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# MENDIVE



REVISTA DE EDUCACIÓN

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*Translated from the original in Spanish*

## **A community training program: preventive experience in Arterial Hypertension**

### **Un programa de capacitación comunitaria: experiencia preventiva en la Hipertensión Arterial**

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#### **ABSTRACT**

In Cuba, parallel to the increase in life expectancy, there has been an increase in arterial hypertension, as a cause of multiple entities. Considering that it is currently one of the main reasons for consultation in primary health care (Family Medical Office) and that it has shown morbi-mortality with an upward trend in recent years, it is considered that, working in preventive education of citizens is essential to achieve its control, hence

the present article narrates the experience in the introduction of a community training program in the family medical office # 1 of the Consolación del Sur municipality, during the period of September 2017 to July 2018. The Universe was represented by the 297 patients dispensed as hypertensive and the Sample, by 150 patients who met the inclusion criteria. To statistically specify the variables, the information obtained was computerized, using the percent as a unit of summary; the main results were an increase in knowledge about risk factors and information about pharmacological treatments and the importance of diet for the control of the disease. It was concluded that the preventive education of the community seems to contribute to the reduction of complications associated with arterial hypertension, as a result of the conscious participation of patients and the family in their treatment.

**Keywords:** community education; arterial hypertension; training program.

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#### **RESUMEN**

En Cuba, paralelo al aumento de la esperanza de vida, se ha producido un aumento de la hipertensión arterial, como causa de múltiples entidades. Teniendo en cuenta que actualmente constituye una de las razones principales de consulta en la atención primaria de salud (Consultorio Médico de la Familia) y que ha mostrado una morbi-mortalidad con tendencia ascendente en los últimos años, es considerable que, trabajar en la educación preventiva de los ciudadanos es esencial para lograr su control, de ahí que el presente artículo narre la experiencia en la introducción de un programa de capacitación comunitaria en el consultorio médico de familia # 1 del municipio Consolación del Sur, durante el periodo de septiembre de 2017 a julio de 2018. El

Universe was represented by the 297 patients dispensed as hypertensive and the Sample, by 150 patients who met the inclusion criteria. To specify statistically the variables, the information obtained was computerized, using the percentage as unit of summary; the main results were an increase in knowledge about the risk factors and the information about the pharmacological treatments and the importance of the diet for the control of the disease. It was concluded that the preventive education of the community seems to contribute to the reduction of complications associated with arterial hypertension, as a result of the conscious participation of the patients and the family in their treatment.

**Palabras clave:** educación comunitaria; hipertensión arterial; programa de capacitación.

## INTRODUCTION

With the recognition and measurement of blood pressure initiated by the Rev. Hales in the 17th century, and the birth of the mercury sphygmomanometer designed by Samuel Basch (1837-1905) for the non-invasive measurement of blood pressure, the era of diagnosis of arterial hypertension in humans began.

Hypertension is defined as elevation of pressure within the arteries. Two types of blood pressure are managed in them: Systolic blood pressure, which is caused by the cardiac pumping of blood to the arteries and the diastolic is the pressure caused by the contraction of the arteries. (World Health Organization, 2014)

It is the most common of the conditions that affect the health of individuals and populations throughout the world, both in developed and underdeveloped countries. It represents in itself a disease, as well as a risk factor for other diseases, such as ischemic heart disease, heart failure, vascular brain disease, chronic kidney disease, and contributes significantly to hypertensive retinopathy. There are risk elements managed in the medical community that also predispose individuals to suffer from high blood pressure, among which we can mention the descent of African Americans, obesity, sedentary lifestyle, stress, anxiety, drinking alcohol, salt in the diet, family history of hypertension, and entities such as diabetes and smoking. However, most of the time no cause of high blood pressure is identified, which is called essential hypertension. (WHO, 2014)

The prevalence has really increased significantly in all latitudes. In the world today, around seven million people die each year from uncontrolled arterial hypertension. (WHO, 2014)

For arterial hypertension there are international guidelines such as *The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure* and the *Clinical Practice Guide for the Treatment of hypertension*, of the European Society of Hypertension and of the European Society of Cardiology. Cuba is currently governed by the former, classifying patients for better therapeutic management and follow-up. (Ministry of Public Health (Minsap), 2018)

While it is true that blood pressure increases with age, this does not occur for example in some tribal communities, which shows that lifestyle influences the presentation or not of hypertension in

patients over 60 years. However, it has been shown that the effects of aging and the pathophysiology of arterial hypertension are closely related and potentiate each other: it is known that at the cardiac level there is hypertrophy of the posterior wall of the left ventricle closely related to the increase in afterload, in addition to calcifications in the valvular apparatus, fatty accumulations around the sinus node as well as in specific fibers of the His bundle.

In the vascular tree the thickness of the intima layer increases, with progressive and physiological elevation of the content of cholesterol esters and phospholipids, this leads to hardening, stiffness and decrease of the lumen of the arteries. While, in the autonomic nervous system, lower sensitivity of beta-adrenergic receptors and alterations of the cholinergic system is determined with a decrease in the chronotropic response to vagal stimulation, the glomerular filtration rate and blood flow decrease at the renal level, difficulty adapting to sodium restriction, decreases the capacity of concentration and dilution, low rates of renin and aldosterone and decrease in body concentration of potassium and biochemically there is glucose intolerance, tendency to hypercholesterolemia and hyperuricemia, and increase in plasma concentration of angiotensin II, norepinephrine. In addition, these processes are accompanied by proliferation of endothelial cells, plaque formation and atherothrombotic lesions in the arterial tree, related to turbulence and pressure originated in the curvatures and bifurcations of the system.

In the current century, stress is invoked as a cause of dissimilar diseases, in the case of high blood pressure it is a contributing factor to decompensation. This constitutes a response of adaptation of the organism

to face demands of the environment for which the person owns or believes to have limited resources. However, when these responses to stressors are very intense, frequent or maintained over time, stress can bring complications to health, causing the appearance of a problem, sharpening or complicating your clinical picture, and even perpetuating the symptoms.

Stress *per se* produces a stimulus of overactivation of the nervous system, with the release of catecholamines and cortisol, causing an increase in blood pressure, heart rate, peripheral resistance and blood glucose and insulin levels, which leads to that blood pressure develops or decompensates when the stimulus is maintained and the individual does not find the necessary compensation elements to stabilize. (Álvarez, Hernández, Báster & García, 2014)

The increase in cardiovascular and cerebrovascular diseases is regulated by arterial hypertension since it is etiologically involved in the pathogenesis of both conditions as has been proven. An unsuccessful treatment of arterial hypertension is one of the great problems of controlling this entity, and one of the cardinal approaches that should be prioritized in medical training, especially in primary health care, which has the advantage within the medical community, because it can develop the real medicine that is preventive and the education of patients in the field. (Álvarez et al., 2014)

Research done in Cuba by the National Institute of Hygiene reveals that the prevalence of hypertension in the urban and rural population of Cuba reaches 30% and 15%, respectively. Its control is the cornerstone on which we must act to reduce morbidity - lethality due to coronary heart disease, cerebrovascular and renal diseases. This disease affects

1/3 of the world's population. In Cuba, the latest studies in the adult population indicate a prevalence between 33 and 40%. (Ministry of Public Health, 2018)

To define a senior citizen as hypertensive, the criteria indicated for adults 18 years of age or older apply. There is an element and that is that systolic pressure increases linearly with age in contrast to diastolic pressure, so that in the elderly isolated systolic hypertension is the most frequent way to appear this entity, responding to 60-70% of the cases.

The elevation of blood pressure figures above normal values is one of the health problems most frequently observed in the Cuban population and with which family doctors face daily. On the other hand, it is suggested that the accumulated risk to develop hypertension in the future is 90% for normotensive patients from 55 years of age. (Weber et al., 2014)

The prevention of arterial hypertension is the most important, universal and least expensive measure, this disease causes high cerebrovascular and cardiovascular morbidity and mortality, a greater volume of medical visits and a greater consumption of drugs and material resources. In a country like Cuba, with limited resources it is necessary to select and evaluate the therapeutic options that are capable of providing the maximum health and social benefit with a minimum cost.

The control of the hypertensive population should be guaranteed and the program should be applied in each office, as well as guaranteeing the functioning of the follow-up consultations of arterial hypertension, which is a crucial factor for patients to remain compensated and without complications. An adequate perception of the risk of suffering from arterial hypertension forces the execution of a

population strategy with massive education and promotion measures aimed at reducing the average blood pressure of the population, impacting on other risk factors associated with arterial hypertension, fundamentally, changes in lifestyles, such as regular aerobic physical activity, adequate food with reduced salt intake, saturated fats and refined carbohydrates, decreased stress levels, moderation in consumption of alcohol as well as the abandonment of smoking and physical exercises are an essential part of the treatment of high blood pressure.

In another sense, an individual strategy is needed, to implement specific individualized measures to people exposed to high levels of one or several risk factors, which means that they have a high probability of suffering from arterial hypertension or are already suffering from it. In this way, an adequate control of the tension figures can be maintained together in all its extension to the positive modification of habits and lifestyles.

Getting the preventive intervention of the doctor begins before any damage develops in the patient is essential; However, particularly in elderly people and in diabetic patients, these goals can be difficult to achieve.

It is known that the lack of adherence to antihypertensive treatment constitutes one of the main causes of failure in the control of hypertension. In this sense, it is recommended that the reduction of BP figures be carried out gradually and maintained and that the selected treatment be as simple and easy to comply as possible, carefully assessing its risk / benefit in each patient. The role of the professionals of the office: the nurse and family doctor, in their relationship and communication with the patient and their families, as well as training and health education programs aimed at them and

the population in general, should emphasize in the changes of habits and lifestyles as well as, in the adherence to the pharmacological treatment.

The objective of antihypertensive treatment on the one hand seeks to reduce cardiovascular mortality and morbidity associated with increased pressure, and on the other, to prevent the progression of the lesion and achieve the regression of subclinical organic damage. For this, it is necessary to treat, in addition to the blood pressure figures, each and every one of the associated risk factors. As a therapeutic objective of blood pressure control in the hypertensive population, it is recommended to reduce it below 140/90 mmHg. However, it should be taken into account that the residual cardiovascular risk of individuals with normal-high BP remains higher than those with optimal BP levels (<120/80 mmHg). Therefore, whenever possible, try to reach values as close as possible to these optimal figures. This is especially important in young people, with greater life expectancy, in which the long-term benefit of treatment will also be greater.

In patients with cerebrovascular, cardiovascular and renal disease, and in diabetics, the more intense reduction of BP protects the cardiovascular morbidity and mortality more adequately, so it is recommended to reduce BP below 130/80 mmHg. The proposal of antihypertensive drug treatment is based on the degree of BP elevation and total cardiovascular risk. In fact, the groups of drugs indicated to start and continue treatment are diuretics, beta-blockers, calcium antagonists, ACEI and ARB-II. Beta-blockers, especially in combination with diuretics, should be avoided in patients with metabolic syndrome or other risk situations of developing diabetes. Treatment should

always begin with a low dose of each chosen drug, planning the gradual reduction of BP.

It is noteworthy that the response should be checked between 4-6 weeks, except in the case of stage three hypertension and in patients with high or very high cardiovascular risk who may benefit from early control. Failure to solve with monotherapy (about 30 % of patients) will require a drug association. Whenever possible, long-acting drugs that are effective for 24 hours and that allow for the single daily dose will be used, in cases of difficult control, the treatment should be divided into 2 doses / day. The choice of a certain type of drug will always be individualized for each patient and will be based on the special indications and contraindications of the different pharmacological groups, assessing the cost of treatment.

As adjuvants for reducing cardiovascular risk, platelet antiplatelet agents and lipid lowering agents will be used. The treatment will be maintained indefinitely in the vast majority of cases. We have to highlight something and that is that the good relationship between doctor and patient, health education and a simple therapeutic scheme favor treatment compliance. (Weber et al., 2014)

At present, arterial hypertension remains one of the most important problems of contemporary medicine and it is estimated that around one billion people suffer from this disease worldwide. (WHO, 2014)

In poor countries, the situation is even more critical, for example, in India and Bangladesh, only 44 % of hypertensive patients are known and of these, only 23% are controlled. (WHO, 2014)

In Cuba there are almost two and a half million hypertensive patients, exactly 2465862. (Minsap, 2018)

In Pinar del Río, this disease has a high prevalence, exactly 222.9 per thousand inhabitants, in other words, there are a total of 131209 hypertensive patients in Pinar del Río. (Minsap, 2018)

In the polyclinic "September 5" there are 9430 hypertensive patients, and in the investigator's office there are 297, for 22 % of the total population. (Family Medical Office, 2017)

The prevalence has been increasing in association with dietary patterns, decreased physical activity, toxic habits and other behavioral aspects. (Family Medical Office, 2017)

Approximately 90 % of hypertensive patients are essential, that is, their cause is unknown, although risk factors are important in these cases. (Roca et al., 2017)

Between 5 and 10 % of cases there is a cause directly responsible for the rise in blood pressure. This form of hypertension is called secondary hypertension, which can not only be treated and disappear without requiring long - term treatment, but it also can be alert to locate even more serious diseases, of which the pressure rise Arterial is just a clinical manifestation. (Roca et al., 2017)

The most frequent risk factors associated with arterial hypertension are the following Roca et al. (2017):

1. Smoking habit
2. Obesity
3. Dyslipidemias

4. Diabetes mellitus

5. Age over 60 years

6. Male sex or postmenopausal woman

7. Family history of cardiovascular disease

To diagnose the disease, it is recommended to perform three spaced blood pressure records, at least one week between each of these, and consider high blood pressure when the average between the determinations is above the figures indicated as normal blood pressure (Roca et al., 2017)

The blood pressure measured in consultation may be higher than the blood pressure that a person normally has, a phenomenon known as white coat hypertension.

It is necessary to take this into account and the figures for ambulatory blood pressure monitoring and self - measurement of blood pressure above, which an individual is, considered hypertensive.

Regarding the prevention of arterial hypertension, and as actions to be taken into account in all patients already diagnosed, the following is recommended (Roca et al., 2017):

- Body weight control.
- Increase in physical activity, decreasing sedentary lifestyle.
- Elimination or reduction of alcohol intake at non-harmful levels.
- Reduce salt intake.

- Achieve an adequate nutritional education on a balanced and proportionate diet of micronutrients that favor health.
- Elimination of smoking.

Antihypertensive treatment will focus on reducing the overall cardiovascular risk, therefore, when it is established, in addition to the blood pressure figures, the presence of other cardiovascular risk factors, such as established renal or cardiovascular disease, diabetes or metabolic syndrome will be taken into account

There are two types of treatment, pharmacological and non-pharmacological, which consists of lifestyle modifications.

The changes in lifestyle (or non-pharmacological treatment) are the same as those already discussed when addressing the prevention of arterial hypertension.

Pharmacological treatment will be imposed from the beginning, together with non-pharmacological treatment, in all patients classified as grade II and in those of grade I with cardiovascular risk. The use of antihypertensive drugs should always be accompanied by measures to change the patient's lifestyle (Roca et al., 2017)

The most commonly used hypotensive medications are: diuretics, beta-blockers, calcium channel blockers, angiotensin converting enzyme inhibitors and more recently angiotensin II antagonists.

Hypertension is resistant or refractory in subjects treated with at least 3 antihypertensive drugs at maximum

doses, one of them diuretic, with adequate compliance with antihypertensive medication, that is, if conventional medicine does not reduce blood pressure to normal levels. (Roca et al., 2017)

The adequate perception of the risk of suffering from arterial hypertension forces the execution of a population strategy with education and promotion measures aimed at reducing the average blood pressure of the population, affecting the risk factors associated with arterial hypertension, mainly the lack of physical exercise, inadequate levels of blood lipids, high salt intake, smoking, alcoholism and obesity. (Alcazar, Oliveras, Orte, Jiménez & Segura, 2018)

Therefore, the authors of this work have the objective of presenting the results of the introduction of a community-training program in the family medical office # 1 of the Consolación del Sur municipality that contributed to improving the indicators of disease prevalence in the sample studied.

## MATERIALS AND METHODS

A descriptive and cross-sectional observational study was conducted in the family medical office # 1 of the Consolación del Sur municipality of the Consolación del Sur municipality during the period from September 2017 to July 2018 with the purpose of determining risk factors associated with arterial hypertension.

The 297 patients dispensed in the consultation as hypertensive represented the universe and the sample consisted of 150 patients (72 male and 78 female) who met the following inclusion criteria:

- That they would like to participate.

- That they were between 18 and 90 years old.
- That they were physically and mentally fit.
- That they were in the health area at the time of the study.
- System approach: it is throughout the investigation, its fundamental essence being the logical and harmonic relationship of all the elements considered in the development of the investigation.

As exclusion criteria, the cases of patients who did not meet the above requirements were considered.

As in all health research, theoretical, empirical and statistical methods play a fundamental role and were applied as follows:

Theoretical methods: These methods allowed the construction and development of scientific theory and the general approach to address the scientific problem. Throughout the dimension of this work, the research process developed is based on the general philosophical method of materialistic dialectic, as its main support. The following were applied:

- Inductive deductive: by generalizing the results of the bibliographic and documentary studies, which were carried out in the development of the research, with which the fundamental aspects of the body of the thesis were formed.
- Synthetic analytical: this method is throughout the investigation, allowing diagnosing and synthesizing the object of study, being used from the bibliographic review, documentary, to the formation of the fundamental theoretical aspects on the subject addressed.
- Logical history: given because it starts from an exhaustive review of all the evolution that arterial hypertension has had in relation to the development of humanity and its discoveries.

Empirical methods: They allowed the collection and processing of the data in the diagnosis, and were:

- Review of documents: it was exhaustive, referring to the importance, impact, magnitude of the worldwide situation of the disease and interest, that knowledge about it represents for those who suffer it to achieve a better quality of life and reduce the damage it causes.
- Observation: this method is applied in the investigation, when observing the incidence of arterial hypertension in the consultations, as well as the low perception of risk about its causes and other associated factors.

Statistical: They fulfilled a vital function in the investigation since they contributed to the appropriate tabulation, processing and generalizations from them.

In this investigation, the descriptive methods were applied, which allowed tabulating the different data of the subject of this investigation, expressed in numbers and by hundreds; The information collected through the survey prepared by the author allowed us to reach conclusions and make recommendations.

## RESULTS

In this investigation, an extensive review of literature, internet searches and



information by email was carried out. The survey was carried out and applied to the selected patients, and the Family Health Stories were used to identify the dispensed patients as hypertensive, apply the inclusion criteria, and collect the variables of interest for the study, we

also worked with individual medical records, evidences of the grandparents club.

The risk factors present in the sample under study were determined.

**Table 1** - Risk factors of arterial hypertension in the sample studied of the family medical office # 1. Municipality Consolación del Sur. (September 2017-July 2018)

Risk factors and personal pathological history	Sex				Total	
	Male		Female			
	Quantity	%	Quantity	%	Quantity	%
Hereditary factor	43	59.7	48	61.5	91	60.6
Smoking habit	2.3	8.9	24	9.3	47	18.3
Alcoholism	14	5.4	-	-	14	5.4
Sedentary	8	3.1	4	3.2	12	4.6
Dyslipidemia	10	3.9	33	12.8	43	16.7
Mellitus diabetes	15	5.8	22	8.5	37	14.4
COPD	8	3.1	4	3.2	12	4.6
Degenerative osteoarthritis	10	3.9	15	5.8	25	9.7
Ischemic heart disease	6	2.3	5	1.9	11	4.2
Psychiatric disorders	2	1.6	4	3.2	6	4.3
Ischemic bird	2	0.7	4	3.2	6	2.3
Gastroduodenitis with hiatal hernia	2	0.7	3	1.1	5	1.9
Hyperthyroidism	-	-	3	1.1	3	2.4
Diabetic polyneuropathy	3	1.1	2	0.78	5	1.9
Chronic kidney disease	-	-	2	0.78	2	0.78
Chronic arterial insufficiency	-	-	2	0.78	2	0.78
Weak visual			-	-		0
Hemorrhagic bird	-	-	2	0.78	2	0.78
Glaucoma	-	-	3	1.1	3	1.1

It was found, through a survey, the knowledge that patients had about them, as well as about the recommended diet for

a hypertensive patient, healthy lifestyles and the importance of adherence to

treatment, before the application of the Training Program community.

**Table 2** - Patient knowledge about Arterial Hypertension and its treatment before applying the Community Training Program.

Knowledge about:	Sex				Total	
	Male		Female		Quantity	%
	Quantity	%	Quantity	%		
HA risk factors	16	22.2	22	28.2	38	25.3
Recommended diet for hypertensive patients according to pathology	9	12.5	3.4	43.5	43	28.6
Importance of treatment adherence	7	9.7	45	57.6	52	34.6
Characteristics of a healthy lifestyle	eleven	15.2	9	11.53	20	13.3

The Community training program was developed through a video-conference and conversations in the office area or in the patients' homes during home visits. This dealt with a specific topic in each session. The topics developed were:

Topic 1: Videoconference about the risk of high blood pressure and its most frequent complications

Topic 2: The risk factors associated with high blood pressure: Smoking habits, Alcoholism, Obesity, Dyslipidemias, Diabetes mellitus, Age over 60 years, Male or postmenopausal women, Family history of cardiovascular disease.

Item 3: Prevention of hypertension with lifestyles that: control of body weight, decreased sedentary lifestyle, elimination or reduction of alcohol intake to no harmful levels, reducing salt intake, balanced diet

and proportioning micronutrient promote health and elimination of smoking. Recommendations specific to each case.

Topic 4: The most commonly used hypotensive drugs and their importance in the treatment of high blood pressure: diuretics, beta-blockers, calcium channel blockers, angiotensin converting enzyme inhibitors and angiotensin II antagonists.

Topic 5: Closing conversation about what has been learned with the Community Training Program.

Once the program was applied, the survey was repeated and the results showed a considerable improvement in risk perception and knowledge, in general, about the disease they suffer, risk factors and the appropriate lifestyle to avoid complications.

**Table 3** - Patient knowledge about Arterial Hypertension and its treatment after applying the Community Training Program.

Knowledge about:	Sex				Total	
	Male		Female		Quantity	%
	Quantity	%	Quantity	%		
HA risk factors	55	76.3	70	89.7	125	83.3
Recommended diet for hypertensive patients according to pathology	49	68.0	72	92.3	121	80.6
Importance of treatment adherence	55	76.3	73	93.5	128	85.3
Characteristics of a healthy lifestyle	66	91.6	49	62.8	115	76.6

## DISCUSSION

It is known that after community intervention in the doctor's office, patients acquire knowledge that will help them manage high blood pressure and possible complications, where cerebrovascular diseases are of great relevance due to their frequent association with it, and for this purpose it is designed by far the plan of the family doctor as prevention is the best option for health. (Baquerizo, 2015)

Paraphrasing Alfonso Calderón: we can say «Arterial hypertension is known as the dancer of the 4 classrooms», since it affects the heart, brain, kidneys and large vessels; alteration is that between 80 and 90 % of the hypertensive elderly suffer, there being a direct and proportional relationship between blood pressure figures and the development of "target" organ lesions, which further reinforces the claim that the population Hypertensive has a risk calculated in 6.3 times greater to suffer these events than the non-hypertensive. (Alfonso & Pizarro, 2010)

In the selected sample, smoking was found as the most prevalent condition, with 18.3 % of the patients, lower than the

68.4 % obtained by (Vázquez, Hernández & Almerás, 2012), but no less significant, because it reflects how it was extended This habit in a population that did not exceed 700 patients in its sample.

However, it is considered that the intervention by community training programs from the Medical Clinic has proven as a preventive factor, and specifically in the case of Hypertension, helps reduce the risk of complications.

We found in the study conducted in the doctor `s office # 1 family Consolacion del Sur there dispensarizados 297 patients with hypertension, we worked with 150 patients, predominated the age group 70 to 79 years, female gender, and black skin color, within the risk factors smoking was determined as the main, followed by dyslipidemia and diabetes mellitus; the most frequent complication was ischemic heart disease; the majority of patients have thiazide diuretics as a fundamental pharmacological treatment , with chlorthalidone being the most frequent .

With a sample of 150 patients, a community training program was

developed consisting of a video-conference and discussion-debate, distributed in five themes, which contributed to improving knowledge about Arterial Hypertension and how to treat it, which contributes to Avoid complications associated with this disease.

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