Research Article

Comparative Medication Histories Between Newly Hospitalized Hypertensive Patients and Hypertensive Outpatients in Cote D'Ivoire

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ABSTRACT

Introduction: The aim of medication history is to specify behaviors that can influence treatment and it is part of an aid to educational diagnosis and medication reconciliation. The objective of our study was to identify factors that may contribute to hospitalization, poor therapeutic response or the occurrence of drugs adverse events in newly hospitalized hypertensive patients (NHP) and hypertensive outpatients (HOP). Methods: A comparative descriptive cross-sectional study was carried out from January 2014 to June 2015 in hospitalization units (department of internal medicine at teaching hospital of Treichville and department of neurology at teaching hospital of Cocody) and ambulatory follow-up unit (medical consultation department at Heart Institute of Abidjan) with hypertensive patients in Cote d'Ivoire. A semi-directive interview was conducted with a questionnaire of medication history with the following factors: factors related to the understanding of treatment (FUT), factors related to the monitoring of the treatment (FMT), factors related to dietetic-hygienic measures (FDHM), factors related to the effects of treatment (FET), factors related to patients (FP). Results: A total of 50 NHP and 100 HOP were recruited. For FMT, regular monitoring by a physician [NHP (52%) *vs* HOP (64%); p= 0.00006)], occasional discontinuation of medication [NHP (54%) *vs* HOP (27%); p = 0.001], satisfaction with the mode and forms of drug administration [NHP (72%) *vs* HOP (88%); p = 0.014], monitoring by several doctors [NHP (24%) *vs* HOP (0%); p = 0.001] and the frequency of biological assessments [NHP (34%) *vs* HOP (87%); p= 0.001] differed significantly between both groups. Among factors related to hygienic-dietetic measures, only the presence of stress and anxiety differed significantly [NHP (88%) *vs* HOP (72%), p = 0.02]. For factors related to the effects of treatment, the perception of adverse drug effects greater than beneficial effects differed significantly [NHP (2%) *vs* HOP (11%); p = 0.047]. Allergy to certain drugs [NHP (12%) *vs* HOP (33%); p = 0.0057] is a factor related to patients that differed significantly between both groups. However, most of FUT, FP, FET and FDHM differed in a non-significant way between NHP and HOP. Conclusion: Factors related to NHP are elements to be considered in an educational program of HOP or on leaving hospital.

Keywords: medication history, hypertension, inpatient, outpatient, Cote d'Ivoire.

INTRODUCTION

The clinical pharmacist represents an essential link in the therapeutic process of management of both inpatients and outpatients. The activities of the clinical pharmacist took shape gradually and led, in the early 1990s, to the introduction of the concept of pharmaceutical care. According to Helper and Strand Pharmaceutical care is the responsible provision of drug therapy for the purpose of achieving definite outcomes that improve a patient's quality of life[1]. This pharmacist's commitment contributes to therapeutic optimization and the prevention of adverse drug events. Numerous studies have corroborated the role of the pharmacist in clinical services and stressed the importance of pharmaceutical care for the optimal use of drugs[2,3]. The clinical activities of the pharmacist cover many fields of competence including patient's medication history[4] which is the first stage of pharmaceutical care. Before medication history, medical history already existed and is always practiced when a patient is newly admitted to hospital. Medical history is often performed by a doctor, an intern or an extern in medicine, and consists in reconstructing by an interview the history of a patient's illness, using his memories and those of patients' family and friends, in order to guide in the medical diagnosis. With the development of pharmaceutical care, medical history was brought closer to medication history. It may be

performed by a pharmacist, a pharmacy intern or a clinical pharmacy student. It is all the information provided to the pharmacist by the patient or patients' family and friends about the medication history, the circumstances that accompanied the taking of drugs (effectiveness, adverse events ...) and the positive or negative behaviors that the patient has had to drugs (adherence, self-medication…). This medication history takes also into account the dietetic-hygienic measures which accompany medicinal treatment and also psychological, social and economic aspects of the patient. Medication history has several interests. It allows to search for behavioral, socio-economic or medication factors that may explain hospitalization, a medical or a medication problem. It also makes it possible to target pharmaceutical advice and it is part of an aid to the establishment of an educational diagnosis of patients[5]. Finally, it is a medication reconciliation tool. Indeed it enables a complete and accurate comparative assessment of drug treatment before hospitalization, on patient's admission and on patient's discharge in order to effectively reduce adverse drug events, replace drugs appropriately, discontinue unnecessary drugs taken by the patient before hospitalization, etc. Without the patient's behavioral analysis vis-à-vis his drug therapy, it is likely that the same causes lead to the same effects and that successive hospitalizations go with inherent costs. Hospitalization may be due to a simple misunderstanding leading to poor management of drug therapy[5]. The problem remains to understand why a patient treated for a chronic pathology is hospitalized, and to identify in this hospitalization if there is no iatrogenic cause, a lack of information or therapeutic education. Or If there is not an environment or a sociocultural level that is likely to generate risks of successive hospitalizations, being causes that need to be addressed[5]. Some authors estimate that the return on investment is significant when comparing the cost of the pharmacist to conduct the medication history to the avoided cost related to adverse drug events[6]. Several goals assigned to the pharmacist in the hospital led him to move from a polyvalent clinical pharmacy activity to a specialized activity in order to best meet the needs of medical teams and patients suffering from chronic diseases such as hypertension[4]. The number of hypertensive adults by 2025 could increase by 60% to reach 1.56 billion[7]. Nine point four (9.4) million deaths each year that is 16.5% of all deaths, can be attributed to hypertension[8]. It is responsible for 51% of deaths due to stroke and 45% of deaths due to coronary heart disease[9]. Among hypertensive adults, 65.7% are from developing countries. Sub-Saharan Africa would have a prevalence of 27-28%[10]. In the Cote d'Ivoire, hypertension affects nearly 15% of the population, with a prevalence in Abidjan of 21%[11]. Hypertension is currently increasing rapidly. The STEPS survey carried out in 2005 revealed a prevalence of hypertension of 21.7% in the population aged 15 to 64 in this country[12]. Studies have shown the value of pharmaceutical interventions (PIs) in the optimization of drug therapy in hypertensive patients[13,14]. The interest of our study was to initiate a clinical pharmacy activity

involving PIs with hypertensive patients starting with the first act of pharmaceutical care, that is to say medication history. Doctors must find valuable information (complementary to medical history) involving an optimal management of hypertensive patients in Cote d'Ivoire. The aim of our study was to analyze comparatively medication histories of newly hospitalized hypertensive patients (NHP) and hypertensive outpatients (HOP) in Abidjan, Cote d'Ivoire.

MATERIALS AND METHODS

Type and context of the study
It is a descriptive and comparative cross-sectional study of the medication history of hypertensive patients. It was carried out in two units of hospitalization of hypertensive patients (department of internal medicine at teaching hospital of Treichville and department of neurology at teaching hospital of Cocody) and one unit of ambulatory follow-up (medical consultation department at Heart Institute of Abidjan). It was carried out from January 2014 to June 2015.

Study population
We selected patients with essential hypertension. Patients who had just been admitted to hospital (group of NHP) were recruited regardless of the reason for admission. They did not present a barrier to communication and patients' family and friends could provide additional information related to medication history. Hypertensive outpatients (group of HOP) were recruited during outpatient visits. All the patients recruited were major and had given their consent.

Information Collection cards
The questionnaire consisted of patient's general data and of questions about the patient's medication history. The medication history questionnaire was related to previous and current medications, allergy, adverse effects, eating habits, adherence, and other patient's concerns related to disease and treatment. A card for medication history report enabled us to highlight for the groups of NHP and HOP, the possible explanations for hospitalization and the factors that have contributed or may contribute to the occurrence of adverse drug events, poor therapeutic response or poor adherence: factors related to the understanding of treatment (FUT), factors related to the monitoring of the treatment (FMT), factors related to dietetic-hygienic measures (FDHM), factors related to the effects of treatment (FET), factors related to patients (FP).

Conduct of the study
We first looked for information concerning le patient from the patient's record. A semi-directive pharmaceutical interview was conducted with patients. The use of open-ended questions encouraged the free expression of patients. The moderate use of closed questions and the elimination of tendentious questions also made it possible to obtain objective information. The duration of the interview was about 15 minutes. The sense of listening participated in the performance of a good interview. At the end, we asked if the patient had no specific questions.

Data analysis

The SPSS software v.20.0, EPI info v.6 and Xlstat v.2015 were used to process the data; the significance level of the tests was 5% for all statistical tests (Fisher's test, Fisher's exact test and Chi-square test).

RESULTS
Patients' characteristics
The average age of patients was 62 years for NHP *versus* 60 years for HOP. The mean age did not vary significantly between both groups (p = 0.26). For all patients the mean age was 61 years. Gender did not vary significantly between both groups (p = 0.35). The sex-ratio was 0.92 for NHP and that for HOP was 0.66. The sex-ratio of all patients was 0.74. More than half of the patients in both groups were married [NHP (58%); HOP (53%)]. The majority of patients had children [NHP (94%); HOP (97%)]. The starting date for antihypertensive therapy varied insignificantly between both groups (p = 0.054) [Table 1]. The medical diagnosis or diagnostic hypothesis of NHP was mainly ischemic stroke (52%), hemorrhagic stroke (14%) and metabolic syndrome (8%) [Table 2].

Significantly different factors between newly hospitalized hypertensive patients (NHP) and Hypertensive outpatients (HOP).
Eighty-eight percent (88%) of NHP were not allergic to certain drugs or products *versus* 67% of HOP. Allergy to certain drugs or products varied significantly between both groups of patients (p = 0.0057). On the whole, 74% of patients were not allergic to certain drugs or products (Table 3). Ninety-eight percent (98%) of NHP *versus* 89% of HOP found that adverse drug effects (ADE) were not superior to beneficial effects. The perception of ADE greater than beneficial effects varied significantly between both groups (p = 0.047). Generally, 92% of patients found that ADE were not superior to beneficial effects (Table 3). Occasional discontinuation of medication was observed in 54% of NHP *versus* 27% of HOP. Occasional discontinuation of medication varied significantly between both groups (p = 0.001). On the whole, 64% of patients did not stop taking occasionally their drugs (Table 3). Satisfaction with the mode and forms of drug administration was observed in 72% of NHP *versus* 88% of HOP. Satisfaction with the mode and forms of drug administration varied significantly between both groups (p = 0.014). On the whole, 82.7% of patients were satisfied with the mode and forms of drug administration (Table 3). Twenty-four percent (24%) of NHP *versus* 0% of HOP were followed by several physicians. the follow-up of patients by several physicians varied significantly between both groups (p = 0.0001). On the whole, 15.3% of patients were followed by multiple physicians (Table 3). Regular follow up of the patient by a physician was done in 58% of NHP *versus* 87% of HOP. Regular follow-up by a physician varied significantly between both groups (p = 0.00006). On the whole, 77.3% of the patients were regularly followed by a doctor (Table 3). Biological assessment was performed regularly in 34% of NHP *versus* 87% of HOP. The frequency of biological assessments varied significantly between both groups (p = 0.0001). In general, 69.3% of patients regularly performed their biological assessments (Table 3). Eighty-eight percent (88%) of NHP had stress, anxiety or other concerns *versus* 72% of HOP. The presence of stress, anxiety or other concerns varied significantly between both groups of patients (p = 0.02). On the whole, 77.3% of patients had stress, anxiety and other concerns (Table 3).

Non-significantly different factors between HIP and HOP groups
The knowledge of treatment objective concerned 76% of NHP *versus* 84% of HOP. It did not vary significantly between both groups (p = 0.64). On the whole, 81.3% of patients were aware of treatment objective (Table 4). Ninety-four percent (94%) of NHP did not receive explanations about the effects of their drugs from a physician or pharmacist *versus* 89% of HOP. The explanation for drug effects did not vary significantly between both groups (p = 0.48). On the whole, 90.7% of patients had no explanation for the effects of drugs by a physician or pharmacist (Table 4). Taking drugs without the advice of a physician or pharmacist (self-medication) concerned 50% of NHP *versus* 44% of HOP. Self-medication did not vary significantly between both groups (p = 0.48). In general, 46% of patients took drugs without the advice of a physician or pharmacist (Table 4). Regular drug supply was difficult in 18% of NHP *versus* 51% of HOP. The regular supply of drugs did not vary significantly between both groups of patients (p = 0.804). On the whole, 46% of patients had difficulty in obtaining their drugs (Table 4). Seventy-two (72%) of NHP *versus* 65% of HOP did not feel unpleasant effects on taking drugs. The unpleasant effects of drug use did not vary significantly between both groups (p = 0.38). On the whole, 67.3% of patients did not experience unpleasant drug effects (Table 4). Ninety percent (90%) of NHP *versus* 85% of HOP did not receive information about special precautions to be taken with prescribed drugs. Information on these particular precautions did not vary significantly (p = 0.39). On the whole, 86.7% of patients did not receive indications on specific precautions related to drugs between both groups (Table 4). Treatment was perceived as effective in 80% of NHP *versus* 82% of HOP. The perception of treatment effectiveness did not vary significantly between both groups (p = 0.76). On the whole, 81.3% of patients felt that their treatment was effective (Table 4). The prescription of a diet plan by a physician was done in 82% of NHP *versus* 79% of HOP. The prescription of a diet plan by a physician did not vary significantly between both groups (p = 0.15). On the whole, a diet plan was prescribed by a physician to 80% of patients (Table 4). Fifty-two percent (52%) of NHP *versus* 64% of HOP regularly followed their diet plan. The regular monitoring of the diet plan did not vary significantly between both groups (p = 0.15). On the whole, 60% of the patients regularly followed their diet plan (Table 4). The majority of patients did not take their drug with beverages (tea, alcohol or coffee) [NHP (96%); HOP (95%)]. Taking the drugs with these beverages did not vary significantly between both groups (p = 0.57). On the whole, 95.3% of patients did not take their drugs with these beverages (Table 4). Most patients did not smoke [NHP (94%); HOP

Table 1: Succinct characteristics of patients.

Items			NHP (N=50)	HOP (N=100)	General (N=150)
Age at the interview [average±SD]			62±11	60 ±9.9	61±10.4
p			0.26 °		
Gender	male [n(%)]		24(48%)	40 (40%)	64 (42,7%)
	female [n(%)]		26(52%)	60 (60%)	86 (57.3%)
	p		0.35 *		
Social life	married [n(%)]		29 (58%)	53(53%)	82 (54.7%)
	divorced [n(%)]		0 (0%)	6 (6%)	6 (4%)
	concubinage [n(%)]		5(10%)	7 (7%)	12 (8%)
	Single person living in a family [n(%)]		15(30%)	30 (30%)	45 (30%)
	Single person living alone [n(%)]		0 (00%)	3(3%)	3 (2%)
	p		< 0.39+		
	Patient with children	Yes [n(%)]	47 (94%)	97 (97%)	144 (96%)
		No [n(%)]	3 (6%)	3 (3%)	6 (4%)
	p		< 0.37°		
Treatment starting date (years)	< 1 [n(%)]		0 (00%)	0 (00%)	0(00%)
	[1-5[[n(%)]		22(44%)	31 (31%)	53 (35,3%)
	[5-10[[n(%)]		5 (10%)	26 (16%)	31 (20.7%)
	≥10 [n(%)]		23 (46%)	42 (42%)	65 (43.3%)
	P		0.054 *		

* Chi-Square test; °Fisher's exact test; +Fisher test; SD: Standard Deviation; NHP: newly hospitalized hypertensive patients; HOP: hypertensive outpatients

Table 2: Medical diagnosis or diagnostic hypothesis of newly hospitalized hypertensive patients (N = 50).

Medical diagnosis or diagnostic hypothesis of NHP	N (%)
Ischemic stroke	26 (52%)
Hemorrhagic stroke	7 (14%)
Metabolic syndrome	4 (8%)
Infectious syndrome	4 (8%)
Kidney failure	2 (4%)
Arteriosclerosis	1 (2%)
Diabetes	1 (2%)
Decompensated inaugural diabetes	1 (2%)
Hypoglycemia	1 (2%)
Heart failure	1(2%)
diabetic feet	1 (2%)
Pneumopathy	1 (2%)
Total	50 (100%)

NHP: newly hospitalized hypertensive patients

(97%)]. Tobacco use did not vary significantly between both groups. In general, 96% of patients did not smoke (Table 4). Sport was not practiced regularly by 74% of NHP *versus* 67% of HOP. The practice of sport did not vary significantly between both groups (p = 0.38). On the whole, 69.3% of patients did not practice sports regularly (Table 4).

DISCUSSION
The majority of patients [NHP (94%); HOP (89%)] had received no explanation from a physician or pharmacist about the effects of drugs. The lack of information on drugs could be the cause of hospitalization related to adverse drug events. According to Berthelot et al. inadequate information can lead to a poor understanding of treatment instructions and irrational use of drugs by the patient[15]. Several authors have shown that there is a link between having a good quality of information and the patient's adherence to the therapeutic project[16,17]. Whether verbal or written, the information given to patients must be adequate. According to Mullen et al. and Rosenstock et al., when this information is given, it significantly improves the knowledge and understanding that patients have of their medication and reduces the risk of errors[18,19]. However, drug information must be adapted to the patient and must take his personality into account, because the need for information varies greatly from one person to another according to Astrom et al.[20]. Blacher et al. have even recommended to organize a consultation of information requiring an educational and listening time[21]. For these authors this consultation must be dedicated for example to inform about the risks associated with hypertension, explain the proven benefits of antihypertensive treatment, set treatment goals, discuss the personal reasons to follow or not a personalized plan care[21]. Regular medical follow up would reduce the risk of hospitalization for medical complications and adverse drug events. The group of HOP consisted of patients at high risk of hospitalization because 51% had difficulties in supplying drugs which could constitute a cause of poor adherence, as shown by Konin et al.[22]. Seventy-four percent (74%) of our patients were not allergic to certain drugs. However, although the results showed a significant difference between both groups, allergy was not a major factor of hospitalization. The majority of our patients were allergic to quinine and some to sulfonamides. However, the occurrence of an allergy may be the cause of poor adherence to treatment by occasional or permanent discontinuation of treatment. The lack of information

Table 3: Significantly different factors between between newly hospitalized hypertensive patients (NHP) and hypertensive outpatients (HOP).

Type of factors	Items		NHP (N=50)	HOP (N=100)	General (N=150)
FP	Allergy to some drugs or products.	Yes [n(%)]	6 (12%)	33 (33%)	39 (26%)
		No [n (%)]	44 (88%)	67 (67%)	111 (74%)
		p	0.0057*		
FET	Perception of adverse effects greater than beneficial effects of treatment	Yes [n(%)]	1(2%)	11 (11%)	12 (8%)
		No [n(%)]	49 (98%)	89 (89%)	138 (92%)
		p	0.047 °		
FMT	Occasional discontinuation of medication	Yes [n(%)]	27 (54%)	27 (27%)	54 (36%)
		No [n(%)]	23 (46%)	73 (73%)	96 (64%)
		p	0.001*		
	Satisfaction with the mode and forms of drug administration	Yes [n(%)]	36 (72%)	88 (88%)	124 (82.7%)
		No [n(%)]	14 (28%)	12 (12%)	26 (17.3%)
		p	0.014*		
	Followed up by several physicians	Yes [n(%)]	12 (24%)	0 (0%)	12 (8%)
		No [n(%)]	38 (76%)	100 (100%)	138 (92%)
		p	0.0001°		
	Regular follow-up by a physician	Yes [n(%)]	29 (58%)	87 (87%)	116 (77.3%)
		No [n(%)]	21 (42%)	13 (13%)	34 (22.7%)
		p	0.00006*		
	Biological assessments	Regular [n(%)]	17 (34%)	87 (87%)	104 (69.3%)
		Rare [n(%)]	33 (66%)	12 (12%)	45 (30%)
		p	0.0001*		
FDHM	Presence of stress and anxiety	Yes [n(%)]	44 (88%)	72 (72%)	116 (77.3%)
		No [n(%)]	6 (12%)	28 (28%)	34 (22.7%)
		p	0.02*		

*Chi-Square Test; °Fisher exact test; NHP: newly hospitalized hypertensive patients; HOP: Hypertensive outpatients; FP: factors related to patients; FET: factors related to the effects of treatment; FMT: factors related to the monitoring of the treatment, FDHM: factors related to dietetic-hygienic measures.

could lead to poor adherence or hospitalization according to Berthelot et al. and Ferrières et al.[15,23]. In our study, few hospitalized patients perceived adverse drug effects to be superior to beneficial effects. Foster et al. found that 20% of patients experienced an adverse event within five weeks of hospitalization[24]. These events were mainly due to undesirable effects and two thirds of these events could have been prevented or minimized by adequate information[24]. The majority of patients in both groups perceived the effectiveness of their treatment. However, according to Scheen, a lack of perception of the beneficial impact associated with constraints and possible adverse events influence the adherence of the patient suffering from a chronic disease to his treatment[25]. The irregular monitoring of the diet plan (p = 0.15), smoking (p = 0.31) and irregular sport practice (p = 0.38) did not differ significantly between both groups of patients. These practices do not participate in therapeutic optimization as shown by the studies of Diallo et al.[26] and WHO[27]. In several studies, these parameters represented risk factors for cardiovascular complications and therefore for possible hospitalization[28,29]. In our study, the presence of stress, anxiety and other concerns (p = 0.02) differed significantly between both groups of patients. There is a strong link between stress and hypertension. Stress affects the cardiovascular system. In fact, it causes transient increases in blood pressure, but it can also be the cause of more permanent elevations when it is associated with other risk

factors (environmental or genetic). The absence of stress would reduce the risk of hospitalization according to Faye et al.[30]. Treatment of hypertension requires antihypertensive therapy in which anxiolytic treatment is an effective but not sufficient adjuvant care[26]. Adherence remains a major challenge in the management of chronic diseases[25]. In our study, occasional discontinuation of medication, dissatisfaction with the mode and forms of drug administration, and the follow-up by several physicians may constitute non-adherence factors. Our results showed that 54% of NHP *versus* 27% of HOP had occasionally discontinued their medications. This occasional discontinuation of medication may be justified by poor adherence to treatment, which is one of the foundations of non-compliance as stated by Le Jeune et al.[31]. One of the foundations of non-adherence during hypertension is the difficulty in getting an asymptomatic patient to accept a medication for life[31]. Dissatisfaction with the mode and forms of drug administration as well as therapeutic follow-up by several physicians were greater in NHP and could constitute non-adherence factors. In Diallo's study, the medical itinerary of many patients was long; 43% of patients reported that the number of physicians consulted varied between 2 and 6[32]. Non-adherence is a factor of poor therapeutic response that can lead to hospitalization. Generally our patients require therapeutic education to prevent hospitalization due to a medical complication or adverse drug events. It is not a

Table 4: No significantly different factors between newly hospitalized hypertensive patients (NHP) and Hypertensive outpatients (HOP).

Types of factors	Items		NHP (N=50)	HOP (N=100)	General (N=150)
FUT	Knowledge of treatment objective	Yes [N(%)]	38 (76%)	84 (84%)	122 (81.3%)
		No [N(%)]	12 (24%)	16 (16%)	28 (18.7%)
		p	0.64*		
	Explanation of drug effects by a physician or pharmacist	Yes [N(%)]	3 (6%)	11 (11%)	14 (9.3%)
		No [N(%)]	47 (94%)	89 (89%)	139 (90.7%)
		p	0.26 °		
FET	Unpleasant effects felt on drug taking	Yes [N(%)]	14 (28%)	35 (34%)	49 (32.7%)
		No [N(%)]	36 (72%)	65 (65%)	101 (67.3%)
		p	0.38*		
	Knowledge of special precautions to be taken with prescribed drugs	Yes [N(%)]	5 (10%)	15 (15%)	20 (13.3%)
		No [N(%)]	45 (90%)	85 (85%)	130 (86.7%)
		p	0.39*		
	Perception of treatment effectiveness	Yes [N(%)]	40 (80%)	82 (82%)	122 (81.3%)
		No [N(%)]	10 (20%)	18 (18%)	28 (18.7%)
		p	0.76*		
FMT	Drug taking without the advice of a physician or a pharmacist (self-medication)	Yes [N(%)]	25 (50%)	44 (44%)	69 (46%)
		No [N(%)]	25 (50%)	56 (56%)	81 (54%)
		p	0.48*		
	Difficulties in regular drug supply	Yes [N(%)]	36 (18%)	51 (51%)	69 (46%)
		No [N(%)]	32 (64%)	49 (49%)	81 (54%)
		p	0.804*		
FDHM	Prescription of a diet plan by a physician.	Yes [N(%)]	41 (82%)	79 (79%)	120 (80%)
		No [N(%)]	9 (18%)	21 (21%)	30 (20%)
		p	0.15*		
	Regular monitoring of diet plan	Yes [N(%)]	26 (52%)	64 (64%)	90 (60%)
		No [N(%)]	24 (48%)	36 (36%)	60 (40%)
		p	0.15*		
	Drug taking with beverages (tea, alcohol, coffee)	Yes [N(%)]	2 (4%)	5 (5%)	7 (4.7%)
		No [N(%)]	48 (96%)	95 (95%)	143 (95.3%)
		p	0.57 °		
	Tobacco use	Yes[N(%)]	3 (6%)	3 (3%)	6 (4%)
		No [N(%)]	47 (94%)	97 (97%)	144 (96%)
		p	0.31 °		
	Regular sports practice	Yes[N(%)]	13 (26%)	33 (33%)	46 (307%)
		No [N(%)]	37 (74%)	67 (67%)	104 (693%)
		p	0.38*		

*Chi-Square Test; °Fisher exact test; NHP: newly hospitalized hypertensive patients; HOP: Hypertensive outpatients; FUT: factors related to the understanding of treatment; FET: factors related to the effects of treatment; FMT: factors related to the monitoring of the treatment, FDHM: factors related to dietetic-hygienic measures.

matter of informing, but of educating the patient so that he can acquire adequate know-how enabling him to reach a balance between his aspirations and the optimal control of his disease within the context of his project of life[33].

CONCLUSION
In our study, the causes of hospitalization could be explained by the irregularity of the biological assessments, the absence of regular follow-up by a physician, the follow-up by several physicians, self-medication, dissatisfaction with the mode and forms of drug administration, occasional drug discontinuation, and difficulty in supplying drugs. Some behaviors did not differ between some NHP and HOP: the HOP group consisted of patients at high risk of hospitalization. Other factors more associated with NHP constitute elements of educational diagnosis to be considered in an educational program for outpatients or patients on leaving hospital. The knowledge of the disease and the objective of the treatment, the importance of medical follow-up, adherence to therapy and the importance of regular monitoring of dietetic-hygienic measures must be also targeted in a therapeutic education program for our patients. The pharmacist must participate in the therapeutic patient education. Medication history should be part of the routine activities for the clinical pharmacist in Cote d'Ivoire.

medecine department, neurology department and consultation department of Heart Institut in all visited health facilities.

REFERENCES

1. Hepler CD, Strand LM. Opportunities and responsibilities in pharmaceutical care. Am J Hosp Pharm 1990; 47(3): 533-43.
2. Kaboli PJ, Hoth AB, McClimon BJ, Schnipper JL. Clinical pharmacists and inpatient medical care: a systematic review. Arch Intern Med 2006; 166: 955-64.
3. De Rijdt T, Willems L, Simoens S. Economic effects of clinical pharmacy interventions: a literature review. Am J Health Syst Pharm 2008; 65:1161-72.
4. Skallia S, Ferreirab E, Bussieresa JF, Allenetc B. Soins pharmaceutiques en gynécologie-obstétrique : à propos d'un cas. Le Pharmacien Hospitalier 2010; 45(3): 117-23.
5. Calop J. L'historique médicamenteux du patient hospitalisé: une tache de routine à effectuer par l'étudiant en pharmacie. Actualités Pharmaceutiques Hospitalières 2005; 4(2): 59-60.
6. Gleason KM, Groszek JM, Sullivan C, Rooney D, Barnard C, Noskin GA. Reconciliation of discrepancies in medication histories and admission orders of newly hospitalized patients. Am J Health Syst Pharm 2004; 61: 1689-95.
7. Kearney PM, Whelton M, Reynolds K, Muntner P, Whelton PK, He J. Global Burden of hypertension: analysis of worldwide data. The Lancet 2005; 365(9455): 217-23.
8. Lim SS, Vos T, Flaxman AD, Danaei G, Shibuya K, Adair-Rohani H, et al. A comparative risk assessment of burden of disease and injury attributable to 67 risk factors and risk factor clusters in 21 regions, 1990-2010: a systematic analysis for the Global Burden of Disease Study 2010. Lancet 2012; 380(9859):2224-60.
9. World Health Organization. The global burden of disease: 2004 update. Geneva: WHO; 2008.
10. Hajjar I, Kotchen J, Kotchen T. Hypertension: trends in prevalence, incidence and control. Ann Rev Public Health 2006; 27:465-90.
11. Comoé K, Sess D. Etude de la tension artérielle en milieu urbain ivoirien. Med Trop 1999; 53: 176-9.
12. Organisation Mondiale de la Santé. Enquête STEPS Côte d'Ivoire 2005 [Internet]. Genève : OMS ; 2005 [consulté le 25 juillet 2016]. Disponible sur : file:///C:/Users/User/Downloads/nds_steps_2005_Cote_d_Ivoire_FactSheet_FR.pdf.
13. Bunting BA, Smith BH, Sutherland SE. The Asheville Project: clinical and economic outcomes of a community-based long-term medication therapy management program for hypertension and dyslipidemia. J Am Pharm Assoc 2008;48(1):23-31.
14. Machado M, Bajcar J, Guzzo GC, Einarson TR. Sensitivity of patient outcomes to pharmacist interventions. Part II: Systematic review and meta-analysis in hypertension management. Ann Pharmacother. 2007;41(11):1770-81.
15. Berthelot JM, Millet S, Chatelier B, Ripoll N, Maugars Y, Prost A. Connaissance par 125 patients des règles de prise de leurs anti-inflammatoires non stéroïdiens. Thérapie 1999; 54: 683-8.
16. Rickheim PL, Weaver TW, Flader JL, Kendall DM. Assessment of group versus individual diabetes education. Diabetes Care 2002; 25: 269-74.
17. Raji A, Gomes H, Beard JO, Mac Donald P, Conlin PR. A randomized trial comparing intensive and passive education with diabetes mellitus. Arch Intern Med 2002; 162: 1301-4.
18. Mullen PD, Mains DA, Velez R. A meta-analysis of controlled trials of cardiac patient education. Patient Educ Couns 1992; 19:143-62.
19. Rosenstock I. Historical origins of Heath Belief Model. Health Educ Monogr 1974; 2: 195-236.
20. Aström K, Carlsson J, Bates I. Desire for information about drugs - A multi-method study in general medical inpatients. Pharm World Sci 2000; 22 : 159-64.
21. Blacher J, Halimi JM, Hanon O, Mourad JJ, Pathak A, Schnebert B, et al. Prise en charge de l'hypertension artérielle de l'adulte. Sang Thrombose Vaisseaux 2013 ; 25(5) : 297-305.
22. Konin C, Adoh M, Coulibaly I, Kramoh E, Safou M, N'guetta R, et al. (2008). L'observance thérapeutique et ses facteurs chez l'hypertendu noir africain. Arch Mal Cœur Vaiss 2007 ; 100(8) : 630-4.
23. Ferrières J, Elbaz M, Maupas E, Carrié D, Puel J. Insuffisance de la prise en charge des patients dyslipidémiques en France : étude Odyssée. Arch Mal Coeur Vaiss 2004; 97: 187-93.
24. Forster AJ, Murff HJ, Peterson JF, Gandhi TK. The incidence and severity of adverse events affecting patients after discharge from the hospital. Ann Intern Med 2003;138:161-7.
25. Scheen AJ. Inertie thérapeutique dans la pratique médicale: causes, conséquences, solutions. Rev Med Liege 2010 ; 65 : 232-8.
26. Diallo A, Ticolat R, Adom A, Niamkey E, Beda B. Etude de la mortalité et des facteurs de létalité dans l'hypertension artérielle de l'adulte noir africain. Med Afr Noire 1998 ; 45(11) : 624-7.
27. Organisation Mondiale de la Santé. Journée mondiale de la santé 2013 : alimentation, nutrition et hypertension [Internet]. Genève : OMS ; 2013 [consulté le 25 Mars 2014]. Disponible sur: http://www.emro.who.int/fr/world-health-days/journee-mondiale-de-la-sante-2013/nutrition-hypertension-factsheet-whd-2013.html.
28. Pechère-Bertschi A, Burnier M, Waeber B. Hypertension artérielle chez la femme : une autre physiopathologie ? [Internet]. Rev Med Suisse 2000; (2320) [consulté le 25 mai 2016]. Disponible sur : http://www.revmed.ch/rms/2000/RMS-2320/20880.
29. Blacher J, Czernichow S, Iaria P. Traitement non pharmacologique de l'hypertension artérielle. EMC-Cardiologie-Angéiologie (Paris- Elsevier); 2005. p. 136-51.
30. Faye K, Heng LH, Collomp R, Peroux E. Hypertension et stress. J Mal Vasc 2003 ; 28(1) : 4-8.

31. Le Jeune S, Mourad JJ. Inobservance et inertie clinique: deux obstacles majeurs à la prise en charge de l'hypertension artérielle [Internet]. Réalités Cardiologiques 2012 ; 286 : 37-43.

32. Diallo BA. Itinéraires thérapeutiques et coût de l'HTA en milieu urbain malien. Medecine d'Afrique Noire 1994; 41(2): 106-7.

33. Ferrières J, Durack-Bown I, Giral P, Chadarevian R, Benkritly A, Bruckert E. Éducation thérapeutique et patient à haut risque: une nouvelle approche en cardiologie. Ann Cardiol Angeiol 2006 ; 55(1) : 27-31.