# MEJORAMED Strategy, Adherence of Family Physicians in Hypertension

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## ARTICLE INFO

## ABSTRACT

Systemic Arterial Hypertension (SAH) affects 25.5 million people in Mexico. In 2019, the Vallejo Family Medicine Unit No. 20 registered the care of 7.2% of the total hypertensive patients of the North Delegation of the I.M.S.S. The SAH MF-15 indicator is an ex-professional scale used within the I.M.S.S. which is based on the proper completion of medical notes with the purpose of providing comprehensive care to the patient. The objective was to evaluate the adherence of the clinical-diagnostic-therapeutic congruence of SAH to an educational strategy (MEJORAMED) in family physicians (FP) during a period of 5 months at the Family Medicine Unit (U.M.F.) No. 20 Vallejo. Material and Methods: Quasi-experimental, prospective, comparative study before-after the intervention, in 20 FP, Control Group (CG) (n=10) and Intervention Group (IG) (n=10); at U.M.F. No.20 from November 2022 to March 2023, with prior informed consent, carrying out the MEJORAMED strategy for 5 months, with the strategy being qualified in GI; CG and IG with adequate (> 80%) or inadequate (0-79%) MF-15 SAH adherence for 5 months; using descriptive statistics, according to Pearson's Chi-square variable, Wilcoxon signed ranks, Kruskal-Wallis H, applying statistical prediction model in variables with significant difference, p < 0.05, using SPSS version 26. Results: Of the 20 FP, n=10 CG and n=10 GI, with a pre/post MEJORAMED score in GI (n=10) with percentile 50 was 6.5/8.0, 95% CI (0.000-0.259) p = 0.01. In follow-up of MEJORAMED in CG and GI with a 50th percentile baseline measurement of 56.25% vs 46.9%; 2nd month 56.25% vs 67.18%; 3rd month 55.46% vs 67.96%; 5th month 58.59% vs 72.65%; respectively, all with p value ≤ 0.05. Mejoramed adherence in CG and GI of 0 (0%) vs 4 (40%), respectively with p = 0.025, statistically significant.

**Keywords:** Systemic Arterial Hypertension; Family Physician; Educational Intervention

**Abbreviations:** SAH: Systemic Arterial Hypertension; FP: Family Physicians; UMF: Family Medicine Unit; CG: Control Group; IG: Intervention Group; IMSS: Mexican Institute of Social Security; OOAD: Decentralized Administration Operative Organ

## Introduction

Systemic Arterial Hypertension (SAH)is a chronic multifactorial disease, represented by a continuous elevation of systolic blood pressure ≥140mmHg and/or diastolic blood pressure ≥90mmHg [1]; established by the ACC/AHA 2017 a diagnostic value of ≥130/80mmHg or when there is a relationship with another cardiovascular disease [2]. The World Health Organization reports that there are 1,280 million people in the world between 30 and 79 years of age with a diagnosis of SAH [3]. During 2018 in Mexico it was recorded that about 25.5 million people over 20 years of age suffer from SAH [4]. In 2020, the Mexican Institute of Social Security (I.M.S.S.) registered 7,764,847 patients with SAH at the national level, predominantly female [5]. A meta-analysis carried out in 4.5 million young adults with a mean follow-up of 14.7 years, showed that patients with normal blood pressure values (120-129/80-84mmHg) had a slightly higher risk compared to patients with optimal values (<120/80 mmHg) of suffering cardiovascular or renal events upon reaching old age [6], the latter being a complication with a high negative impact both for the patient and for the health services [7]. In Mexico, primary care in patients with SAH and its comorbidities is performed by the family physician [8], being able to solve the vast majority of the health problems of the population with a preventive and educational approach from the systemic and social point of view [9]. An educational strategy is the set of plans or actions focused on a group of people in order to achieve a certain objective, after the acquisition of knowledge that allows the resolution of a problem [10].

A study that carried out an educational strategy in family physicians in Mexico, based on clinical cases and theoretical questions to assess the clinical aptitude of nephropathy in diabetic patients, presenting 8% of family physicians with adequate diagnostic clinical aptitude [11]. Another study reports a significant level of knowledge in family physicians using participatory techniques, questionnaires, and presentations in the management of SAH as an educational intervention strategy [12]. In the Decentralized Administration Operative Organ (O.O.A.D.) of the D.F. North of the I.M.S.S., an indicator that measures clinical-diagnostic-therapeutic congruence in comprehensive care for patients with arterial hypertension is implemented, called MF15 [13] created as a result of the series of procedures for the supervision of health services within the I.M.S.S [14]. The objective of the study was to evaluate the adherence of the clinical-diagnostic-therapeutic congruence of SAH to an educational strategy (MEJORAMED) in family physicians during a period of 5 months at the Family Medicine Unit (U.M.F.) No. 20 Vallejo.

## Materials and Methods

### Study Design

It was a quasi-experimental design of a comparative group before and after the intervention, analytical, longitudinal (duration of 5 months), prospective, carried out in 20 family physicians.

### Scope and Period of Study

This study was conducted in the U.M.F No. 20 Vallejo of the Decentralized Administrative Operation Body (O.O.A.D.) of the North Delegation of the Federal District (D.F. North) of the I.M.S.S., in the period November 2022 to March 2023.

### Participants

After accepting the informed consent, 20 family physicians were considered non-probabilistically for convenience; 10 from the morning shift (control group) and 10 from the afternoon shift (intervention group), assigned to the U.M.F. No. 20 Vallejo of the IMSS. With inclusion criteria: having seniority in the position > 5 years; exclusion criteria: being non-family doctors, general practitioner; Elimination criteria: who do not meet 100% attendance at academic sessions and who abandon the study on their personal initiative.

### Variables

The measurements that were considered as independent variables were Age: time lived by a person expressed in years [15] (Categorized in years); Sex: male or female organic condition of human beings [15] (Categorized: 1. Male, 2. Female); Family Physician: Health professional with medical training who has completed a postgraduate degree obtaining the title of specialist in family medicine [8]. (Categorized: 0. Control group, 1. Intervention group); Maximum degree of studies: last level of study that the doctor has completed and accredited regarding his academic training (Categorized: 1. Specialty, 2. Master's); Training in arterial hypertension: level of knowledge that the doctor has about arterial hypertension (Categorized: 1. Diploma, 2. Institutional courses); Work shift: hours during which the worker's work activity is carried out [16] (Categorized: 1. Morning, 2. Evening); Seniority in the job position: Time that a worker has remained in his job position (Categorized in years). The MEJORAMED educational strategy was considered as an intervention variable; set of plans or actions focused on Family Physician personnel in order to achieve modifications in the elements and items mentioned in the MF15 of arterial hypertension reflected in the electronic clinical record. Said strategy is evaluated by means of a pre- and post-educational intervention knowledge questionnaire, with a score of 0-10 points, based on the content of the Integral Attention Protocol (IAP) guide for arterial hypertension.

The MF15 of arterial hypertension was named as the dependent variable: an indicator that measures clinical-diagnostic-therapeutic congruence in comprehensive care for patients with arterial hypertension used in the Decentralized Administration Operative Body (O.O.A.D.) D.F. North of the I.M.S.S [13] including the UMF 20 Vallejo, evaluates parameters that range from the anamnesis, directed and specific physical examination, request for auxiliary studies and integration of a diagnosis and treatment, as well as identification of complications of the pathology, consists of 35 evaluation items with a

dichotomous YES/NO response and 5 items to color an "X" if you comply with said item registered in the medical note, giving a final result of 0-100% , if it is >80% there is adequate attachment, with <80% it indicates inadequate attachment [14].

## Procedure

**MEJORAMED Educational Strategy Model:** Prior to the educational strategy, an evaluation of the medical notes of the participants of both groups was carried out using the MF15 indicator of arterial hypertension at Time 0, the selection of medical notes through the electronic clinical record was carried out using the randomization formula in the Excel program from November to March, without considering Saturday and Sunday, locating the diagnosis through the CIE-10 of arterial hypertension (I-10). With the evaluation of the parameters established in the indicator, a score of 0 -100% is obtained as a result. In the control group, the IAP guide for arterial hypertension was provided on a monthly basis and the medical notes were evaluated according to the MF15 indicator of arterial hypertension during the following months established for follow-up. In the intervention group, the MEJORAMED educational strategy was used, which consists of 6 academic sessions called A - F during a period of 5 months, in which different techniques were performed. Carrying out a detailed descriptive letter of the planning of each established session: in the first session

A. The educational strategy model was provided with the development and general structure of the study, as well as the application of the educational pre-intervention questionnaire based on the content. of the IAP guide for arterial hypertension. Second session

B. There was an academic presentation on the definition of arterial hypertension, epidemiological aspects (global, national and local), risk factors, the items contained by the MF15 indicator of arterial hypertension established by the I.M.S.S. as well as a knowledge quiz on these topics. Third session

C. There was an academic presentation on the clinical picture of arterial hypertension and comprehensive physical examination, analysis of clinical cases of situations attended at the first level of care, and a dialogue table for discussion of the case. Fourth session

D. There was an academic presentation on the diagnosis and comprehensive treatment of arterial hypertension, as well as a group evaluation of the MF15 indicator of arterial hypertension with its respective feedback. Fifth session

E. There was an academic presentation on complications of arterial hypertension and referral criteria at the second level of care, analysis of clinical cases related to clinical complications of this disease and a dialogue table for discussion. Sixth session

F. There was an academic presentation on special situations of arterial hypertension and the impact of an adequate clinical-diagnostic-therapeutic congruence on the management of arterial hypertension, as well as the completion of the educational post-intervention questionnaire. Finally, a final evaluation of the MF15 indicator of arterial hypertension was carried out at Time 1 at 5 months of follow-up in both study groups, taking as an outcome the global rating of each evaluation of the MF15 indicator at the times carried out, with or without the presence of adequate adherence (Figure 1).
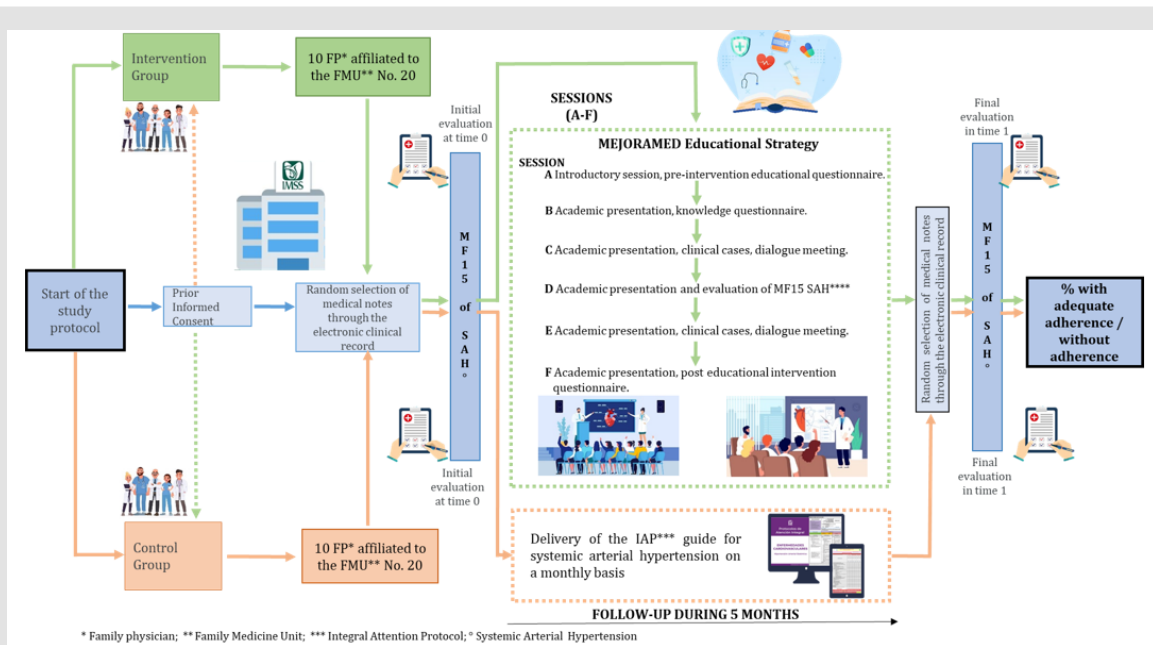


**Figure 1:** MEJORAMED Educational Strategy Model.

**Ethical and Legal Aspects:** The data is found in a registry endorsed by the I.M.S.S. Health Research and Ethics Committee.

**Statistical Methods:** Due to the size of the sample, it was carried out in a non-probabilistic way for the convenience of family physicians who met the inclusion criteria and were integrated into the study, using the usual techniques of descriptive statistics. In the comparison of the control and intervention groups for the variables age, sex, working time, shift, highest level of studies, training in arterial hypertension and adherence to the MEJORAMED strategy, the Pearson Chi-square test was used; the scores obtained pre/post MEJORAMED evaluation, the Wilcoxon signed rank test was used for related samples, with 95% confidence intervals (CI); In the 5 measurements of adherence to MEJORAMED in the 20 family physicians, using percentiles with 95% confidence intervals and compared in the intervention and control group, using the Kruskal-Wallis H statistical test; all tests with a p value ≤ 0.05 as statistically significant. If there is a significant difference in some of the follow-up times (Basal – 5 months) and adherence in family physicians, it is considered to use a statistical prediction model taking adherence > 80% as the cut-off point. The analyzes will be carried out in SPSS version 26.

## Results

In the present study of the 20 family physicians, 10 belong to the control group and 10 to the intervention group; the female sex predominated with 90.0% (n = 9) vs 60.0% (n = 6) respectively, with a value of p = 0.121. For the age groups, ≥ 41 years predominated with 70.0% (n = 7) vs. ≤ 40 years 70.0% (n = 7), p = 0.074; Working time ≥ 10 years with 90.0% (n=9) vs. ≤ 9 years (n=9), p=0.000; Institutional courses of high blood pressure with 100% (n=10) vs. 90.0% (n=9), p= 0.305 (Table 1). The qualification obtained pre/post MEJORAMED evaluation in the intervention group (n=10) presented a value in the 50th percentile (Median) of 6.5/ 8.0, with 95% CI (0.000-0.259) value p = 0.01 (Table 2). The percentiles performed during the follow-up period (baseline - 5 months) of the MF-15 (0 - 100%) during the MEJORAMED strategy in family doctors (n=20) a median of 52% was obtained in the baseline measurement with 95% CI (0.000-0.139) p value = 0.04; second month 63% with 95% CI (0.000-0.139) value = 0.05; third and fifth month 66% with 95% CI (0.000-0.139) p = 0.01 and p= 0.00, statistically significant (Table 3). The percentiles performed during the follow-up period (baseline - 5 months) of the MF-15 (0 - 100%) during the MEJORAMED strategy in the family physicians of the control group (n=10) and intervention group (n=10) a median of 56.25% vs. 46.9%; second month 56.25% vs. 67.18% ; third month 55.46% vs. 67.96%; and fifth month 58.59% vs. 72.65%; respectively, with p value ≤ 0.05, statistically significant (Figure 2).
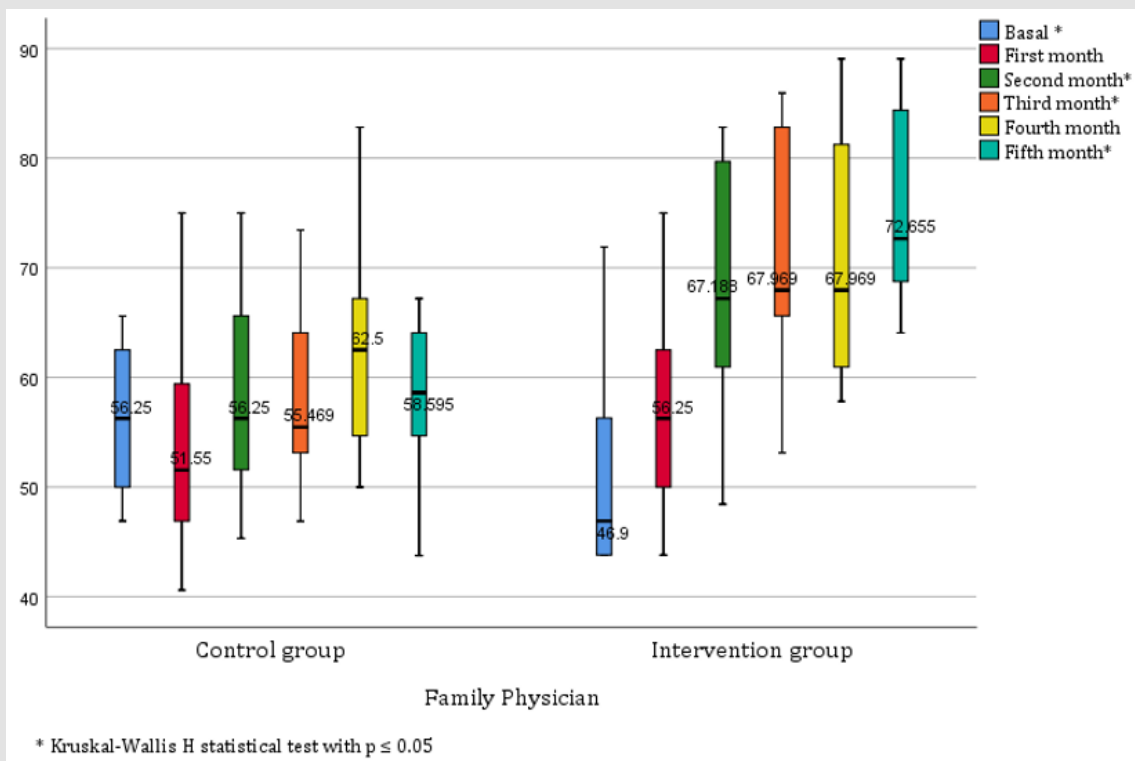


**Figure 2:** Percentailes in the adherence to MEJORAMED in 5 measurements of the Family Physician of the U.M.F.No.20 Vallejo of the I.M.S.S.

**Table 1:** Demographic characteristics of the Family Physician of control and intervention of the U.M.F. 20 Vallejo of the I.M.S.S.

| Characteristics | Control N=10 | Group % | Intervention N=10 | Group % | P-Value* |
|---|---|---|---|---|---|
| Sex | | | | | |
| Male | 1 | 10.0 | 4 | 40.0 | 0.121 |
| Female | 9 | 90.0 | 6 | 60.0 | |
| Age | | | | | |
| ≤ 40 years | 3 | 30.0 | 70 | 70.0 | 0.074 |
| ≥41 years | 7 | 70.0 | 3 | 30.0 | |
| Working time | | | | | |
| ≤ 9 years | 1 | 10.0 | 9 | 90.0 | 0.000 |
| ≥ 10 years | 9 | 90.0 | 1 | 10.0 | |
| Workday | | | | | |
| Morning | 10 | 10.0 | 0 | 0 | 0.000 |
| Evening | 0 | 0.0 | 10 | 100 | |
| Maximum degree of studies | | | | | |
| Specialty | 6 | 60.0 | 9 | 90.0 | 0.121 |
| Master's Degree | 4 | 40.0 | 1 | 10.0 | |
| High Blood Pressure training | | | | | |
| Diplomat | 0 | 0 | 1 | 10.0 | 0.305 |
| Institutional courses | 10 | 100 | 9 | 90.0 | |

Note: *p<0.05 Pearson's Chi-square test

**Table 2:** Qualification obtained in the pre/post- evaluation MEJORAMED of the family Physician U.M.F. 20 Vallejo of the I.M.S.S.

| Evaluation | N | 25 | Percentiles 50(Median) | 75 | Wilcoxon signed rank test (Z)[a] | 95% of confidence Lower | Interval Upper | P-Value** |
|---|---|---|---|---|---|---|---|---|
| Pre- Evaluation[O] | 10 | 6.0 | 6.5 | 7.0 | -2.825 | .000 | 0.259 | 0.01 |
| Post- Evaluation[*] | 10 | 7.9 | 80 | 8.5 | | | | |

Note: OBaseline evaluation (Zero time); *Final evaluation (5 month); **Wilcoxon Signed rank test for related samples with P≤0.005; aIt is based on negative ranges

**Table 3:** Percentiles in the adherence MEJORAMED in 5 measurements of the family Physician of the U.M.F. No.20 vallejo of the I.M.S.S.

| Measurements | N | 25 | Percentiles | 75 | Kruskal- Wallis H* | gl | 95% confidence Lower | Interval Upper | P-Value* |
|---|---|---|---|---|---|---|---|---|---|
| Basal | 20 | 47 | 52 | 59 | 4.077 | 1 | .000 | 0.139 | 0.04 |
| First month | 20 | 48 | 53 | 62 | 0.421 | 1 | .441 | 0.859 | 0.52 |
| Second month | 20 | 53 | 63 | 73 | 3.727 | 1 | .000 | 0.139 | 0.05 |
| Third month | 20 | 55 | 66 | 72 | 7.659 | 1 | .000 | 0.139 | 0.01 |
| Fourth month | 20 | 58 | 64 | 79 | 2.409 | 1 | .000 | 0.306 | 0.12 |
| Fifth month | 20 | 58 | 66 | 74 | 12.421 | 1 | .000 | 0.139 | 0.00 |

Note: *Kruskal- Wallis H statistical test with p≤0.05.

The percentage of adherence in family doctors in the control and intervention group of the MF-15 (> 80%) of the MEJORAMED strategy was 0 (0%) vs. 4 (40%), respectively with a p value = 0.025, statistically significant (Table 4). A statistical prediction model was used, comparing the adherence to the MEJORAMED strategy in each of the FPs of both groups (IG vs. CG) in the 4 significant months of follow-up (baseline, second, third and fifth month) in relation to their percentage level obtained (MF–15 from 0 to 100%), representing 4 IG FP with adherence > 80% in the second, third and fifth month, 6 IG FP with 70-90% in the fifth month of follow-up. Of the CG, only one FP reached 75% of the percentage in the second month of follow-up, the rest of the FP is <70% in all months (Figure 3).

**Table 4:** Contingency table of adherence to MEJORAMED in two groups of family Physician from the U.M.F. No.20 vallejo of the I.M.S.S.

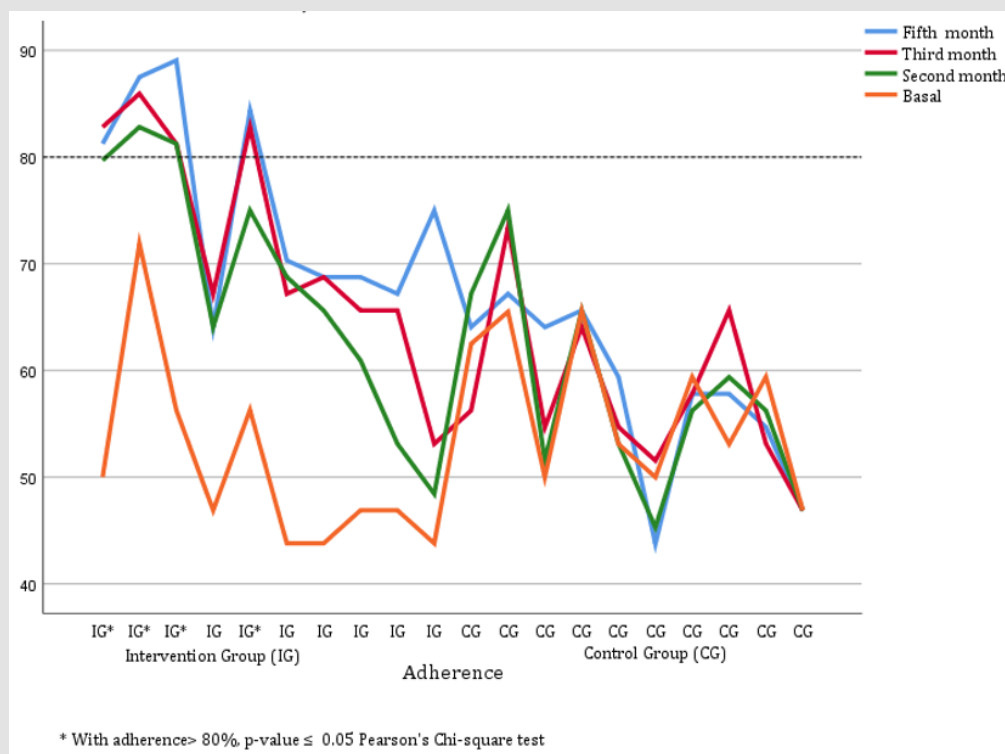| | | | Without adherence 0-79% | With adherence >80% | Valor p* |
|---|---|---|---|---|---|
| Family Physician | Control | Count | 10 | 0 | 0.025 |
| | Group | % Within Family Physician | 100.0% | 0.0% | |
| | Intervention | Count | 6 | 4 | |
| | Group | % Within Family Physician | 60.0% | 40.0% | |
| | Total | Count | 16 | 4 | |
| | | % Within Family Physician | 80.0% | 20.0% | |
| | | % of the total | 80.0% | 20.0% | |

Note: *P<0.05 Pearson's Chi-Square test



**Figure 3:** Comparison of adherence to MEJORAMED in two groups of Family Physician from the U.M.F No.20 Vallejo of the I.M.S.S.

## Discussion

The intervention strategy MEJORAMED demonstrated to obtain better values in the median of the MF-15 of SAH in the IG of family physicians compared to the CG during the 2nd, 3rd and 5th month of follow-up, contributing to improve adherence up to 40% of patients. IG family physicians, statistically significant. Considering that the SAH MF-15 contains items for evaluation of physical examination, diagnosis, and treatment; In other educational interventions, no statistically significant difference was found in the clinical practice of physicians when evaluating the prescription of medications [17]. The 5-month follow-up time in the study demonstrated significant changes in the adherence of family physicians (>80%) to the SAH MF-15 at the 2nd, 3rd, and 5th month follow-up; considering the time of educational follow-up an influence to present these changes; An educational intervention study carried out in nursing staff on changes in attitudes about evidence-based practice shows that follow-up time influences a statistically significant positive change at eight weeks (2nd month) of follow-up [18]. 18 Education interventions that have shown significant changes in health personnel (nursing) consider the intervention of experts and methodologists to develop the intervention, this being an online modality intervention [19]; however, in the MEJORAMED,

face-to-face intervention, required the experience of medical personnel with administrative and educational positions to consider the completion times of the MEJORAMED in acceptable conditions for both groups (IG and CG).

It is important to consider MEJORAMED in the IG, carrying out different types of activities focused on the items evaluated by the MF15 indicator of arterial hypertension based on the information obtained from the Comprehensive Care Protocol (PAI) of systemic arterial hypertension by exposing its content through of slides, brainstorming among the group members, periodic questionnaires of the content seen in the session, which resulted in an improvement in the score obtained by the MF15 indicator, which was simultaneously reflected in the quality of attention to their patients. Which allows primary care as an interface between patients and the health care system, showing associations with better health outcomes [20]. Within the significant follow-up of the MEJORAMED in the third month of follow-up, it culminates with the best qualification record and in the fifth month of follow-up observing an improvement in items that the SAH MF-15 evaluates with aspects ranging from the interrogation of signs and specific symptoms such as visual acuity, claudication, vasospasmic symptoms, oral health, exercise, and salt intake in the diet to items within the physical examination such as fundus examination, jugular venous distention, Homans sign, and palpation of peripheral pulses. Another study refers to a statistically significant improvement in the effectiveness of the treatment of family physicians carried out in Croatia in 2019, considering family medicine as the cornerstone in the control of arterial hypertension [21].

## Limitations

The present study could not be carried out in a randomized manner in the IG and CG due to the little flexibility of having the working hours that the FPs have to adjust them to the training schedules, so a hybrid intervention could have been implemented in MEJORAMED to achieve adequate management of groups in a randomized manner.19 The motivation of the doctors or the affection of the teacher who carried out the MEJORAMED strategy were not evaluated, being important to consider in the 4 FP that presented adequate adherence, given qualitative studies have shown a positive effect on intervention strategies [22]. In comparison of the intervention groups, the support, cognitive and motivation factors show that teachers play an important role in the teaching and learning processes in self-regulation as an effect of educational intervention [23].

## Conclusion

The results of the MEJORAMED strategy show that the objective of adherence to the SAH MF-15 in family physicians was statistically significant with a 5-month follow-up at the U.M.F. No. 20 Vallejo of the I.M.S.S. The implementation of MEJORAMED in arterial hypertension favors improving the indicators evaluated by the department heads

of the U.M.F. of the I.M.S.S. Changing the doctor's perspective regarding the care they provide to the hypertensive patient, reflecting in the comprehensive care given to the patient with better control and follow-up of SAH, in addition to the prevention of complications and decreased patient mortality; that in future follow-up studies these results could be reflected in a reduction in expenses considering that they are studies of the randomized clinical trial type.

## Contribution of the Authors

To all the researchers of the original article for obtaining the data source that allowed the successful completion of this research study. All authors of this study approve the publication of this paper.

## Conflict of Interests

The researchers of this article information declare that there is no economic interest or conflict of interest.

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