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# WELLNESS APPLICATION, EFFECTS, AND EVALUATION FROM THE CARDIOFOOD LIFESTYLE PROGRAM: A LATIN AMERICAN EXPERIENCE

APLICACIÓN, EFECTOS Y EVALUACIÓN DEL BIENESTAR A PARTIR DEL PROGRAMA CARDIOFOOD LIFESTYLE: UNA EXPERIENCIA LATINOAMERICANA

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## ABSTRACT

**Introduction:** The changes in daily routines as a result of the mitigating measures implemented in the face of the COVID-19 pandemic represent a challenge for the Latin American population to preserve their general well-being.

**Objective:** To evaluate the assessment of well-being from the Cardiofood Lifestyle medicine program in virtual modality in Latin American participants during the COVID-19 pandemic in 2020. **Methods:** Analytical, retrospective and descriptive study, with a quantitative approach; developed in virtual mode between May and December 2020. The population sample was 51 participants. A subjective assessment questionnaire and a self-authorship well-being score were applied, validated by a hypothesis test. The P value equal to zero is calculated. **Results:** Of 51 participants, 44 (86%) were women with a mean age of 45 and 7 (14%) were men with a mean age of 40 years. The mean of the evaluation test of the Cardiofood Lifestyle program was 4.71. 35 (68.62%) participants felt more energetic; 46 (90%) expressed feeling much more secure in choosing healthy foods; 36 (70.58%) felt much more lucid and 41 (80.40%) stated that they felt much healthier compared to the beginning of the program. **Conclusions:** There is a good subjective assessment of the well-being represented in Latin American participants of the Cardiofood Lifestyle medicine program in virtual modality during the COVID-19 pandemic in 2020, represented in better sensations of energy, lucidity, ability to make food choices and health.

**Key Words (DeCS):** lifestyle; feeding behaviour; quality of life; coronavirus infections; health promotion; chronic disease (Fuente: DeCS BIREME)

## RESUMEN

**Introducción:** Los cambios en las rutinas cotidianas como resultado de las medidas mitigantes implementadas frente a la pandemia de COVID-19 representan un desafío para la población latinoamericana para conservar su bienestar general.

**Objetivo:** Evaluar la valoración del bienestar a partir del programa de medicina de estilo de vida Cardiofood Lifestyle en modalidad virtual en participantes latinoamericanos durante la pandemia de COVID-19 en 2020. **Métodos:** Estudio analítico, retrospectivo y descriptivo, con enfoque cuantitativo; desarrollado en modalidad virtual entre mayo y diciembre del 2020. La muestra poblacional fue de 51 participantes. Se aplicó un cuestionario de valoración subjetiva y un score de bienestar de propias autorías validadas por un test de hipótesis. Se calcula el valor P igual a cero. **Resultados:** De 51 participantes, 44 (86%) fueron mujeres con una edad media de 45 y 7 (14%) hombres con una media de edad de 40 años. La media del test de valoración del programa Cardiofood Lifestyle fue de 4,71. 35 (68,62%) participantes se sintieron con más energía; 46 (90%) expresaron sentirse mucho más seguros en la elección de alimentos saludables; 36 (70,58%) se sintieron con mucha más lucidez y 41 (80,40%) manifestaron sentirse mucho más saludables en comparación al comienzo del programa. **Conclusiones:** Existe una buena valoración subjetiva del bienestar representado en participantes latinoamericanos del programa de medicina de estilo de vida Cardiofood Lifestyle en modalidad virtual durante la pandemia de COVID-19 en 2020, representado en mejores sensaciones de energía, lucidez, capacidad de elecciones de alimentos y salud.

**Palabras Claves (DeCS):** estilo de vida; conducta alimentaria; calidad de vida; infecciones por coronavirus; promoción de la salud; enfermedad crónica (fuente: DeCS BIREME)

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## INTRODUCTION

Conserving a healthy lifestyle and maintaining well-being has become a challenge after the appearance of COVID-19 disease and the subsequent worldwide pandemic. Local authorities of different countries in Latin America have implemented a variety of mitigating measures that include isolation, social distancing, quarantine in phases, hygiene measures, etc<sup>(1)</sup>. which has represented a challenge for the people of this region to conserve their health<sup>(2,3)</sup>.

COVID-19 pandemic has been installed within another pre-existing pandemic: the pandemic of non-transmissible chronic disease, such as cardiovascular disease, diabetes mellitus, chronic obstructive pulmonary disease, arterial hypertension, and cancer<sup>(1,5)</sup>. In the Region of the Americas, there are 5.5 million deaths due to this cause per year<sup>(6)</sup>. These conditions together with advanced age constitute a greater risk for those who develop COVID-19.

Therefore, maintaining and improving integral health and wellbeing through lifestyle medicine (LM), defined as the practice of prescribing healthy habits based on scientific evidence<sup>(7,8)</sup>, is constituted as singular importance in health promotion, since it focuses on the origin and root of non-transmissible chronic disease risk factors<sup>(8,10)</sup>. Successful documented experiences exist regarding LM intervention programs, such as the Ornish Program<sup>(11)</sup> and CHIP Program<sup>(12)</sup> but they are based on cultural standards particularly from population samples corresponding to North American culture.

When facing the problem described, we recognize this void in the field of Lifestyle Medicine, given the lack of therapeutic intervention research in this field with respect to cultural context and particularly from Latin America. For all the before mentioned, it is necessary to

develop research from a Lifestyle Medicine approach that considers the population characteristics of this region. Consequently, the objective of this study is to evaluate the subjective assessment from the LM program called Cardiofood Lifestyle in virtual mode in Latin American participants.

## METHODOLOGY

### Experimental design

We performed a retrospective and descriptive study with quantitative focus, and it was carried out in virtual mode for participants of diverse countries in Latin America.

### Population and sample

A total of 51 answers were obtained from the completed forms from the first cohort of the Cardiofood Lifestyle Program. All the subjects are from Latin American precedence, of different countries, including Chile, Argentina, Peru, Uruguay, Paraguay, Colombia, Venezuela, Mexico, and immigrants living in the United States. We need to emphasize that the sample was not representative of the general population, however, the results obtained allow us to generate conclusions regarding the program participants.

### Variables and instruments

In order to evaluate the subjective wellness assessment from the Cardiofood Program, we applied an assessment questionnaire and experience evaluation and subjective results, which we call "Request for Testimony and Feedback" (Table 1), through Google Forms. Since the virtual mode adopted due to the COVID-19 pandemic, and the inability to collect laboratory data and clinical parameters, we decided to adopt a subjective evaluation questionnaire of self-authorship with the purpose of evaluating wellness results. These results were evaluated through a score that quantifies the obtained results in the applications.





**Table 1.** Request for Testimony and Feedback

1. Compared to when you began the program, how confident do you feel about your power to control and lose weight and not gain it back and improving your lifestyle?				
Much more confident	More or less confident	Same	Less confident	Much less confident
2. Compared to when you began the program, how much energy do you have now?				
Much more energy	A little more energy	More or less the same	A little less energy	Much less energy
3. Compared to when you began the program, how confident do you feel on your capacity to choose health food options?				
Much more confident	More or less confident	Same	Less confident	Much less confident
4. Compared to when you began the program, what level of mental lucidity would you say you currently possess?				
Much more lucid	A little more lucid	More or less the same	A little less lucid	Much less lucid
5. Compared to when you began the program, how healthy do you currently feel?				
Much less lucid	A little healthier	More or less the same	A little less healthy	Un Much healthier
6. Have you lost weight since you began the program?				
Yes	No		Not sure	
7. If you lost weight, how many kg exactly?				
Open answer				
8. What did the Cardiofood program mean to you? Why?				
Open answer				

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To obtain the quantitative score, we included questions 1 to 6 in the "Request for Testimony and Feedback". The answers were translated to numerical values between 1 and 5 (question 6, having only 3 answer options, used only values 1, 3, and 5 to keep the scale). Questions 7 and 8 correspond to open questions, therefore, they were removed from the score. The wellness score was calculated adding the values of the answers of each participant, then dividing the result of the sum by 6, which is the number of questions included (Table 5). The instruments were elaborated by the authors and validated on a qualitative level through expert judgment.

**Procedures**

Data collection was carried out between the months of May and December 2020, during the first wave of the COVID-19 pandemic. IN order to obtain results, we applied an online questionnaire with the Google Forms platform, through a link sent to the program participants, prior to the finalization of this. Likewise, we explained to the participants the importance of completing it with the objective of studying the obtained results.

**Statistical analysis**

After the data collection, these Will be entered





into a database created in the Microsoft Excel 2010 program. Qualitative values were presented as frequencies and percentages and of the quantitative variables mean and standard deviation.

**Ethical aspects**

The ethical principles from the Helsinki Declaration of the World Medical Association were respected. Prior to the application of collection instruments and participation in the Cardiofood Lifestyle Program we considered the virtual informed consent acceptance, sent in the beginning of the same and signed promptly.

**RESULTS**

Regarding the characteristics of the participants in this study, 44 (86%) were women between 30 and 65 years and 7 (14%) of the remainder of the total sample were

men of 45 years as average age, all from different countries in Latin America, among them Chile, Argentina, Peru, Uruguay, Paraguay, Colombia, Venezuela, Mexico, and immigrants living in the United States.

The subjective assessment on confidence in the management of body weight resulted in 46 (90%) of the sample feeling more confident. When analyzing the subjective assessment on weight loss, 40 (78,43%) of the sample expressed having lost weight. The quantitative evaluation of weight loss according to individual measures of participants in their homes after having participated during 8 weeks of the program, gave the following results: 29.41% (15) of the sample lost 3 kg, 21.56% (11) 2 kg, 9.80% (5) lost 2.5 kilos. (Table 2)

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**Table 2.** Subjective assessment of confidence in weight control, weight loss, kg lost after completing the Cardiofood Lifestyle Program (N=51)

Compared to when you began the program, how confident do you feel in controlling and losing weight and not gaining it back again and improve your lifestyle?		
Assessment	Frequency	Percentage
Much more confident	46	90%
More or less confident	5	10%
Same confidence	0	0
Less confident	0	0
Much less confident	0	0
Did you lose weight since you began the program?		
Assessment	Frequency	Percentage
Yes	40	78,43%
No	8	15,68%
I'm not sure	3	5,88%
If you lost weight, exactly how many kg?		
Did not lose weight	5	9,80%
1 kg	3	5,88%
2 kg	11	21,56%
2,5 kg	5	9,80%
3 kg	15	29,41%
3,5 kg	2	3,92%
4 kg	4	7,84%
5 kg	2	3,92%
6 kg	1	1,96%
8 kg	3	5,88%





Analyzing the level of energy, 35 (68,62%) of the sample felt more energy compared to when they began the program. The subjective assessment of mental lucidity gave a result of 36 (70,58%) of the sample. (Table 3)

to it. (Table 4) When referring to the subjective assessment of health after completing the program, 41 (80.40%) manifested feeling much healthier and 10 (19.60%) expressed feeling somewhat healthier.

Regarding the subjective assessment of selection capacity of healthy food options, 46 (90%) of the sample expressed feeling much more confident, while 5 (10%) manifested feeling more or less confident with respect

(Table 4) On the other hand, the wellness mean of the Cardiofood Lifestyle program is above 3, with an average evaluation of 4.71. In table 5, the scores of each participant can be seen.

**Table 3.** Subjective assessment of energy level and mental lucidity after completing the Cardiofood Lifestyle program (N=51)

Compared to when you began the program, how much energy do you have now?		
Assessment	Frequency	Percentage
Much more energy	35	68,62
A Little more energy	14	27,45
More or les the same	2	3,92
A Little less energy	0	0
Much less energy	0	0

Compared to when you began the program, what level of mental lucidity would you say you currently have?		
Assessment	Frequency	Percentage
Much more lucid	36	70,58
A little more lucid	9	17,64
More or less the same	6	11,76
A little less lucid	0	0
Much less lucid	0	0

Source: Testimony Request Cardiofood Lifestyle Program





**Table 4.** Subjective assessment on confidence in the selection capacity of healthy food choices and subjective assessment of health after completing the Cardiofood Lifestyle Program (N=51)

Compared to when you began the program, how confident do you feel in your ability to select healthy food options?		
Assessment	Frequency	Percentage
Much more confidente	46	90
More or less confident	5	10
Same level of confidence	0	0
Less confident	0	0
Much less confident	0	0
Compared to when you began the program, how healthy do you currently feel?		
Assessment	Frequency	Percentage
Much healthier	41	80,40
A little healthier	10	19,60
More or less the same	0	0
A little less healthier	0	0
Much less healthier	0	0

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Source: Testimony Request Cardiofood Lifestyle Program

**Table 5.** Score table on Wellbeing of each participant in the Cardiofood Lifestyle Program (N=51)

SUBJECT	FINAL SCORE OF ALL ANSWERS	SCORE
1	29.0	4.83
2	28.0	4.67
3	28.0	4.67
4	29.0	4.83
5	27.0	4.50
6	27.0	4.50
7	29.0	4.83
8	30.0	5.00
9	28.0	4.67
10	30.0	5.00
11	26.0	4.33
12	30.0	5.00
13	30.0	5.00





SUBJECT	FINAL SCORE OF ALL ANSWERS	SCORE
14	30.0	5.00
15	22.0	3.67
16	30.0	5.00
17	25.0	4.17
18	28.0	4.67
19	30.0	5.00
20	30.0	5.00
21	30.0	5.00
22	30.0	5.00
23	30.0	5.00
24	30.0	5.00
25	29.0	4.83
26	26.0	4.33
27	28.0	4.67
28	30.0	5.00
29	30.0	5.00
30	23.0	3.83
31	30.0	5.00
32	28.0	4.67
33	27.0	4.50
34	25.0	4.17
35	27.0	4.50
36	28.0	4.67
37	28.0	4.67
38	30.0	5.00
39	28.0	4.67
40	28.0	4.67
41	30.0	5.00
42	26.0	4.33
43	30.0	5.00
44	30.0	5.00
45	30.0	5.00
46	30.0	5.00
47	26.0	4.33
48	28.0	4.67
49	25.0	4.17
50	26.0	4.33
51	28.0	4.67

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## DISCUSSION

Following the North American College of Lifestyle Medicine and the Latin American Society of Lifestyle Medicine, Lifestyle Medicine (LM) can be defined as an evidence-based approach that seeks to prevent, treat, and even reverse diseases by replacing harmful behaviors for other beneficial ones, such as how to eat healthier, being physically active, stress relief, avoiding abuse of toxic substances, adequate sleep, and having a solid emotional support system, through 6 fundamental pillars, we are able to organize, set health objectives for the patients, and convert them into active and responsible agents when thinking about their well-being<sup>(14,15)</sup>.

The intervention programs in lifestyle medicine, such as the Ornish Program<sup>(11)</sup> and CHIP Program<sup>(12)</sup> are based on cultural standards particular to population samples corresponding to North American culture. The Cardiofood Lifestyle Program proposed to unite the knowledge acquired about LM and health coaching in the stages that preceded the COVID-19 pandemic. As a result of the knowledge in effectiveness of LM programs dosed in at least an 8-week period, we decided to experiment implementing these recommendations adapted to the Latin American population with their cultural characteristics and needs in the moment of the COVID-19 pandemic. Using education in healthy eating, a plant-based integral nutrition, as a main focus<sup>(1,16)</sup>, during the sessions the participants gained knowledge to prevent, control and improve non-transmissible chronic diseases, such as cardiovascular disease, obesity, diabetes, cancer, and risk factors of COVID-19<sup>(1,4,5)</sup>. Additionally, they feel healthier, more lucid, with more energy, and part of a group, guided and contents<sup>(1,17,20)</sup>.

Maintaining an adequate weight during the COVID-19 pandemic was a challenge with the subsequent increase in risk factors of getting this disease<sup>(1)</sup>. During the Cardiofood Lifestyle Program, we urged participants to follow a low caloric density food pattern that generates great satiety, which offers a solution to weight loss and management<sup>(1)</sup>. This eating pattern was associated to a decrease of cardiovascular diseases and cancer<sup>(1,21)</sup>, reduction in inflammation and oxidative stress<sup>(1,22)</sup>, diversity in intestinal microbiota due to the presence of fibers and polyphenols and regulation of the immune system<sup>(1,22,23)</sup>. The selection of healthy foods

and confidence in this aspect constituted a central factor in well-being, resulting in 90% of positive assessment.

Regarding energy and lucidity of people during COVID-19, the preliminary reports have shown that people presented with a reduction in the average step count which fluctuates between 7% and 38% in all the countries<sup>(1,24)</sup>. Insufficient physical activity is one of the main risk factors of death in the world, as well as a key risk factor for at least 35 ailments<sup>(25)</sup>, including cardiovascular disease, cancer and diabetes<sup>(1,26,27)</sup>.

During the Program, physical activity was supported through the incorporation of courtesy yoga classes and a recommendation of counting their steps daily, with the aim of reaching 10.000 by the end of the program. These recommendations resulted in an assessment of 68,62% of greater energy and 70,58% of greater lucidity of the sample.

These results reveal a very promising prognosis for the development and implementation of therapeutic intervention group programs in virtual mode of Latin Americans that have the need to eat healthier, feel more energized, lucidity and wellness. Fundamentally, we evidence that therapeutic education of the participants<sup>(1)</sup> during the program was able to improve their subjective assessment on health.

Regarding healthy relationships, scientific evidence holds that authentic social interactions, including brief one, have positive effects on longevity and general health<sup>(1,28)</sup>. According to a study by Grant & Glueck, healthy social connections are considered the most important predictor of happiness and longevity. Connectivity could activate the parasympathetic nervous system, reducing stress, and its dangerous consequences<sup>(1,17,29)</sup>.

During COVID-19, social distancing was a very important recommendation to control infections and help save lives. In the Cardiofood Lifestyle Program, through weekly meetings of 1 hour and 15 minutes, the opening of an exclusive Facebook group created emotional support, through social interactions, Health Coaching sessions<sup>(19,25)</sup> and virtual contact, such as is evidenced in the Wellness score results.





Therefore, we recommend moving forward with Lifestyle Medicine interventions and education for the Latin American population, with the goal of promoting specific actions geared towards improving healthy food choices, energy, and well-being withing the COVID-19 pandemic and non-transmissible chronic diseases.

Our study limitations have been, in the first place, that the online questionnaire may have generated response bias, however, we used an easy to use self-administered standardized instrument. We must mention that the total participation was of 120 people in the Cardiofood Lifestyle Program and only 51 completed the questionnaire. For future interventions, specific strategies will be evaluated to make this action more effective, for example carry it out in session 8 before finishing the program. Likewise, due to the virtual mode

adopted during the COVID-19 pandemic, it was not possible to gather laboratory data and clinical parameters that could be effectively evaluated from a distance. Despite these limitations, we consider that the research provides important information.

## CONCLUSION

We found a good subjective wellness evaluation from the LM program called Cardiofood Lifestyle in virtual mode in Latin American participants. In face of this, it is important to develop therapeutic intervention programs in lifestyle medicine for this population sample with the goal to improve wellbeing of people within the context of the COVID-19 world pandemic marked within the pandemic of non-transmissible chronic diseases.

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**Conflicts of interest:** The authors declare not having conflicts of interest.

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