71 - REGRESSION LOGISTICS: PREDICTIVE MODEL FOR OUTLET OF DECISION REGARDING THE DETERMINANTS IN THE CONTROL OF THE ARTERIAL PRESSURE IN HYPERTENSIVE MEN IN THE CITY OF JOÃO PESSOA- PB

ROSIMERY CRUZ DE OLIVEIRA DANTAS[1]
VALDÊNIA VERÍSSIMO DE LIMA[2]
JOZEMAR PEREIRA DOS SANTOS[3]
NEIR ANTUNES PAES[4]
1. Enfermeira, mestranda do programa de pós-graduação em Modelos de Decisão e Saúde do departamento de estatística - Docente da UFCG.
2. Enfermeira, mestranda do programa de pós-graduação em Modelos de Decisão e Saúde do departamento de estatística
3. Prof. Mestre do Departamento de Estatística
4. Prof. Dr. Pesquisador do Departamento de Estatística
Universidade Federal da Paraíba – João Pessoa-PB – Brasil
rmeryco_dantas@hotmail.com

INTRODUCTION

The chronic diseases not-transmissible (CNCD) has been increasing its prevalence in the world and in the countries in development as they affirm Murray and Lopez (1997) apud Esteghamati et al (2009). In Brazil this picture has been being preoccupation reason for the organs of Public Health, carrying the researchers to develop studies to understand that factors are harnessed to these pathologies.

Among CNCD, the cardiovascular diseases (DCV) receive larger highlight, as shown by are the mortality main cause in the Brazilian population, having the Systemic Arterial Hypertension (HAS) as your risk main factor. The prevalence in the adult population meets above 30%, and when evaluated among goods, it punctuates 35,8% in the men and of 30% in women, attacking about 25% of the world population, with increase forecast of 60% of the disease cases in 2025. (FERREIRA, 2009; SBH; SHC;SBN, 2010).

The arterial hypertension, according to SAW HER Brazilian Guideline of Hypertension (SBH; SHC;SBN, 2010), constitutes a clinical condition multifactorial characterized by elevated levels and sustained of arterial pressure. It is linked for factors of modifiable risks, such as smoker, ethyl, sedentarism and obesity, and not-modifiable, associates the pathological organic alterations, that as Lopez et al (2006) apud Rubinstein et al (2010) in lots of Latin-american countries, there is an intermediary mortality for the pathologies groups bearers where the risk main factors are the hypertension, an elevated index of corporeal mass (IMC), the abusive use of alcohol and smoker.

Being the man more susceptible the influence of these factors, the Health department institutes the National Politics of Integral Attention to the man's Health with aim of promoting, among others aspects, health actions that enable life expectation increase and morbimortalidade indices reduction for causes preventable and avoidable (Brazil, 2008). Among these actions for the disease control stands out in 2002 the Information System implantation in Health HIPERDIA, this with the goal of accompanying the hypertensive in SUS's units oupatient, the medications receipt and the information production for the health managers that, starting from its analysis, lifts strategies for life quality improvement of these people (CASTRO et al., 2010).

In this context, in which man's health receives new pulse in the context of the Public Health in Brazil, was awaken the wish of, using the research database of Paes (2008/2009), develop a study on the factors of modifiable risk in the control of the arterial pressure diastolic,

Whose goal is to evaluate the factors association of modifiable risks with the control of the arterial pressure in hypertensive of the masculine gender attended in to family's Strategy Health in João Pessoa's city.

METHODS

Study observational, of the kind coorte retrospective, like a cutting of available results in the project multicentric effectiveness evaluation in the control of the systemic arterial hypertension and association with risk factors comparing the Health Program attention of the Family and of Basic Units of Northeast municipal districts Health of Brazil, developed by Paes (2008) close to the Laboratory of Demographic Studies (LED) of the Statistics Department (OF) of Paraíba's Federal University (UFPB), under CNPq's Sponsorship (Proclamation: MCT/CNPq/MS –SCTIE – DECIT/MS In the. 37/2008, starting from a sample of 75 patient of the masculine sex.

They were selected explanatory variables used in the decision model application: Age, race, occupation, conjugal situation, income, schooling, accompaniment condition, smoker, sedentarism, overweight/obesity, ethyl, analyzed through the regression logistics, in order to if you observe its relation with the variable dependent: Levels pressures of the arterial pressure (PA), who has as final outcome the control of the same.

To establish the control definition criteria of PA was adopted PA's Systolic parameter = 140mmhg and PA Diastolic =80 mmHg having as back-up SAW HER Brazilian guidelines of Hypertension. The data were organized in a worksheet in the Microsoft Excel 2007 and afterwards the database was transposed for analysis in the package statistician SPSS version 18.0.

According to Hosmer and Lemeshow (1989), in the regression model the success probability is given by to equation below:

$$\pi_i = \pi(x_i) = P(Y_i = 1 | X = x_i) = \frac{\exp(\beta_o + \beta_1 x_{i1} + \cdots + \beta_p x_{ip})}{1 + \exp(\beta_o + \beta_1 x_{i1} + \cdots + \beta_p x_{ip})} = \frac{\exp(x_i^T \beta)}{1 + \exp(x_i^T \beta)}$$

π_i = model success probability of regression logistics and

β_1= values of the unknown parameters.

RESULTS AND DISCUSSION

The number of individuals of the observed masculine sex is not representative of the men registered in Hiperdia of the city of João Pessoa and yes of the larger research developed by Paes (2008; 2009), in the calibrating condition of PA just to have in a trice been done (annual interview).

Of the studied hypertensive 40,8% were with the levels pressure controlled 59,2% not controlled. Being 65,3% not accompanied according to the criteria of the Health department: The minimum of 3 consultations with calibrating and PA's record (SBH;SBC;SBN,2006), result that implies in the accompaniment lack of the hypertensive by the Units of Health (Table 1).

Table 1- Profile social demografic of the hypertensive men of the city of João Pessoa

		Pressure Control				Total	
		Not Controlled		Controlled		N	%
		N	%	N	%		
Kind of user	Not accompanied	29	64,4%	20	66,7%	49	65,3%
	Accompanied	16	35,6%	10	33,3%	26	34,7%
Conjugal situacion	I only lives	5	11,1%			5	6,7%
	It lives accompanied	40	88,9%	30	100,0%	70	93,3%
Schooled	illiterate/literate	13	28,9%	12	40,0%	25	33,3%
	schooled/Graduate	32	71,1%	18	60,0%	50	66,7%
Race	Not white	35	77,8%	18	60,0%	53	70,7%
	white	10	22,2%	12	40,0%	22	29,3%
Occupation	Unemployed	2	4,4%	3	10,0%	5	6,7%
	Employee	43	95,6%	27	90,0%	70	93,3%
Income salary	< 2 salaries	17	37,8%	7	23,3%	24	32,0%
	2 Salaries and +	28	62,2%	23	76,7%	51	68,0%
Coded age	< de 60 years	15	33,3%	12	40,0%	27	36,0%
	60 years and +	30	66,7%	18	60,0%	48	64,0%

Source: PAES (2008;2009)

It presented a prevalence of 36,0%, for smaller of 60 years and of 64,0% to the ages above of the referred, and that translates the reality that with advance it of the age arise alterations in the anatomical structure of the arteries, whose association to other factors, favors the installation of this worsen (CARVALHAES, 2009). Thence the need to specific actions for this group, in partnership with other professional, like the physical educator.

Most (93,3%) cohabited with people with blood liaisons or not, what favors the treatment measures, Moreira and Araújo, (2001) apud Lucena (2010) verified that people with companions presented twice larger chance of are accomplishing the treatment in relation to those without companions. Still stands out a group scholled, where 60% owns at most incomplete fundamental teaching. Similar result to of Barbosa, Scala and Ferreira (2009) that detected a prevalence of 1, 6 larger times in individuals with up to four years of study when compared with to that 8 years old or more.

Concerning race had larger prevalence in the not white (with emphasis between drab and blacks) totalizing 70,7%, reinforcing the fact that the hypertension is one worsen that it attacks more the black race, with a prevalence twice greater than the white race, despite if do not know with exactness, the miscigenation impact in Brazil (SBH;SBC; SBN, 2010).

The descriptive analysis concerning presence of the factors of modifiable risk reveals that 80,0% are not smokers, 50,7% are not sedentary, however 53,3% are in overweight/obesity and 84,% are not ethyl. The overweight and the obesity highlighted in the study point high association with PA's Control, because as Nogueira et al. (2007) apud Silva et al. (2011), say the obesity is one of the most important factors associates to the arterial hypertension in adults for present relation with other morbidities.

For the obtainment of a model for PA's Control, initially there was the association qui-square test application (2) that allowed to identify the variable conjugal situation, race, income and obesity with signifcance respective of 0.059, 0.098, 0.159 and 0.059, implying tell that these are terms that interfere directly in PA's Control.

With the Regression Logistics application (Table 2) the variable race and overweight/obesity presented p-value (IC95%) of 0,047 (0,111-0,985) and 0,036 (0,119-0,933), to <0,05 respectively, and value ß of 0,331 and 0,333, that implies tell that the hypertensive of the study that are not white has 3,31 times less chance of controling the pressure than the ones that are white; already with regard to the overweight/obesity with overweight/obesity present 3,33 times less chance of controling the pressure than the individuals with normal weight. The model of generated decision is expressed in the following equation:

$$\pi_i = (Y = 1) = \frac{\exp(0{,}655 - 0{,}047 race - 0{,}036 overweight/obesity)}{1 + \exp(0{,}655 - 0{,}539 race - 1{,}64 overweight/obesity)}$$

Table 2: Variable of the Regression Logistics model

		S.E.	Variable definition	Significance	Exp(β)	IC 95,0%	Exp(β)
						smaller	larger
Race(1)	-1,104	0,557	1	0,047	0,331	0,111	0,987
Occupation(1)	1,320	1,011	1	0,192	3,742	0,515	27,166
Overweight/ obesity (1)	-1,101	0,525	1	0,036	0,333	0,119	0,932
Ethyl(1)	0,998	0,693	1	0,150	2,714	0,698	10,561
Constant	0,655	0,526	1	0,213	1,925		

Source: PAES (2008;2009)

CONCLUSIONS

The model of multiple regression logistics used to the decision outlet was very efficient, as shown by have allowed the perception of a reality many times forgotten by everybody, professional of Health and managers. With the results pointed by the model can decide that demographic factors partner are strong determinants in PA's Control, and because of this should be changes focus in the practices who composes the services of the Basic Attention.

The statistical analysis allows the understanding that the monthly accompaniment leads the construction of a more

punctual profile, and as the individuals of the masculine sex present frequency to the Units of very sporadic Health, there is the need to if establish programs, assistances and turns in the health services of the basic attention, that propitiate a better welcoming to the man, in partnership with other professional, with special attention to the physical educator.

REFERÊNCES

BRASIL, Ministério da Saúde. Secretaria de Atenção a Saúde. Departamento de Ações Programáticas Estratégicas. Política Nacional de Atenção Integral à Saúde do Homem: princípios e diretrizes. Ministério da Saúde, Brasília, 2008.

BARBOSA, Larissa Silva; SCALA, Luiz César Nazário e FERREIRA, Márcia Goncalves. Associação entre marcadores antropométricos de adiposidade corporal e hipertensão arterial na população adulta de Cuiabá, Mato Grosso. Revista Brasileira de Epimiologia [online]. 2009, vol.12, n.2, pp. 237-247. ISSN 1415-790X.

CASTRO, Natercia Gomes et al. HIPERDIA: conhecimento da cobertura do programa no Maranhão. Caderno de pesquisa, São Luís, v. 17, n. 2, maio/ago. 2010.

CARVALHAES, Maria Antonieta de Barros Leite; MOURA, Erly Catarina de; MONTEIRO, Carlos Augusto. Prevalência de fatores de risco para doenças crônicas: inquérito populacional mediante entrevistas telefônicas em Botucatu, São Paulo, 2004. Revista Brasileira de Epidemiologia, São Paulo, v. 11, n. 1, 2008.

ESTEGHAMATI, Alireza et al.. Third national surveillance of risk factors of non-communicable diseases (SuRFNCD-2007) in Iran: methods and results on prevalence of diabetes, hypertension, obesity, central obesity, and dyslipidemia. BMC Public Health 2009, 9:167 doi:10.1186/1471-2458-9-167

FERREIRA, Sandra Roberta Gouveia et al. Frequência de hipertensão arterial e fatores associados: BRASIL, 2006. Revista de Saúde Pública. São Paulo, 43(Supl. 2):98-106, Nov. , 2009.

HOSMER, D.W.; LEMESHOW, S. Applied logistic regression. 2.ed. New York: John Wiley & Sons, 2000.

LUCENA, Marcelo de Medeiros. Conhecimento de Portadores de Hipertensão Arterial Acerca de seu Tratamento. Monografia - Universidade Federal de Campina Grande. Centro de Formação de Professores. Unidade Acadêmica de Ciências da Vida. Cajazeiras, 2010.

PAES, Neir Antunes. Avaliação da Efetividade no controle da hipertensão arterial sistêmica e associação com fatores de risco comparando a atenção do Programa de Saúde da Família e de Unidades Básicas de Saúde de municípios do Nordeste do Brasil. 2008. Projeto de pesquisa aprovado pelo CNPq no âmbito do Edital MCT/CNPq/MS – SCTIE – DECIT/MS N. 37/2008 – Processo N. 576671/2008-8.

RUBINSTEIN, Adolfo et al. Estimation of the burden of cardiovascular disease attributable to modifiable risk factors and cost-effectiveness analysis of preventative interventions to reduce this burden in Argentina. BMC Public Health, 2010, 10:627.

SILVA, Bruna Ziderich et al. Efeitos do programa de exercícios sobre antropometria e pressão arterial de indivíduos obesos. ConScientiae Saúde, 2011;10(2):256-262.

SOCIEDADE BRASILEIRA DE HIPERTENSÃO. SOCIEDADE BRASILEIRA DE CARDIOLOGIA; SOCIEDADE BRASILEIRA DE NEFROLOGIA (SBH;SBC;SBN). VI Diretrizes Brasileiras de Hipertensão Arterial. Arquivo Brasileiro de Cardiologia, v. 95, n.1, Supl 1, 2010.

_____. V Diretrizes Brasileiras de Hipertensão Arterial. Arquivo Brasileiro de Cardiologia, v. 95, n.1, Supl 1, 2006.

Rua: Titico Gomes,23
Bairro: Belo Horizonte
CEP: 58704-380 – Patos – Paraíba - Brasil
Email: rmeyco_dantas@hotmail.com

REGRESSION LOGISTICS: PREDICTIVE MODEL FOR OUTLET OF DECISION REGARDING THE DETERMINANTS IN THE CONTROL OF THE ARTERIAL PRESSURE IN HYPERTENSIVE MEN IN THE CITY OF JOÃO PESSOA- PB

ABSTRACT

The chronic diseases has not have been increasing its prevalence in Brazil and in the world, and among them the cardiovascular diseases stand out for having the Systemic Arterial Your hypertension risk main factor, that for being one worsen multifatorial, being them factors of modifiable risk or not, finds in the masculine group the being that suffers more the influence of these factors, because it is the remotest group in the health services. To select the variables and to identify its relation with the variable dependent: Control of the arterial pressure, applied in the Regression Logistics model. The descriptive analysis presents a masculine group in its majority with not controlled Pressure (59,2%), senior (64,0%), schooled (66,7%), living with company (93,3%), no (70,7%), not smoker (80,0%), not sedentary (50,7%), in overweight/obesity (53,3%) and not ethyl (84,0%). The model fitting presented as explanatory variables for PA Control, adopting itself a reliable interval of 95% and one to=0,05, obesity (p-value =0,047) and race (p-value =0,036). The relevance meets in the fact that, the health actions are more focused in the factors of modifiable risk as smoker, ethyl, sedentarism, and with the results presented by the model evidences the need to if establish programs, strengthen partnerships, assistances and turns in the health services of the basic attention, that propitiate a better welcoming to the man with more specific activities for the obesity control.

KEYWORDS: Control; Hypertension; model.

REGRESSION LOGISTIQUE: MODÈLE DE PRÉVISION POUR LA PRISE DE DÉCISION POUR DETERMINER COMMENT CONTROLER LA PRESSION DU SANG DANS LA VILLE DE HOMMES HYPERTENDUS JOÃO PESSOA-PB.

RÉSUMÉ

Les maladies chroniques non transmissibles, a augmenté sa prévalence au Brésil et dans le monde, et les maladies cardiovasculaires parmi eux se démarquent pour avoir la Hypertension son principal facteur de risque, ce qui devrait être un grief multifactorielle, et ils facteurs de risque modifiables ou non, se trouve dans le groupe des hommes qui souffre le plus, c'est l'influence de ces facteurs, il est le plus éloigné du groupe des services de santé. Pour sélectionner les variables et d'identifier leur relation avec la variable dépendante: contrôle de la pression artérielle, appliqué dans le modèle de régression logistique. L'analyse descriptive montre un groupe majoritairement des hommes avec une pression non contrôlée (59,2%), les personnes âgées (64,0%), éducation (66,7%), vivant avec la société (93,3%), les non-Blancs (70,7%), les non-fumeurs (80,0%), non-sédentaires (50,7%) de surpoids / obésité (53,3%) et les non-buveurs (84,0%). Le modèle ajusté a montré comme covariables

pour le contrôle de BP, l'adoption d'un intervalle de confiance de 95% et un α = 0,05, l'obésité (p = 0,047) et la course (valeur-p = 0,036). La pertinence réside dans le fait que les actions de santé se concentrent davantage sur les facteurs de risque modifiables tels que le tabagisme ou la consommation d'alcool, la sédentarité, et avec les résultats présentés par le modèle met en évidence la nécessité d'établir des programmes, renforcer les partenariats, la fréquentation et les changements dans les services de santé dans les soins primaires, qui fournissent des soins de meilleure qualité aux hommes avec des activités plus spécifiques de lutte contre l'obésité.

MOTS-CLÉS: contrôle, l'hypertension, le modèle.

REGRESIÓN LOGÍSTICA: MODELO PREDICTIVO PARA LA TOMA DE DECISIONES SOBRE LOS DETERMINANTES EN EL CONTROL DE LA PRESIÓN ARTERIAL DE LOS HOMBRESHIPERTENSOS EN LA CIUDAD JOÃO PESSOA-PB.

RESUMEN

Las enfermedades crónicas no transmisibles ha aumentado su prevalencia en Brasil y en todo el mundo, y desctacamos la enfermedad cardiovascular por tener la Hipertensión su principal factor de riesgo, lo que es un motivo de queja multifactorial, y ellos factores de riesgo modificables o no, se encuentra en el grupo de hombres que más sufre la influencia de estos factores, es el más lejano grupo de servicios de salud. Para seleccionar las variables e identificar su relación con la variable dependiente: control de la presión arterial, aplicado en el modelo de regresión logística. El análisis descriptivo muestra a un grupo en su mayoría hombres con presión controlada (59,2%), personas mayores (64,0%), educación (66,7%), que viven con compañía (93,3%), los no blancos (70,7%), los no fumadores (80,0%), no sedentaria (50,7%) en el sobrepeso / obesidad (53,3%) y los no bebedores (84,0%). El modelo ajustado mostró como covariables para el control de la PA, la adopción de un intervalo de confianza del 95% y un archivo. α= 0,05, la obesidad (p-valor = 0,047) y la raza (p-valor = 0,036). La importancia radica en el hecho de que las acciones de salud se centran más en los factores de riesgo modificables, como el consumo de tabaco, el alcohol, la inactividad física, y con los resultados presentados por el modelo pone de relieve la necesidad de establecer programas, fortalecer las asociaciones, asistencias y los cambios en los servicios de salud en la atención primaria, que proporcionan una mejor atención a los hombres con más actividades específicas para controlar la obesidad.

PALABRAS CLAVE: Control, hipertensión, modelo.

REGRESSÃO LOGÍSTICA: MODELO PREDITIVO PARA TOMADA DE DECISÃO QUANTO AOS DETERMINANTES NO CONTROLE DA PRESSÃO ARTERIAL EM HOMENS HIPERTENSOS DO MUNICÍPIO DE JOÃO PESSOA-PB.

RESUMO

As doenças crônicas não-transmissíveis, tem aumentado sua prevalência no Brasil e no mundo, e dentre elas as doenças cardiovasculares se destacam por ter a Hipertensão Arterial Sistêmica seu principal fator de risco, que por ser um agravo multifatorial, sendo eles fatores de risco modificáveis ou não, encontra no grupo masculino o ser que sofre mais a influência destes fatores, pois é o grupo mais afastado dos serviços de saúde. Para selecionar as variáveis e identificar sua relação com a variável dependente: controle da pressão arterial, aplicado no modelo de Regressão Logística. A análise descritiva apresenta um grupo masculino na sua maioria com Pressão não controlada (59,2%), idosos (64,0%), escolarizado (66,7%), vivendo com companhia (93,3%), não-brancos (70,7%), não tabagistas (80,0%), não sedentários (50,7%), em sobrepeso/obeso (53,3%) e não etilistas (84,0%). O modelo ajustado apresentou como variáveis explicativas para o controle da PA, adotando-se um intervalo de confiança de 95% e um α=0,05, obesidade (p-valor =0,047) e raça (p-valor =0,036). A relevância encontra-se no fato de que, as ações de saúde estarem mais focadas nos fatores de risco modificáveis como tabagismo, etilismo, sedentarismo, e com os resultados apresentados pelo modelo evidencia-se a necessidade de se estabelecer programas, fortalecer parcerias, atendimentos e turnos nos serviços de saúde da atenção básica, que propiciem um melhor acolhimento ao homem com atividades mais específicas para o controle da obesidade.

PALAVRAS-CHAVES: Controle; Hipertensão arterial; modelo.