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Original article

## **The profile farmacoterapéutico like key element in the skilled pharmaceutical attention**

The pharmacotherapeutic profile is To key element in specialized pharmaceutical care

Or profile farmacoterapêutico like element chave na atenção farmacêutica skilled

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### **SUMMARY**

The main adults constitute a populational group with predominance of chronic illnesses, between these stand out the hipertensión arterial; cardiopathy isquémica; cardiac insufficiency and bronconeumonía bacteriana. Of here that for this population result useful the development of a profile farmacoterapéutico to optimise the farmacoterapia that receive. It realised this investigation with the aim to diagnose the impact that have the profiles farmacoterapéuticos in the services of skilled pharmaceutical attention in patient main adults. It realised an observational study, prospectivo of some intentional samples of profiles farmacoterapéuticos



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registered in the municipality Manzanillo, province Granma, Cuba, in which they participated 50 main adults, during the months of March to May of the 2024. They predominated main or equal patients of 70 years of the feminine sex, the 54 % of the patients was polimedicado, the 44 % consumed between 5-8 medicines. The majority of the patients presented 4 illnesses by which went reasons of frequent income. They detected 5 treatments and 230 negative results associated to the medication. It predominated the treatment 5 by his efficiency and security. It is indispensable the integration of a chemist empowered in the team multidisciplinario of health, with a pharmaceutical intervention that allow to identify conveniently problems related with the medicines like farmacological interactions and errors in the medication, ensuring the effectiveness of the medicines.

**Key words:** main Adult; Profile farmacoterepéutico; Problems related with the medicines.

#### **ABSTRACT**

Older adults constitute To population group with to predominance of chronic diseases, among which hypertension, ischemic heart disease, heart failure, and bacterial bronchopneumonia stand out. Therefore, developing to pharmacotherapy profile for this population is beneficial to optimize the pharmacotherapy they receive. This research was conducted to diagnose the impact that pharmacotherapy profiles have on specialized pharmaceutical care services for older adult patients. An observational, prospective study was carried out with intentional samples of pharmacotherapy profiles recorded in the municipality of Manzanillo, Granma province, Cuba, involving 50 older adults during the months of March to May 2024. Predominantly, patients aged 70 years and older were female; 54 % of the patients were receiving multiple medications, while 44 % consumed between 5-8 medications. Most patients presented four diseases, leading to frequent hospitalizations. Five treatments and 230 negative outcomes associated with medication were detected. Treatment 5 was predominant due to its efficacy and safety. The integration of To qualified pharmacist into the multidisciplinary health team is essential, with pharmaceutical interventions that allow for the timely identification of



medication-related problems, such as drug interactions and medication errors, thereby ensuring the effectiveness of medications.

**Keywords:** Older adult; Pharmacotherapy profile; Medication-related problems.

## RESUMO

Older adults constitute a population group with predominance of chronic diseases, among which stand out arterial hypertension, ischemic cardiopathy, cardiac insufficiency and bacterial pneumonia. Therefore, for this population, the development of a pharmacotherapeutic profile is useful to optimize the pharmacotherapy that they receive. This research was carried out with the aim to diagnose or impact that the pharmacotherapeutic profiles have in pharmaceutical services for elderly patients. It was carried out a study observational and prospective with intentional samples of pharmacotherapeutic profiles registered in the municipality of Manzanillo, province of Granma, Cuba, in which 50 older adults participated, during the months of March to May of 2024. Predominated patients with 70 years or more of age, of the female sex; 54 % of the patients were polymedicated, and 44 % consumed between 5 to 8 medicines. For the majority of patients, 4 diseases were presented, which led to frequent hospitalizations. 5 treatments were detected and 230 negative results associated with the medication. The treatment 5 predominated due to its efficacy and safety. It is indispensable the integration of a qualified pharmacist in the multidisciplinary instrument of health, with a pharmaceutical intervention that allows to identify precociously problems related to medicines, as pharmacological interactions and errors in medication, guaranteeing the effectiveness of medicines.

**Palavras-chave:** Idoso; Profile farmacoterapêutico; Problems related to medicines.

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## Introduction

The skilled pharmaceutical attention (AFE) is the professional act chemist to provide one or more medicines to a patient, generally like answer to the presentation of a medical prescription. In this act, the chemist educates, informs and orients essentially to the patient but also to the doctor, to the nurse and to other personnel related on the suitable use of said medicines. One of the main committed inside the pharmaceutical attention is to promote the safe use of the medicines.<sup>(1)</sup>

The profile farmacoterapéutico (PFT) has turned into a fundamental pillar in the system of health, especially in the management of farmacological treatments complexes. In this context, surfaces like an essential tool that allows to the professionals of the health evaluate and optimise the therapy medicamentosa of the patients. The PFT includes information detailed on the medicines that a patient is using, as well as his historial medical, what facilitates the identification of possible interactions, adverse effects and the adherencia to the treatment. However, in spite of his importance, the implementation of the PFT in the clinical practice enfrenta diverse challenges.<sup>(2)</sup>

One of the social problems more notable is the fault of effective communication between the different professionals of the health, what can carry to an attention fragmentada and to a handle unsuitable of the treatments. This translates in an increase of complications in the patients, as well as in an additional load for the system of health. Besides, the scarce specific training in farmacoterapia that receive some professionals limits his capacity to use the PFT of effective way.<sup>(3)</sup>

The PFT constitutes an instrument of basic work for the clinical chemist as it allows monitorizar the effectiveness of the therapies medicamentosas, determine the possible causes that prevent to achieve the results expected and take decisions on the change or adecuación of the



farmacoterapia applied.<sup>(3)</sup> Although the profile farmacoterapéutico is recognised internationally his implementation in Cuban institutions is irregular with scarce documentation on his impact in institutions of the Cuban public health.

By the before exposed decided realise this investigation with the aim to diagnose the impact that have the profiles farmacoterapéuticos in the services of skilled pharmaceutical attention in patient main adults that attended to a query in the room of Geriatrics of the hospital Celia Sánchez Manduley and that belong to the Policlínico #2 municipality Manzanillo, province Granma.

Through this analysis, expects contribute to a better understanding of the paper of the PFT in the handle of the pharmacological treatments and his impact in the public health.

## Methods

It realised a study prospectivo for the description and analysis of problems related with the medicines identified from a query in the room of Geriatrics of the hospital Celia Sánchez Manduley and in the Policlínico #2 (when it gives him the high doctor) to that belong the patients of the municipality Manzanillo, province Granma, Cuba, during the months of March to May of the 2024.

It was conformed a sample intencional (no probabilistic) of 50 profiles farmacoterapéuticos of patients, following the following criteria:

Criteria of inclusion: profiles farmacoterapéuticos (PFT) corresponding to main patients of 60 years of age, of both sexes, diagnosed with 4 pathologies hipertensión arterial (HPA), cardiopathy isquémica, cardiac insufficiency and bronconeumonía bacteriana.

Criteria of exclusion: profiles farmacoterapéuticos inadecuadamente documented, (incomplete because of the interruptions of the follow-up, owing to the mobility of the patients, errors in the



filled up of the profiles from the interviews realised and those with fail in the documentation of the consent informed of the patients).

These patients received queries of follow-up farmacoterapéutico, to which accessed once realised the preliminary evaluation of his needs farmacoterapéuticas in the moment of the dispensación and the broadcast of his corresponding consent of participation.

Consent informed: the sanitary professionals informed to the patient on what comported his participation in the study, ensuring that they understood the information before awarding his consent. The patient received a copy of the consent informed (annex 1) that previously signed. Anytime they could abandon the study withdrawing his consent.

Confidentiality of the data: it guaranteed the protection of the personal privacy and the confidential treatment of the personal data that resulted of the activity of investigation according to the had in the Law Data protection.

Looking for have a global vision, the clinical chemist employs a profile farmacoterapéutico, that allow to identify problems related with the medicines (PRM) and can affect the efficiency of the treatment.<sup>(4)</sup> The profile farmacoterapéutico materialises by means of a register or model that includes the fundamental clinical data of the patient eat: the demographic; diagnostic of the illnesses; drugs that him recetaron and has come taking (farmacological interactions); type of nutrition (interactions with the medicines).

The sample of patients characterised through variables biosociales (sex, age) and farmacoterapias (quantity of medicines consumed). The systematic of identification and classification of the PRMse realised taking into account the procedure normalised of work for the service farmacoterapéutico (SFT) to the main adult and the criteria of medication potentially inappropriate (MPI) for this group of patients, both instruments were validated for the Cuban context by Ortega<sup>(5)</sup> from the evaluation by experts of the international criteria more known (Beers, STOP-START and Index of adecuación of medicines) and his contextualización to the activity asistencial Cuban.<sup>(6)</sup>



In regard to the errors of prescription, considered MPI to that medication in which the risk to produce adverse effects is upper to the clinical profit, especially when there is evidence of the existence of therapeutic alternatives safer and/or effective.

They were identified two categories of MPI: MPI1 – potentially inappropriate Medication, independent of the diagnostic or clinical condition and MPI2 – potentially inappropriate Medication, dependent of the diagnostic or clinical condition.<sup>(5)</sup>

MPI1 – Included those drugs or groups of drugs that have to be avoided or used with caution in the elderly, independently of his clinical condition, since they exist evidences that the potential risk of adverse reactions surpasses the profits that contributes his use.

MPI2 – Included to those drugs or groups of drugs that have to be avoided in patients with determinate pathological antecedents, in which the evidence has showed a risk increased of adverse reactions.

In the evaluation of the PRM of adherencia, applied the questionnaire Morisky-Green-Levine to evaluate the adherencia therapeutic, considering two levels: “adherencia total” and “no adherencia”.<sup>(7)</sup>

The evaluation of the RAM realised considering the application of the algorithm of Karch and Lasagna for each patient, taking into account the documentation in the profile farmacoterapéutico of the undesirable effect for the suspicious medicine and the corresponding spontaneous notification of the RAM, as the established in the Manual of Norms and Procedures of Farmacovigilancia valid in Cuba.

Processing of the information: it realised through a statistical program Statgraphics Centurión, version XV.

## Results



It worked with the 100 % of the profiles farmacoterapéuticos, this analysis was realised by the clinical chemist.

The age average of the patients was of 74,3 years ( $Of \pm 8,4$ ) and predominated the ones of the feminine sex (62,0 %). In relation with the quantity of medicines consumed, the 54 % of the patients was polimedicado, between them the 44 % consumed between 5-8 medicines and the 10 % consumed nine or more. (Table 1,2)

**Table 1:** Age average of the patients.

Age average of the patients	Patient quantity	%
Patients with 74 years	40	80
Patients between 60 – 74 years	5	10
Main patients 74 years	5	10
Total of patients	50	100

**Table 2:** Sex of the patients.

Sex of the patients	Quantity of patients	%
Feminine sex	31	62
Masculine sex	19	38
Total of patients	50	100

It is important to stand out that the treatment of illnesses like the hipertensión arterial, cardiopathy isquémica, cardiac insufficiency and bronconeumonía bacteriana has to be realised by a doctor, the one who will evaluate each case of individual way and will prescribe the most suitable treatment. However, the types of treatments that used of general way are the following:

1. Hipertensión Arterial (HAS):

- Inhibidores Of the ECA (like lisinopril or enalapril).





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- Bloqueadores Of the receptors of angiotensina II ( losartán).
  - Diuréticos (hidroclorotiazida, clortalidona).
  - Betabloqueantes (metoprolol).
  - Antihipertensivo (amlodipino) bloqueador Of the channels of the calcium.
  - Nifedipino (bloqueador Of channels of calcium of the type dihidropiridina).

## 2. Cardiopathy isquémica (CI):

- Aspirin. To warn events trombóticos.
- Estatinas (atorvastatina, to control the cholesterol).
- Betabloqueantes (carvedilol).
- Clopidogrel. It blocks the activation plaquetaria mediated by disofato of adenosine (ADP) administered by oral road, that inhibits the training of clots.
- Inhibidores Of the ECA.

## 3. Cardiac insufficiency (IC):

- Diuréticos (Like furosemida) to handle the retention of liquids.
- Inhibidores Of the ECA.
- Antagonists of the aldosterona (espironolactona).
- Betabloqueantes (bisoprolol).
- Dinitrato Of isosorbida. Reductor Of the demand of oxygen by the myocardium)
- Digoxina Is a glucósido cardiotónico, used like agent antiarrítmico, acts, like direct effect, inhibiting the bomb  $\text{Na}^+ \text{K}^+ \text{ATPase}$  in the heart, diminishing the exit of  $\text{Na}^+$  and increasing the levels of  $\text{Ca}^{+2}$  intracellular.

## 4. Bronconeumonía bacteriana (BB):



- Antibiotics. The election of the antibiotic will depend of the causal agent; for example, amoxicilina, azitromicina oceftriaxona are common.
- Broncodilatadores (Like salbutamol ampolleta 0,5 mg/mL) if there is respiratory difficulty.

5.- Treatment for (HAS); (CI); (IC); (BB). For patients hospitalizados.

- Ceftriaxona. Antimicrobic -- beta-lactámico -- cefalosporinas -- 3ra generation.
- Salbutamol (ampolleta 0,5 mg/mL) Broncodilatador -- beta-simpaticomimético.
- It roasts (81 mg) Antiagregante plaquetario, inhibidores enzymatic, inhibidores of ciclooxigenasa: they inhibit the synthesis of tromboxano.
- Clopidogrel (75 mg) Antiagregante plaquetario, inhibidores of receptors inhibidores of receptors of ADP.
- Atorvastatina (20 mg) Hipolipemiente, is a drug of the family of the estatinas used to diminish the levels of cholesterol in blood and in the prevention of cardiovascular illnesses. Also it stabilises the platelets and warns the embolism by means of mechanisms anti-inflammatories.
- Espironolactona (25 mg tableta) Diurético ahorrador of potassium.

Drugs that have come taking the patients: nifedipino, atenolol, ibuprofen, naproxeno and captopril, carvedilol.

They detected a total of 230 PRM, with an average of 4,6 (Of±1.1) PRM by patient. They predominated the errors in the prescription with a 40 %, followed of the errors in the administration with 37 % and the adverse reactions medicamentosas 14,3 %, as it shows in the table 3.

Between the errors prescription prevailed the related with the interaction drug-drug (13,9 %), for example those that occur between acid acetilsalicílico-enalapril, amlodipino-hidroclorotiazida, nifedipino-atenolol, ibuprofen-atenolol, acid acetilsalicílico- furosemda,



clopidogrel-furosemida, atorvastatina-amlodipino, nitrosorbide-furosemida, espironolactona-digoxina between others. It followed him the potentially inappropriate medication (MPI) with a 11,3 % between both (MPI1 and MPI2). It predominated the MPI independent of the diagnostic or clinical condition (MPI1) with a 9,1 % related with the use of medicines like the ibuprofen, naproxeno, nifedipino, sour acetilsalicílico and digoxina. (Table 3)

**Table 3:** PRM in main adults with HTA, cardiopathy isquémica, cardiac insufficiency and bronconeumonía bacteriana.

Type of PRM	Description of the PRM	Quantity of PRM	
		Nº	%
Errors of prescription	Omission of the prescription	5	2,2
	Unsuitable length of the treatment	3	1,3
	Individualisation of the treatment not taking into account the age	3	1,3
	The indication is unsuitable	5	2,2
	The dose prescribed by the doctor is not appropriate for elderly is unsuitable	18	7,8
	MPI1	21	9,1
	MPI2	5	2,2
	Interaction drug-drug	32	13,9
	Subtotal	92	40
Errors of dispensación	Insufficient proportionate information by the chemist about the use of the medicine	9	3,9
	Subtotal	9	3,9
Errors of administration	Interaction feed-medicine (without responsibility of the prescripctor)	37	16,1
	Interaction drug-drug by conjoint administration of medicines	20	8,7
	No adherencia to the treatment	27	11,7
	Change of the road of administration	1	0,4
	Subtotal	85	37,0
Adverse reaction to medicines	Causal relation with a problem of health (undesirable effect)	33	14,3

	Subtotal	33	14,3
Others	No availability of medicines in the service of pharmacy	11	4,8
	Subtotal	11	4,8
Total		230	100,0

Source: Profile farmacoterapéutico

The errors of administration more frequent were the interaction feed-medicine with the 16,1 % associated to the consumption of the medicines antihipertensivos (captopril, diuréticos, bloqueadores of the channels of calcium) and the no adherencia to the treatment with the 11,7 % of the PRM detected. One of the groups of medicines that more incidió in this last problem was the use of the diuréticos, between which were the clortalidona, the hidroclorotiazida and furosemida. They predominated the 27 no adhered patients to the treatment. The main reasons that comported to these results were the forget and the apparition of undesirable effects.

**Table 4:** adverse Reactions medicamentosas and medicines involved in the treatments of the main adults.

Adverse reactions	Medicines involved	Frequency of apparition	
		Nº	%
Poliuria	Omission of the prescription	3	9,1
Ardour in epigastrio	Aspirin	2	6,1
Buccal dryness	Hidroclorotiazida, clortalidona, espironolactona, aspirin, amlodipino, furosemida	15	45,4
Somnolencia	Amlodipino	1	3,0
Taquicardia	Captopril, nifedipino	2	6,1
Edema in inferior members	Amlodipino	2	6,1
Dry cough	Captopril, enalapril	4	12,1
Bradycardia	Atenolol, carvedilol	2	6,1
Blurred vision	Enalapril	1	3,0
Pain in epigastro	Naproxeno	1	3,0
Total		33	100

Source: Profile farmacoterapéutico

Another of the PRM detected was the apparition of RAM with a total of 33, that represented the 14,3 %. The buccal dryness (45,4 %), dry cough (12,1 %) and poliuria (9,1 %) were the most



frequent, as it shows in the table 2. To the avaluar the causality predominated the likely reactions (57,6 %), followed of the possible (42,4 %).

## Discussion

The study collects the profile farmacoterapéutico carried out in a query in the room of Geriatrics of the Hospital Celia Sánchez Manduley and Policlínico #2 (when it gives him the high doctor) to that belong the patients of the municipality Manzanillo, province Granma, Cuba.

The main adults have a high risk to present PRM due to the fact that to this age occur physiological changes that drive to alterations farmacocinéticas and farmacodinámicas.<sup>(8)</sup> These results coincide with other studies in this populational group, by the fact that these patients have several pathologies, main vulnerability and number of medicines prescriptos, that comport to interactions medicamentosas.<sup>(6)</sup>

The feminine sex was the gender that predominated could be related first of all because in Cuba, the hope of life is upper for the women main adults that for the men and exists a main prevalencia of HTA, cardiopathy isquémica, cardiac insufficiency and bronconeumonía bacteriana in patients of this sex, related with the decrease of the oestrogens in the women posmenospáusicas.<sup>(9)</sup>

In the main adults diagnosed the bronconeumonía bacteriana like respiratory infection more frequent, similar result to the found by Rojas in an investigation realised in Peru, that poses that the changes in the immunological answer and in the respiratory physiology are own of the process of aging and do them more liable to develop this pathology.<sup>(10)</sup> These patients also were affected by crisis hipertensiva, cardiopathy isquémica, cardiac insufficiency what coincides with studies that show that the chronic illnesses no transmisibles are the main cause of hospitalisation in the main adults. These reasons have motivated the development of several investigations of pharmaceutical attention in this populational group.<sup>(11)</sup>



The polimedicación described saves relation with the multiple chronic illnesses in these patients. It had a similar behaviour to the referred by Castro-Rodríguez JA *et al*,<sup>(12)</sup> those who express that the number average of medicines consumed daily by the patient dispensaries of age advanced oscillates between two and nine.

The high number of PRM found in the investigation also has been reportado by other researchers.<sup>(13)</sup> it Can attribute to that the illnesses are due to the polimedicación present in these patients, as the risk to develop some PRM increases proportionally with the number of medicines used.

The unsuitable prescription of medicines constitutes in the actuality a sanitary problem of big magnitude, that ocasiona the apparition of RAM, elder morbimortalidad, as well as an increase of the costs and excessive hospitable stays. The chemists play a vital paper in the detection and prevention of errors of prescription. His interventions reduce the costs of treatments and the potential damage of the serious errors of prescription. This problem described also was reportado by Ukoha-Kalu *et al*.<sup>(14)</sup>

The predominance of the interactions medicamentosas (IM) between the errors of prescription could explain by the main number of medicines that use these patients, as well as by the fact that the patients in a lot of occasions receive treatments prescribed by several specialists and these sanitary professionals many times desconocen all the medicines that his patients consume.<sup>(15)</sup>

The results of the present investigation coincided with the published by Yoana Leyva-López *et al* <sup>(16)</sup> regarding the predominance of the IM, the same were fundamentally between medicines used for afecciones of the cardiovascular system. Instead, there were differences with the quantity of IM detected, related possibly with the main number of patients that these authors included in his study.

The interactions between anti-inflammatories no esteroideos (AINE) and inhibidores of the enzyme convertidora of angiotensina (IECA) also were notified by Suryani D. *Et al* <sup>(17)</sup> those who



ensure that this combination can increase the risk of renal damage and hiperkalemia, especially in the patients geriátricos. The inhibition of the synthesis of prostaglandins caused by the AINE can cause retention of sodium, which could affect the affectivity of the therapy antihipertensiva and produce increase of the blood pressure<sup>(17)</sup>. On the other hand, the IECA improve the effect hipoglucemiante of the sulfonilureas, as they increase the sensitivity to the insulin, by what recommends in this study realise an adjust of dose of the hipoglucemiante.

Between the errors of administration predominated the interactions feed-medicine, which constitute a notable subject, that has main clinical significance in the elderly, however, has been little spread. The foods can affect in different degree the farmacocinética and the farmacodinamia of the medicines and of equal way, the medicines cause impact on the nutritional state, already was producing a nutritional deficiency or interfering in the process natural of the feeding (generating hambre or anorexia, vomits or nauseas, etcetera). These interactions, in addition to being bidirectional, can be from slight until very grave, and even mortal, by what do not have to subestimarse.

The simultaneous consumption of foods and diuréticos of the roasts of Henle, like the furosemida, delay the absorption and diminish the efficiency of east, instead, the espironolactona has to administer together with foods because it increases the biodisponibilidad, when delaying the vaciamiento gastric<sup>(18)</sup>. Regarding the IECA, the absorption increases when it administers with the empty stomach. The consumption of captopril and espironolactona with rich foods in salts of potassium like orange, banana, spinach and other vegetables of green leaves, have to avoid as they can appear cardiac arrhythmias associated to the increase of the levels plasmáticos of potassium.

The investigation realised by Jáuregui-Garrido et al <sup>(19)</sup> notifies the interactions between foods and drugs antihipertensivos like diuréticos, IECA and bloqueadores of the channels of calcium, something similar occurs with the investigation presented in this article.



On the other hand, the no adherencia therapeutic, another of the errors of administration detected, diminishes the therapeutic profits for the patient, which causes a deterioration of his clinical condition with the increase of hospitalisations and of expenses by cares of health. Of here that the adherencia to the medication is a crucial component in the treatment of chronic illnesses <sup>(20)</sup>. In the investigation, comported of similar way to the referred in the literature, which reporta that the prevalencia of no adherencia to the farmacological therapy in the main adults varies of the 38 to the 57 %. The low adherencia associates with the use of a big number of medicines, what could explain the results obtained when taking into account that the 54 % of the patients was polimedicado. The forget like reason of no adherencia to the treatment is because of the loss by heart that often it accompanies to the aging and the multiple occurrence illnesses, by what consume more drugs and during periods more prolonged of time that the youngsters. <sup>(21)</sup>

The investigation realised allowed to ascertain the high incidence of PRM in main adults hipertensos, a subject with limited studies in the Cuban sanitary surroundings for this type of patients, what denotes the need to develop actions to optimise the farmacoterapia, guaranteeing the suitable documentation of the information for the implementation of the plan of cares and the evaluation of results in the patient.

In this investigation describe the interactions between foods-medicine, which have main clinical significance in the main adults and do not have to subestimarse. The study had the limitation of the small size of the sample of patients.

The association between the apparition of the PRM and the variables studied can be due to the polifarmacia and variations farmacocinéticas and farmacodinámicas, added to the decrease in the capacity of answer of the organism of the patient main adults that predominated in the sample, besides influenced the pluripatología joined to the high number of medicines what comports to interactions, adverse reactions and errors in the medication; however, it does not





exist consensus in other studies that show significant differences between these variables and the identification of PRM.

The investigation evidenció that the most used treatment is number 5 for the main patients of 60 years of age, of both sexes, diagnosed with hipertensión arterial, cardiopathy isquémica, cardiac insufficiency and bronconeumonía bacteriana, by his efficiency, security, suitability and cost as it poses the criterion of selection of the medicines. The previous can be due to that the patients hospitalizados have more time to realise them a study of the diagnostic of the illnesses that present and propose a treatment with better results for the health of the patient.

## Conclusions

The study evidenció a high incidence of problems related with the medicines in main adults polimedicados of the Hospital Celia Sánchez Manduley con predominance of interactions medicamentosas and errors in the administration. The chronic illnesses and the pluripatología, together with changes farmacocinéticos own of the aging, increase the therapeutic risks in this group. It stands out the key paper of the chemist to improve the security and efficiency of the treatment. The limited sample is a restriction, but the results underline the need to optimise the management farmacoterapéutica in patients geriátricos.

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### **Statement of conflicts of interests**

The authors declpough that they do not exist conflicts of financial interest, personal or professionals that can have influenced in the realisation or interpretation of the results of the present study.

### **Contributions of the authors**

Conceptualización: Roberto Dieguez Rodríguez.

Curing of data:Roberto Lotti Bolaño, Augusto Berro Zamora.

Formal analysis: Annie Aranda Castle, Jorge Palm Cardona.

Investigation: Roberto Dieguez Rodríguez, Roberto Lotti Bolaño, Augusto Berro Zamora.

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Administration of the project: Roberto Dieguez Rodríguez.

Editorial – original draft: Roberto Dieguez Rodríguez, Annie Aranda Castle.

Editorial – review and edition: Jorge Palm Cardona.

## **Annex 1**



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Form of consent informed

I,.....

(Name and surnames)

-. I have read the leaf of information that has delivered me .

-. I have been able to do questions on the study.

-. I have received sufficient information on the study.

-. I have spoken with the: .....

(Names of the researchers)

-. I comprise that my participation is voluntary.

-. I comprise that I can withdraw me of the study:

1.- When it want to.

2.- Without having to give explanations.

3.- Without that this repercute in my medical cares.

Presto freely my compliance to participate in the study and give my consent for the access and utilisation of my data in the conditions detailed in the leaf of information.

Signature of the patient

Signature of the researcheris

Name:

Name:.....

Date:.....Date: .....



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