

Hypertension in a Female Nursing Staff-Pattern of Occurrence, Diagnosis, and Treatment

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Objective – To report the pattern of occurrence, diagnosis, and treatment of hypertension in a female nursing staff of an emergency hospital.

Methods – We carried out a cross-sectional study that included interviews and blood pressure measurements of 494 nursing professionals at an emergency hospital in the city of Salvador, in the state of Bahia, Brazil. We considered hypertensive all individual with blood pressure $\geq 140/90$ mmHg or normal pressure if on regular treatment.

Results – We found a prevalence of hypertension of 36.4%. Only 18.3% of the individuals ignored their hypertensive condition, and 64.2% admitted not being having regular treatment. Of those individuals who were having treatment, 69.4% had elevated blood pressure on examination. The major reasons for not being on treatment was the occasional elevation of blood pressure (22.2%) and medical counseling (20.0%).

Conclusion – The results point to the need to introduce hypertension control measures in this occupational group, because of the magnitude of the disease and the potential impact on diffusion of knowledge and measures to control hypertension.

Key words: hypertension, female health, occupational health

In Brazil, hypertension is one of the main causes of part of the mortality among adult females, especially because of its cardiovascular complications¹. This pattern is similar to that observed in industrialized countries, but it has some peculiarities, such as the highest rate of early mortality due to these cardiovascular causes, especially among women². Mortality due to acute myocardial infarction in the age bracket from 35 to 44 years in Brazil is approximately 3 times higher in men and 4 times higher in women than in men and women in the United States; mortality due to cerebrovascular diseases in the same age bracket is, respectively, 5 and 6 times higher among Brazilian men and women². In Brazil, the prevalence of hypertension among women in levels similar to or even greater than those of men in distinct populations of the country is noteworthy, and this may be confirmed in half of the 2 dozen articles on this topic published during the period 1980 to 1999³⁻²⁰.

Despite the great changes due to the social integration of Brazilian women, particularly achieving by their rapid and increasing entrance into workplace, much little is known about the occurrence of hypertension and its complications in this population group. This gap is especially relevant, considering that the literature has reported an association between professional work and cardiovascular diseases²¹⁻²³ and the influence of work on blood pressure elevation²⁴.

Among 9 studies carried out in Brazil, focusing on distinct occupational groups, 4 comprised only men²⁵⁻²⁸; three had 60%, 72.9%, and 76% male participation respectively²⁹⁻³¹; one did not report the results according to sex³²; and only one had a slightly lower female study population than male study population³³.

Most nursing professionals are women. Nurses are an occupational group which is little studied in Brazil, despite the fact that nursing is recognized as a challenging activity because it requires management of situations involving suffering, pain, death, and also because of the continuity of care and long and often unpredictable work hours that it demands³⁴⁻³⁷. In addition, due to the direct contact with patients, nurses and their aides become privileged agents who are in position to spread information and knowledge about

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hypertension, thus justifying studies about this disease in this group of professionals.

We studied the pattern of occurrence of hypertension, and its diagnosis and treatment among the female nursing staff at an emergency hospital.

Methods

We carried out a cross-sectional study within a public emergency hospital in the city of Salvador, in the state of Bahia, Brazil. The study comprised 494 female nurses and nurses' aides who carried out regular nursing activities in the above mentioned hospital. They were interviewed and had their blood pressure, weight, and height measured.

Blood pressure assessment comprised 2 measurements on the same occasion (beginning and end of the interview), in the sitting position, on the right arm at heart level. We used mercury manometers (Narcosul brand), periodically calibrated, with cuffs compatible with the circumference of the arm.

The systolic level corresponded to the first regular beat, and the diastolic value was equivalent to that corresponding to the disappearance of the Korotkoff sounds (phase V). For those cases where the sounds did not completely disappear, even after the complete emptying of the cuff, the phase IV of Korotkoff was considered (point of muffling of the sounds). Before the first series of pressure measurements, initiated after at least 5 minutes of resting, and in the interval between 2 series, never less than 20 minutes, we requested the individuals not to exert themselves physically and nor use stimulants, such as tea, coffee, tobacco, alcoholic beverages, or medication.

Standardization of blood pressure measurements was assured by careful training, and was checked during the field work and later at its end, through the analysis of distribution of measurements with regard to the terminal digits and the degree of inter- and intraobserver reliability. The procedures adopted and the measurement reliability were reported in a previous study³⁸.

The nursing professionals were weighed on a standard digital scale (Filizola ID-1500) with automated calibration and great accuracy. Height was measured with a rigid meter stick, using the standard technique.

Estimates of systolic and diastolic blood pressures were obtained by the mean of the first and second measurements. According to international criteria³⁹, we considered as hypertensive those individuals with blood pressure ≥ 140 mmHg, and also those with measurements within the normal range but having regular treatment. For purposes of comparison with other national studies, we also reported the cutoff point of 160/95mmHg⁴⁰, used until recently. Pregnant women were excluded from the study.

Individuals with a body mass index (BMI = weight/height²) equal to or above 30 were classified as obese⁴¹. Those with BMI <30 and ≥ 25 were classified as overweight, and those with BMI below these values were considered normal⁴¹.

In order to measure the disease occurrence, we calculated the overall prevalence and the prevalence according to specific segments; as measures of association we used prevalence ratios and their respective 95% confidence intervals. Results were tested for statistical significance of associations through Person's chi-square test and the existence of a trend through the linear association of Mantel-Haenszel⁴².

Results

The average age of the population studied, consisting predominantly of mulatto and black women (86.2%), was 37.7 years, 43.9% of them being in the age bracket from 30 to 39 years. As regards educational level, most of the women had completed high school (67%) or college (20.4%), comprising 19.2% nurses and 80.8% nurses' aides. Their workload was significant, their average weekly workload being greater than 30 hours (45.7 hours), due to the existence of more than 1 regular paid activity (54.0%), usually another job in the health area. Approximately half of the professionals interviewed (49.4%) added more than 20 hours of domestic work to their already intense weekly workload, corresponding to physical exertion considered moderate in 50.8% of the cases and heavy in 26.1% of the cases.

According to criteria used until recently establishing 160/95 mm Hg as the cutoff point, we found a prevalence of hypertension of 27.9%, which increased to 36.4% when we adopted the current cutoff point of 140/90mmHg. This prevalence is almost twice as high as among nurses' aides (40.1%) when compared to that of the nurses (21.1%) (Table I).

The prevalence of hypertension increased with age, ranging from 7.1% among the younger women to 70.2% among women aged 50 or more, when the prevalence is almost 10 times greater (Table I). The prevalence of hypertension among overweight (40.2%) and obese (65.9%) groups was, respectively, 2.0 and 3.3 times higher than women whose BMI was within the normal range (Table I).

The prevalence of hypertension among mulatto and black women was twice as high as in white women, 38.7% and 22.1% (Table I). There is a clear inverse relation to educational level, the prevalence of hypertension ranged from 54.8% among women with lower educational levels to 22.8% among those with a college education (Table I).

We observed that blood pressure measurement was a frequent practice within the population studied: 78.3% of the women had measured their blood pressure within the last 6 months, and more than half had done it within the last month (Fig. 1). Therefore, only 18.3% of the cases detected ignored their hypertensive condition (Fig. 2); the absolute majority (73.3%) reported multiple previous episodes, and more than 1 year had passed since the first detection of increased blood pressure (76.4%) had occurred. However, 64.2% of the women studied admitted not being on regular treatment, and among those reporting being on regular treatment, 69.4% had increased blood pressure on examination (Fig. 3). A portion of the women treated (36.7%) were only on a diet; a small portion (14.3%) used only medication;

Table 1 – Prevalence of hypertension according to selected classical predictors							
Predictor	N	Prevalence				PR	95% CI
		160/95 mmHg		140/90 mmHg			
		n	(%)	n	(%)		
Global	494	138	27.9	180	36.4		
Occupation*							
Nurse	95	17	17.9	20	21.1	1.0	**
Nurses' aide	399	121	30.3	160	40.1	1.9	(1.3 - 2.9)
Age*							
20-29	84	5	6.0	6	7.1	1.0	**
30-39	217	47	21.7	61	28.1	3.9	(1.8 - 8.8)
40-49	146	59	40.4	80	54.8	7.8	(3.5-16.8)
50 +	47	27	57.4	33	70.2	9.8	(4.4-21.7)
BMI*							
Normal	198	31	15.7	40	20.2	1.0	**
Overweight	214	60	28.0	86	40.2	2.0	(1.4 - 2.7)
Obesity	82	47	57.3	54	65.9	3.3	(2.4 - 4.5)
Color of the skin*							
White	68	12	17.6	15	22.1	1.0	**
Black or mulatto	426	126	29.6	165	38.7	1.8	(1.1 - 2.8)
Educational level*							
Middle school	62	28	45.2	34	54.8	2.4	(1.6 - 3.7)
High school	331	90	27.2	123	37.2	1.6	(1.1 - 2.4)
College	101	20	19.8	23	22.8	1.0	**

* p < 0.05; ** reference group; N- number of workers (global and in each level); n- number of hypertensive individuals (global and in each level); PR – prevalence ratio (calculated based on current criteria of 140/90 mm Hg); CI - confidence interval; BMI – body mass index. (%) of first column (N).

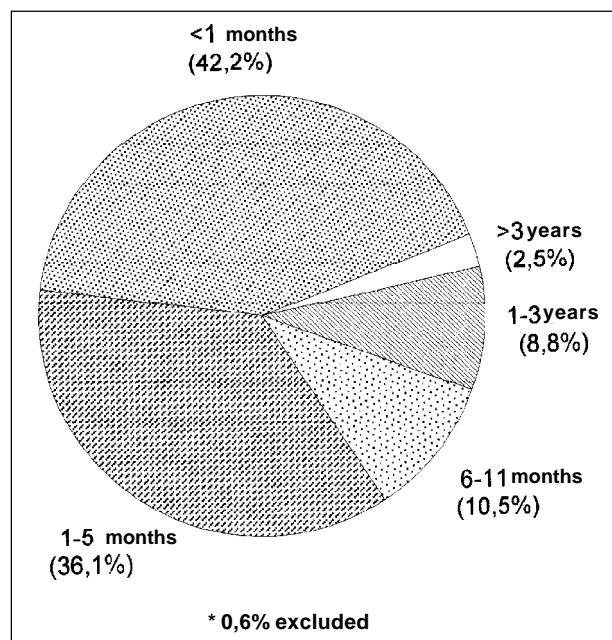


Fig. 1 – Time elapsed since the last blood pressure measurement (N = 491*). * 0.6% were excluded due to absence of measurement.

and most of them (49.0%) combined both modalities of treatment (Fig. 4).

The major reasons for not treating hypertension were the occasional elevation of blood pressure (22.2%) and medical counseling (20.0%). Among the remaining reasons for not treating we can cite the following: not considering it necessary (12.2%) and having no symptoms (12.2%). Pro-

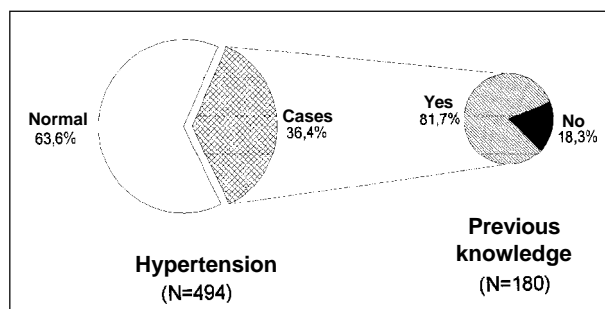


Fig. 2 - Hypertension prevalence (140/90 mm Hg) and previous knowledge of the disease.

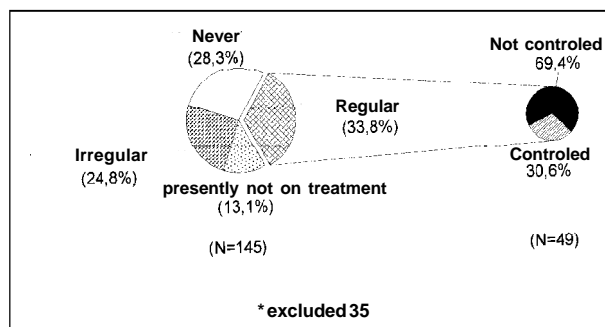


Fig. 3 - Cases of hypertension (140/90 mm Hg)* according to treatment. * Thirty-three workers were excluded because they ignored the disease and 2 more workers because they had no information about treatment. ** Treatment is only in case of episodes of blood pressure elevation.

blems deriving from the use of medication corresponded to only 7.7% of reasons reported (Fig. 5).

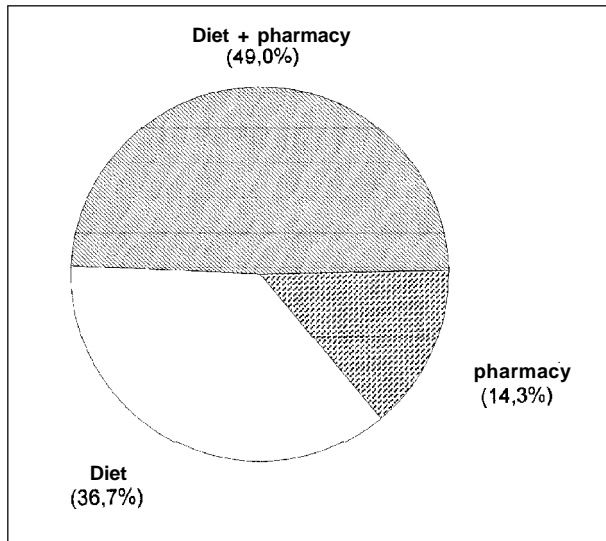


Fig. 4 – Cases of hypertension (140/90 mm Hg) according to a regular type of treatment (N=49).

Discussion

The prevalence of hypertension was very high, particularly in the group of nurses' aides. Their prevalence (40.1%) was almost twice that of the nurses (21.1%). Comparison of this pattern with those of other occupational groups studied in Brazil was difficult, not only because of methodological diversity, but also because of the change in the cutoff point for disease classification and the great differences in age composition. However, the prevalence of hypertension in this population is very high, overtaking only by the prevalence found in 2 other population studies^{14,15} and in another study carried out with men who work in tanneries²⁶. All these studies were conducted in São Paulo and included much older individuals.

The magnitude of the problem in the population group studied is surprising since it involves an occupational group. We would expect to find a lower prevalence of disease than that found in population studies, due to the so-called healthy worker effect, ie, a progressive selection of healthier people and those who are more apt to work⁴³. Ho-

wever, another point that favors the nonexclusion of sick workers in this study is the high prevalence of hypertension in the older age group, where a clear association between disease and age is seen, likewise reported in nonselected populations^{44,45}. On the other hand, in a study of urban vehicle operators⁴⁶, the authors identified that the prevalence of hypertension in this group increased to 41% in the age bracket from 40 to 49 years, from which it decreased a little, remaining between 37% and 38% in older age brackets, indicating a selection by the disease in the population studied. In another study⁴⁷, the authors observed the absence of severe forms of hypertension among women, particularly the older ones, strongly suggesting the existence of mechanisms of restriction to employment combining sex and age. In our study, despite the selection through death or retirement due to disease, the impact on the pattern found was not significant enough to exclude sick people from the active population. On the contrary, one may assume that the public sector, providing stability and having more flexible mechanisms of selection than the private sector, is retaining a population of workers less apt to dispute a place in the workforce, including for reason of disease.

Blood pressure measurements had an excellent intra- and interobserver reliability³⁸. Inclusion of women who reported being on regular treatment for hypertension, even though with blood pressure levels within the normal range, may introduce false-positive results, because the information used is based on the reports of people interviewed. In our study, the answers were compared with others in regard to the use of medication in the last 7 days, confirming a high level of consistency among them. However, the final value of the classification adopted is confirmed by the low percentage of people considered hypertensive by the study with no antecedents of increased blood pressure (only 23.3%). In addition, most of the hypertensive patients detected by the study had a previous history of disease of more than 1 year of duration with multiple episodes of blood pressure elevation.

In an international multicenter study involving 20 countries conducted by the World Health Organization⁴⁸ using criteria equivalent to that used in the present study, the prevalence of hypertension (160/95mmHg) in women ranged from 12.6% in Denmark to 40.3% in the former German Democratic Republic, but most of the populations studied had rates of 25% or more⁴⁹.

The most frequent occurrence of hypertension among female mulatto and black workers is consistent with other findings in Brazil⁵⁰ and in the United States⁴⁴. In our study, the prevalence of hypertension was negatively associated with to the educational level, which is reported in the specialized literature and also in other national studies^{8,14,16,51,52}. Association with overweight and obesity is equally reported in the national^{3,9,16,53,54} and international⁵⁵⁻⁵⁷ literature.

Most hypertensive women in our study reported having previous knowledge of their condition (76.7%), but 63.2% were not on regular treatment, and among the remaining, 69.4% had elevated blood pressure on examination.

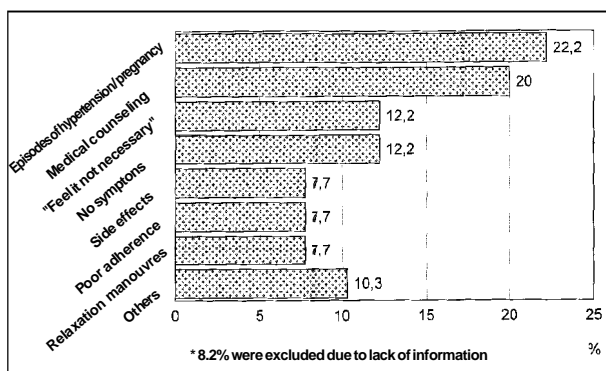


Fig. 5 – Reasons given for absence of treatment among cases of arterial hypertension (140x90 mm Hg) (N=90*), * 8,2% were excluded due to lack of information.

Compared with a few other national studies of working populations that addressed these questions^{25,30,33}, the nursing professionals studied were those that had the highest level of previous knowledge, which may be explained by the frequent practice of measuring blood pressure. They were also those with the highest proportions of adherence to treatment and of people treated with the disease under control. However, this position in regard to the remaining groups does not diminish the severity of the situation, particularly considering health professionals, who should have a higher adherence to therapeutical and prophylactic prescriptions. Two of the other groups studied in the country comprised health professionals, hospital staff²⁵, and physicians³⁰, the latter being in the worst condition in regard to previous knowledge, treatment, and control of hypertension. This indicates the complexity of the problem, since access to information about the severity of the disease, its complications, and preventive and therapeutical resources does not necessarily mean a higher adherence to control measures. However, all these studies indicate the low effectiveness of control actions for hypertension in our country. Population

inquiries³⁹ in the United States have reported a progressive increase in regard to previous knowledge and adherence to treatment. In the period from 1988 to 1991, proportions of 84% and 73% were obtained respectively for previous knowledge and adherence to treatment, with a still low control of more than half of the cases treated.

In conclusion, the results of our study show that hypertension is a severe health problem among the female nurses studied, indicating the need for measures directed at this occupational group, due to the magnitude of the disease and the potential impact in diffusion of knowledge and of measures for controlling hypertension.

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