A Survey of Patterns of Nonpharmacologic Care for Hypertensive Patients, Including Recommendations for Their Children

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SUMMARY To ascertain current approaches of physicians to nutritional-hygienic management of hypertensive patients and their children, a survey was done among a random sample of Chicago-area generalists, internists, and cardiologists. Thirteen items related to advice for patients; two for their children. Of 713 physicians holding M.D. degrees in the sample, 573 (80%) responded. For hypertensive patients, the great majority of physicians indicated that they advise weight loss, avoidance of salt use at table, no smoking, regular exercise, limitation of alcohol intake, and avoidance of stressful situations. Although 98% advised weight loss, a minority responded positively to reduction of carbohydrate and/or fat intake. Only 25% recommended limiting the salt use of children, and only 19% recommended taking the blood pressure of children of hypertensive patients. These data indicate that the majority of Chicago-area practitioners advocate nutritional-hygienic measures for their hypertensive patients. Only a minority, however, apparently advocate primary preventive approaches for the children of hypertensive patients. (Hypertension 2: 215-220, 1980)

KEY WORDS • hypertension • children • high dietary sodium • exercise • weight loss • smoking • alcohol • coffee

APPROACHES to preventive and long-term care of cardiovascular diseases have been changing rapidly over the last decade. The identification of risk factors for hypertension offers further opportunity for early detection, and the resultant growing emphasis on life-style intervention requires a new perspective for health practitioners.1 Nutritional and hygienic measures have been relatively neglected in the training of physicians; educational programs are required to establish their role in the evolving practice of cardiovascular prevention. With this long-range goal in mind, we carried out a two-stage survey among community-based samples of physicians to evaluate current approaches to the nutritional-hygienic management of hypertensive patients. The survey included questions about preventive recommendations for their children.

Methods

Two surveys were conducted 6 months apart, utilizing separate samples of Chicago area physicians.

First Survey

Physicians were randomly selected from the Chicago metropolitan telephone directory; only those with an identified speciality were included. Three areas of practice were chosen: general practice, internal medicine, and cardiology. To achieve relative balance, approximately two-thirds of the listed physicians of each type were included, yielding a sample of 174 general practitioners, 292 internists, and 44 cardiologists, for a total of 510 physicians.

A questionnaire on 15 possible nutritional-hygienic recommendations for a patient with high blood pressure and for his/her children was sent to each physician with a stamped, self-addressed return envelope (table 1). Pharmacological therapy and issues of compliance were specifically excluded from consideration.

Recommendations included on the questionnaire, in random order, encompassed two areas, namely, possible nutritional-hygienic measures: 1) for the hypertensive patient (13 questions); and 2) for possible primary prevention for his/her children (2 questions). While the principal concern of our research group was the response to the two questions concerning children, it was our judgment that the following items in particular also reasonably merited a positive answer: items 002-004, relating to weight reduction and the possibility of control of hypertension by this means, as well as control of the concomitant and additive risk factor, hypercholesterolemia; item 006, also relating to calorie control and to the data showing an association between heavy drinking (4 or more drinks per day) and hypertension; item 011, since high salt intake
TABLE 1. The Questionnaire

From the following statements, please check the advice or recommendations that you give patients with essential hypertension.

- (001) Reduce protein intake
- (002) Reduce carbohydrate intake
- (003) Reduce fat intake
- (004) If obese, lose weight
- (005) Eliminate coffee
- (006) Limit use of alcohol (no more than three drinks/day)
- (007) Take your children to the pediatrician*
- (008) Maintain ideal body weight
- (009) Eliminate alcohol drinking
- (010) Limit intake of coffee
- (011) Avoid added salt at the table
- (012) Eliminate any form of tobacco smoking
- (013) Limit salt intake of children
- (014) Exercise regularly
- (015) Avoid stressful situations

We would appreciate the return of this form as soon as possible. A return envelope is included for your convenience. Thank you.

*Advice 007 was modified in a second survey to read: Take your children to the pediatrician for taking their blood pressure.

is probably involved in the etiology and pathogenesis of hypertension in genetically susceptible people and may interfere with the effectiveness of antihypertensive medication; item 012, since smoking — especially its most common form, cigarette smoking — adds to risk of major cardiovascular disease for the hypertensive patient, as does hypercholesterolemia; item 014, since regular moderate rhythmic exercise can aid in weight control, improve cardiopulmonary fitness, slow heart rate, and possibly contribute to blood pressure control for the hypertensive patient with the cardiovascular capacity to undertake a safe, progressive exercise program.

The first survey was conducted over a period of 6 months during the second half of 1977. Two mailings were required to achieve a response rate greater than 65%, the minimum established at the beginning of the project.

Second Survey

In the first survey, (table 1), recommendation 007 stated, "Take your children to the pediatrician." At that point, it was implied that the item referred to blood pressure measurement for children with hypertensive parents. A second survey, however, was carried out in a new sample to eliminate the possibility of misinterpretation of that potentially vague item. The response was thus modified, "Take your children to the pediatrician for taking their blood pressure" (table 1). The remaining items were unchanged.

This second survey was also conducted over 6 months, during the second half of 1978. The sample comprised the physicians not included in the first survey, and again cardiology, internists, and general practitioners. Two mailings were again required to achieve a response rate greater than 65%.

Pooled Survey

Both surveys were analyzed independently. Since responses were similar, the data from the two surveys were also pooled.

Statistical Methods

We used Z-tests to test the difference in percentage of responses to item 007 between the first and second surveys.

Two-by-two contingency tables were also computed to assess the relationship between response to the questions relating to adults and to children, and the relationship between responses to the two questions relating to children. Similarly, responses to pairs of questions relating to adults were assessed together.

Results

Table 2 summarizes the rates of response, and table 3 the answers to the first and second surveys, by category of physicians.

First Survey

The overall response rate, after two rounds of questionnaire mailing, was 77%, or 392 of the 510 physicians originally selected. The internal medicine group had the highest response rate, 91%; cardiologists the intermediate, 75%; and general practitioners the lowest; 53% (table 2).

The three groups selected recommendations involving nutritional-hygienic measures for hypertensive patients much more often than advice for primary prevention for children (table 3). For example, "If obese, lose weight" was selected by 99% of the physicians; "Avoid added salt at the table" by 93%. In contrast, only 16% of the physicians responded positively to the question about encouraging hypertensive patients to, "Take your children to the pediatrician" (item 007), and only 25% to, "Limit salt intake of children" (item 013).

The physicians in the first survey generally gave similar responses regardless of type of practice. Certain items were given more weight than others, however, by different physician groups. For example, "Reduce fat intake" was marked by 63% of the general practitioners and only 39% of the cardiologists. General practitioners (24%) also checked, "Take your children to the pediatrician" more often than did both internists (14%) and cardiologists (15%) (table 2).
Second Survey

The response rate in the second survey was 89% (table 2). Its principal objective was to test the effect of modifying item 007. The modified item was chosen by only 24% of the doctors in the new sample (table 3). While this percentage is significantly higher than the 16% responding positively in the first survey, it is not qualitatively different; i.e., in both surveys, only a small minority of physicians replied in the affirmative on this question. In the second survey, as in the first, only about a quarter responded positively to the recommendation of limiting salt intake of children.

In general, the response to the rest of the items in the second survey was very similar to the first (table 3). For example, “If obese, lose weight,” (item 004), was the suggestion most selected by each category of physicians (99% and 98% in the first and second surveys respectively). The next most commonly selected were, “Avoid added salt at the table” (item 011) (93% and 96%), “Maintain ideal body weight” (item 008)
(85% and 83%), and “Exercise regularly” (item 014) (77% and 71%). Also, about the same proportion as in the first survey responded to the item, “Reduce fat intake” (item 003) (45% and 41%).

Pooled Survey

In the final analysis with the pooled data from both surveys, 242 tables were generated on the responses to related items for the hypertensive patient, and on the association between responses to questions about adults and children. Only 60 (10.5%) of the 573 physicians with M.D. degrees (MDs) responded affirmatively to both questions about children; fully 67% checked neither (table 4).

The analyses relating responses to the questions about care for hypertensive adults with those about preventive approaches for the children of these adults yielded consistent patterns: physicians who responded positively about use of nutritional-hygienic measures for adult patients with high blood pressure were more likely to advise taking children to the pediatrician than those who replied in the negative (19.9%-37.5% vs 2.9%-18.0%). Correspondingly, those replying positively about use of nutritional-hygienic measures for hypertensive adults were more likely to indicate that children should limit salt intake (25.9%-50.0% vs 0.0%-23.5%). The percentage of physicians advising a preventive approach for the offspring of hypertensive patients, however, never reached the majority.

In regard to responses to pairs of questions on management of adults with hypertension, almost all MDs checked item 004, “If obese, lose weight,” but only a minority (20.2%) simultaneously checked item 002, “Reduce carbohydrate intake” or 003 (43.8%), “Reduce fat intake.” A majority (58.8%) checked both 004 and 006, “If obese, lose weight” and “Limit use of alcohol (no more than 3 drinks/day).” Almost all the physicians (92.7%), irrespective of category, checked both 004 and 011, “If obese, lose weight” and “Avoid added salt at the table.” Two-thirds checked both items 004 and 012, “If obese, lose weight” and “Eliminate any form of tobacco smoking.” Similarly, about three-fourths (74.3%) checked both 004 and 014, “If obese, lose weight” and “Exercise regularly.” Nearly two-thirds (65.1%) checked both 011 and 014, “Avoid added salt at table” and “Exercise regularly.” A majority (36.9%) checked 006 and 011, “Limit use of alcohol” and “Avoid added salt at the table.” About half checked both 014 and 015, “Exercise regularly” and “Avoid stressful situations.” A near majority checked both 006 and 012, and 006 and 014.

Discussion

The results provide evidence concerning the approach of physicians to nutritional-hygienic measures for hypertensive patients, for the primary and secondary prevention of cardiovascular diseases. High percentages reported that they advise their patients to lose weight if obese, maintain ideal body weight, limit use of salt and alcoholic beverages, exercise regularly, and abstain from smoking. High proportions also responded positively to pairs of these questions. Thus, there seems to be high-level agreement about the possibility that modifying these aspects of life-style may usefully contribute to correcting high blood pressure and preventing its “complications.”

Certain of the responses, however, are clearly paradoxical and anomalous. Thus, while almost all physicians indicated their agreement with need for weight control and correction of obesity, only a minority simultaneously checked the questions on reducing carbohydrate and fat intake. This suggests unclarity as to practical methods for caloric restriction to achieve weight loss, or at the very least, failure to make the conceptual link between need for correction of obesity and need to lower carbohydrate and/or fat intake to achieve this. Moreover, failure by a majority to check the recommendation on fat intake suggests limited awareness of the relationship of dietary lipid (along with caloric balance) to serum cholesterol and its control.1-7

Approaches to improving life-styles for the control of high blood pressure and prevention of its complications are well supported in the literature. Thus, epidemiological and clinical data are extensive on the relationship between overweight and hypertension, and the possibility of controlling high blood pressure for obese patients by weight loss.1, 2, 4, 5, 8-10 High dietary sodium has long been considered a crucial element in the development of high blood pressure, although inconsistencies in findings still remain to be clari-

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**Table 4. Relationship Between Response of Physicians to the Two Recommendations About Children: Two Surveys Combined, All Physicians**

<table>
<thead>
<tr>
<th>Recommendation 007: Take your children to the pediatrician*</th>
<th>No</th>
<th>Yes</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recommendation 013: Limit salt intake of children</td>
<td>384 (67.0%)</td>
<td>48 (8.4%)</td>
<td>432 (75.4%)</td>
</tr>
<tr>
<td>Yes</td>
<td>81 (14.1%)</td>
<td>60 (10.6%)</td>
<td>141 (24.6%)</td>
</tr>
<tr>
<td>All</td>
<td>465 (81.2%)</td>
<td>108 (18.8%)</td>
<td>573 (100.0%)</td>
</tr>
</tbody>
</table>

*Recommendation 007 was modified in the second survey to read: Take your children to the pediatrician for taking blood pressure.
Evidence has recently become available that alcohol may also play a role. The importance of lack of exercise is less well established. An elevated heart rate has been described as a risk factor for hypertension, and exercise that promotes cardiovascular fitness can lower heart rate, possibly having a long-term effect on blood pressure. On the other hand, a relationship between cigarette smoking and blood pressure has not been clearly established, although bits of evidence are available. Cigarette smoking, however, is a major, established risk factor for coronary heart disease (CHD). Hence, the recommendation to limit this practice is particularly important for patients with high blood pressure. As to coffee intake, there is no firm evidence linking this habit with the development of high blood pressure, and the findings on its relationship to CHD are inconsistent.

Nutritional-hygienic means could be important tools not only in the therapy of hypertension, but also in its primary prevention. The approach most consistent with present understanding is to consider high blood pressure a multifactorial disease resulting from a variety of homeostatic and metabolic disorders, under environmental (life-style) and genetic influences. All the life-style factors were touched upon by the great majority of physicians responding to this survey with respect to their adult patients, but not with respect to the children of these patients; i.e., in terms of early primary prevention of high blood pressure. Thus, in the first survey, only 16% of the responding practitioners advised patients with high blood pressure, “Take your children to the pediatrician,” and in the second survey — after clarification of this question, only 24% checked it off. Consequently, only 25% replied positively to the recommendation, “Limit salt intake of children,” and only 10% checked both the items on care for children.

Clearly, these are very low-order positive responses, especially in view of the extensive data available on the familial tendency to high blood pressure, and on the relationship between sodium and hypertension. Recent findings by our group underscore this conclusion, since they indicate an association between salt intake and blood pressure, independent of sex, race, weight, and height, in school children as early as age 11-14.

The Task Force on Blood Pressure Control in Children currently recommends that all children over the age of 3 years should have their blood pressure taken at least once a year. The frequency of this examination in actual practice is almost certainly lower. If pediatricians and general practitioners focused their attention particularly on children with high blood pressure in the family background and with such traits as “high normal” blood pressure (e.g., readings in the 75th percentile), overweight, and rapid heart rate, then at least this high-risk segment of the population would come under long-term surveillance. Weight control with a fat-modified diet and limitation of sodium intake could be pursued as preventive measures, as well as participation in sports and exercise programs, and encouragement to avoid cigarettes and alcohol.

As is evident from recent reports, the approach to high blood pressure in children has changed in recent years. Essential hypertension is now regarded as important as, or more important than, secondary hypertension in children, at least in the second decade of life; and the role of the early antecedents of high blood pressure is more widely recognized. The necessity arises in practice to have the prospective view — based on specific data on blood pressure level, pulse, weight, salt intake, and family history — that sizable numbers of children are potential hypertensives. We must then act on it; i.e., use safe nutritional-hygienic means to seek to prevent this serious disease. It is common practice to inquire about the illnesses of parents, but it is not yet common, as this survey shows, to warn the same patients about the possible diseases their children might develop. Change is in order; it may be anticipated that this approach to early prevention will contribute significantly to further decline in mortality from the major adult cardiovascular diseases in the United States over the coming decades.

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