407	29.829	1	.000	9.212	4.152	20.439
Health responsibility	4.551	1.120	16.498	1	.000	94.727	10.538	851.525
Stress management	2.594	.350	54.906	1	.000	13.383	6.739	26.578
Interpersonal support	2.603	.368	50.038	1	.000	13.502	6.565	27.773
Self up dating	4.057	.723	31.455	1	.000	57.798	14.002	238.583
Constant	-10.609	1.320	64.553	1	.000	.000		

Source: Students survey.

As it can be seen in the table, the OR of the responsibility dimensions in health and self-updating maintain high values, this means that there is collinearity, so it is decided to create a third model omitting these variables.

It is important to clarify that the variables created from the instruments developed by Nola Pender and Rosenberg are correlated with each other, so it is not uncommon for the model to have evidence of collinearity. However, the model's ability to predict is efficient, based on the findings in the probability summary tables, where each prediction matches the characteristics in the lifestyle dimensions each student possesses.

Table 12. Fit model of logistic regression.

Fit model of logistic regression								
	B	Estandar error	Wald	gl	Sig.	OR	Confidence interval	
							Bottom	Top
Nutrition	2.558	.257	98.719	1	.000	12.911	7.795	21.385
Work out	1.743	.315	30.572	1	.000	5.712	3.080	10.594
Stress management	2.367	.297	63.420	1	.000	10.665	5.956	19.097
Interpersonal Support	2.926	.316	85.543	1	.000	18.661	10.037	34.694
Constant	-5.394	0.464	135.135	1	.000	.005		

Source: Students survey.

Below is an explanation of the OR risk possibilities obtained in the logistic regression model.

1. Students who have inadequate nutrition have a 12.9 times increased risk of inadequate lifestyle compared to those with adequate nutrition.
2. Students who have an inadequate work out habit have a 5.7 times, increased risk of inadequate lifestyle, compared to those students who have an adequate exercise habit.
3. Students who have inadequate stress management have 10.6 times, increased risk of inadequate lifestyle, compared to those who properly manage stress.
4. Students who have inadequate interpersonal support have an 18.6 times increased risk of an inadequate lifestyle, compared to those who have an adequate lifestyle.

The resulting equation in our adjusted logistic regression model is as follows:

$$P(\text{lifestyle}) = \frac{1}{1 + \text{Exp}(5.394 - 2.558 X_1 - 1.743 X_2 - 2.367 X_3 - 2.926 X_4)}$$

To explain the model equation we proceeded to make a probabilities table of five descriptive intervals that helps us summarize the results obtained from the equation of each student by means of the model, which generates as a result the following probabilities.

Table 13. Summary of the prediction capacity of the fit model.

Summary table of grouped probabilities model 3		
Intervals	Frequency	Percentage
0,01 - 0,20	132	17.5%
0,21 - 0,40	150	19.9%
0,41 - 0,60	10	1.3%
0,61 - 0,80	216	28.7%
0,81 - 10	245	32.5%
Total	753	100.0%

Source: Students survey.

First, the model is used to predict the response using the information in each row of the data file. If the predicted value is greater than the border, the student is considered an “inappropriate lifestyle”. The table shows the percentage of predicted observed data.

The first interval indicates that 17.5% of students surveyed (132) have a 0.01 to 0.20 chance of having an inadequate lifestyle.

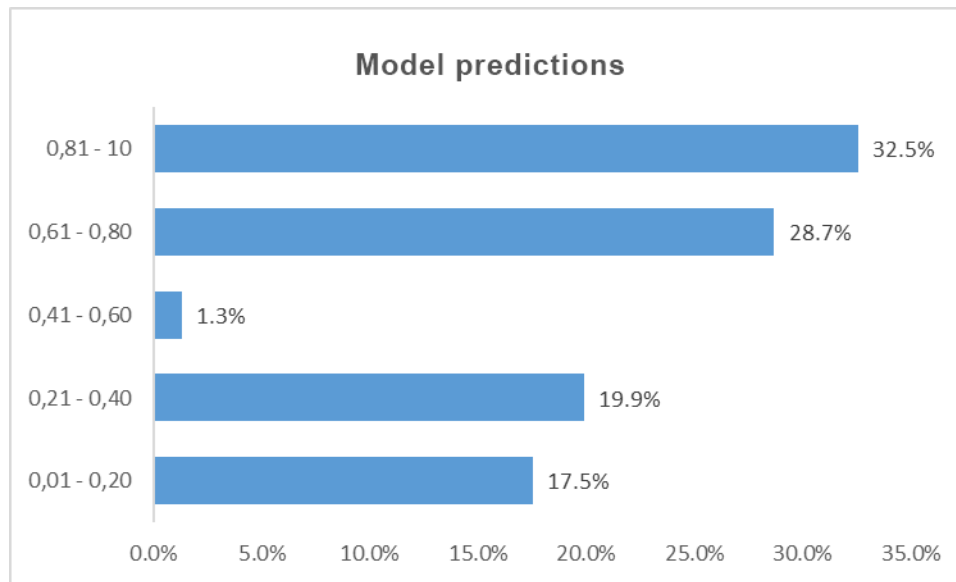
The second interval indicates that 19.9% of students surveyed (150) have a 0, 21 - 0.40 chance of having an inadequate lifestyle.

The third interval indicates that 1.3% of students surveyed (10) have a 0.41 - 0.60 chance of having an inadequate lifestyle.

The fourth interval indicates that 28.7% of students surveyed (216) have a 0.61 - 0.80 chance of having an inadequate lifestyle.

The fifth interval indicates that 32.5% of students surveyed (245) have a 0.81 – 1 chance of having an inadequate lifestyle.

This is summarized in the graph below



Graph 1. Model predicted probability. Source: Students survey.

DISCUSSION

In the present work, first of its kind at the National Autonomous University of Nicaragua, Managua, a sample of 753 university students from 16 to 29 years of age entered in 2012 and those in the last year 2016 was analyzed. The results obtained in this project show that after bivariate and multivariate analyses have been applied with respect to the personal factors age, gender, origin, self-informed disease and parenting, it is concluded that they are variables that do not represent significantly in the Pearson Square Chi association test, so it can be said that the variable personal factors presented in the study are not dependent on the lifestyle of the students.

On the other hand, it is proven that the dimensions that make up the lifestyle can explain the lifestyle of RURD students.

Based on the revised literature for the elaboration of the project in terms of lifestyles, according to Nola Pender the health promoter lifestyle refers to the set of behavioral patterns or habits that are closely related to health in a broad sense, that is, to everything that provides well-being and development of the human person. People's health is linked to lifestyle, because the health-promoting lifestyle seeks the well-being of the human being and unhealthy lifestyles are associated with risk factors that contribute to the presence of diseases. Therefore, with regarding to the above mentioned, within the nutrition dimension the lifestyle of students is inadequate in 54% of students not presenting many differences in relation to the year of admission to the university, this relates directly to the BMI found in students in study, and in women this was

between 15.61 and 42.1 kg , with an average of 23.43 ± 4.09 DE so it can be inferred that 67.27% of BMI is grouped between 19.34 and 27.52 being overweight. In relation to the BMI of males under study, these were between 14.69 and 54.28 Kg, with an average of 23.74 ± 4.84 DE, so 68.27% of BMIs are grouped between 18.91 and 28.58 Kg considering grade 1 obesity. These results resemble studies conducted at the national level that demonstrate the prevalence of risk factors in RURD students, and workers, reporting that 11.17% were at normal weight, 59.88% increased risk of overweight (BMI 25 – 29.99) and obese (BMI 30 to 40).

In the work out dimension, the lifestyle is inadequate in students, both those who entered in 2012 and 2016, obtaining 56% and 58% respectively.

The female gender is between values 5 and 20 with an average of 9.46 ± 3.39 SD indicating that 68.27% of women are grouped between the values of 6.07 and 12.85 being the appropriate values between 14 and 20, males are among the minimum and maximum equal values of 5 and 20 with an average of 10.69 ± 3.48 DE , indicating that 68.27% of males are between values 7.21 and 14.17.

In this case the students surveyed are not developing fitness skills that contribute to overall health.

Responsibility for health implies an active sense of responsibility for one's own well-being. This includes self-observation behaviors, informing and educating about health, exercising timely use of health services, and informed consumerism when requesting professional assistance, findings found in students were an inadequate health responsibility in both those admitted in 2012 and those in 2016, resulting in 59% and 61% failing to have their health responsibility.

Stress management refers to the set of responses to the stressful situation, which involve the identification and implementation of the psychological and physical resources executed to control or reduce tension effectively. For RURD students surveyed this lifestyle dimension is inadequate 54% (more than half) of students. Stress is a potential threat to the mental health and physical well-being of the subject and a risk factor for health problems such as headaches, back pain, cancer, heart disease and gastrointestinal disorders; reported diseases in some students in the compound.

As for the interpersonal support dimension was also found inadequate in the students surveyed, it is important to recognize that interpersonal relationships, social interaction and communication are fundamental to achieving a sense of intimacy; significant closeness involved in sharing and expressing thoughts and feelings.

Self-realization of students under study was inadequate in 26% of students 2012 and 28% of students 2016, this dimension focuses on the development of internal resources through

growth, connection and development, providing an inner peace that opens up the possibility of creating new options to become something more, going beyond who we are, at the same time provides us with a sense of harmony, fullness and connection with the universe. All of this results in the maximisation of human well-being to achieve well-being.

A binary logistic regression model was applied to make the predictions, in which thirteen dichotomous variables that make up the study were first introduced; seven of them made up personal factors, and 6 of them made up of lifestyle. When running the program, the software provides the bus test, model summary and variables that make up the regression model. To explain the model, the P value of the Wald statistic was taken as a reference indicating whether the explanatory variables included in the model provide information to explain the model-dependent variable in our case the lifestyle.

The P value of the Wald statistic of the variable gender, age, provenance, self-informed disease, child tenure and BMI has an associated value greater than 0.05 therefore we say that the variables of personal factors does not provide information to the logistic regression model. It is therefore concluded that personal factors do not provide enough information to predict the lifestyle of RURD students.

A second model was run that included the variables that make up lifestyles (nutrition, exercise, stress management, health responsibility, interpersonal support and self-updating), finding that these variables are correlated with each other, so it is decided to adjust the model by omitting the variables responsibility in health and self-updating, this in order to reduce the effect of collinearity.

The results of the third fitted model indicate OR with lower values, but highly explanatory in relation to lifestyle. It can be concluded that the model created is efficient in predicting the lifestyle that each student possesses.

CONCLUSIONS

This study Healthy Lifestyles and their association with personal factors in Students was carried out in the Rubén Darío University Campus of UNAN-Managua. This is a pioneering study that brings to the baseline for the healthy university program.

Among the main findings of this study were found that the personal factors age, gender, body mass index, provenance and height of the students are not associated with the lifestyle of these; On the other hand, there is a strong association between the dimensions of nutrition, work out, responsibility in health, stress management, self-realization and student lifestyle. The conclusions according to the specific objectives are explained in more detail below:

1. The personal characteristics of the students of the Rubén Darío University Campus were obtained, the average age of the female sex is 19 years, the weight was 58.14 kg, the height of 1.58 m, and the BMI is 23.43 considered overweight. The male sex the average age was 20 years, the weight of 67.26 kg, the height of 1.69 m, the BMI is 23.74 considered obesity grade 1.

Most of the students correspond to the urban area. Half of the students in study do not have any kind of student scholarship. Most students do not report self-informed illness and have no children.

2. The lifestyle profile of students of both genders of the RURD is inadequate.

Chi square association tests indicate that personal factors age, gender, provenance, height, self-informed disease are not associated with students' lifestyles.

There is a strong association between the dimensions of nutrition, exercise, responsibility in health, stress management, self-realization and the lifestyle of students in study.

The logistic regression model reflects that students who have inadequate nutrition, inadequate exercise habit and inadequate stress management are at greater risk of inadequate lifestyle than those who have adequate nutrition, exercise habit and stress management.

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