DIETARY FACTORS IN OVERWEIGHT ADULTS.

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CONTENTS

14. ANNEXURES

S U M M A R Y

The often stated inability of many patients to lose weight or maintain weight reduction is a common complaint heard in general practice and the dietary reasons underlying the problem was studied. The study was carried out in a suburban general practice , and it was found that there is a high degree of dietary ignorance and dietary indiscretion in overweight people. This would therefore account in the majority of cases for the claims made by patients that they eat very little and yet cannot lose weight.

Overweight/obesity is of multi-factoral aetiology and the dietary aspect plays a major role. Thus recommendations have been made to endeavour to correct the problem at general practice level, by supplying a protocol in an approach to weight control management and at a community level by the introduction of a comprehensive and multifaceted health programme aimed at education and implementation of good dietary behaviour.

I N T R O D U C T I O N

The high incidence of people being overweight poses a serious public health problem and obese individuals are at risk for many degenerative disease conditions (1,12,3).

In general practice the practitioner encounters many overweight patients and in the interests of good medical practice, these patients should have their weight reduced. This has not proved to be an easy task and long term success even in specialised institutions has been poor (6). There are many reasons for these poor results (1,2,3,4,5) and one of the main problems found in general practice is that many of the patients state that they consume very little in the way of food or watch their diet very carefully but still are not able to lose weight. It is therefore important that the aforegoing statement be investigated so as to endeavour to pinpoint why many overweight patients are unable to lose weight because the answer could result in the successful long term reduction in weight. This in turn would have enormous benefits in terms of improved health and monetary value for the individual and for the community as a whole.

This study was therefore undertaken to investigate dietary factors in overweight adults and to answer the question of why some overweight patients are unable to lose weight or maintain any weight reduction.

O B J E C T I V E S

1. To identify overweight adults who have no medical cause for such overweight.
2. To determine in persons included in the study, their opinion concerning :-
   (a) a normal diet
   (b) a reducing diet
   (c) fattening and non-fattening foods.
3. To identify beliefs concerning diets which may lead to an increase in weight or inability to lose weight.
4. To advance hypotheses in respect of dietary habits and beliefs which may lead to increase in weight or inability to lose weight.
5. To prepare a protocol of procedure for the management of overweight patients.

DEFINITION OF CRITERIA

The following terms are defined for the purposes of this study.

1. Acceptable weight range:as indicated in guidelines for body weight. Journal of the Royal College of Physicians, London 1983 17: 5-65 (Annex. A)
2. Overweight : when body weight exceeds the upper limit of acceptable weight range indicated in 1 above.
3. Normal diet : an adequate supply of all the nutrients needed to promote a state of well being (health) for each individual.
4. Reducing diet : where nutrients are prescribed in amounts that are regulated as to amount and type of nutrients so as to cause weight reduction.
5. Fattening and non-fattening food : refers to food which the patient regards as being able to cause an increase or decrease in body weight.
6. Medical cause : a known pathological condition which can be attributed as the cause of overweight.
7. Dietary habits : may be regarded as the regular daily pattern of food intake, including quantity and quality of foodstuffs.
8. The Practice : The family general practice of the researcher situated in Sarnia Road, Durban.
9. Dietary ignorance : Inadequate knowledge with respect to the calorie content of foods (i.e., ignorance with respect to which foods are potentially fattening).
10. Dietary indiscretion : consumption of foods known to be of high calorie content by a person wishing to lose weight.

SELECTION OF SAMPLE AND CONTROL GROUPS

SAMPLE : The first thirty five patients attending the Researcher's practice commencing 1st June 1985 who were classified as overweight according to the above definition and who had no known medical cause for being overweight were included in the study.
Repeat consultations during the study period were not included in the study.

CONTROL : No control group will be drawn for the purpose of this descriptive study. However, comparisons internal to the study will be made.

METHOD OF DATA COLLECTION

During the normal running of the practice the researcher was able to select patients for weighing and measurement of height. Using the guideline for bodyweights (Annexure A) the first 35 overweight patients attending the researcher's practice commencing 1st June 1985 were included in the study providing no medical cause for being overweight could be found.

In respect of all patients included in the study

(i) interviews were conducted at the consulting rooms of the researcher by a qualified nursing sister who works in the practice and who was thoroughly briefed on the questionnaire and check list and where doubts existed with regard to the adequate answering of questions then the interviewer referred the problem to the researcher.

(ii) A questionnaire for dietary history (Annexure.B) was administered by the inverviewer.

(iii) An additional questionnaire directed to a 24-hour food recall (Annexure.C) was also administered by the same inverviewer. This questionnaire served as a memory "jogger" to the patient and was used after the patient had completed their list of foods eaten during the previous 24 hours.

(iv) Opinion was solicited regarding the various foods included on a list (Annexure.D) which were considered to be fattening or non-fattening by the patient.

At the end of the interview the two questionnaires (annexure.B and C) plus the check list (Annexure.D) were handed to the researcher.This concluded the initial interview and on leaving the

surgery the patient was issued with a guideline format (Annexure.E) to aid in the recording of all food consumed during a 24 hour period during one week day. At the conclusion of the one day food record the patient was requested to return the record to the researcher.

Bias was reduced through the following means:

(a) The inclusion of the first 35 consecutive overweight patients attending the practice during the study period who met the requirements for inclusion in the study.

(b) The exclusion of repeat consultations during the study period.

(c) The use of standardised questionnaires.

(d) A fully briefed and trained (nursing sister) interviewer administered the questionnaires.

(e) There was strict adherence to defined criteria.

The interviewer was specifically warned and reminded not to prompt for answers and not to answer any questions, especially with the open-ended questions. Many of these open-ended questions expected one or more answers e.g. "patient's reason for being overweight"? The patient could give one or many reasons or reply that they did not know.

LIMITATIONS OF THE STUDY

Due to the relatively small sample size it was not possible to do statistical tests of significance.

Dietary analysis was difficult because of the complex nature of human eating behaviour and doubt as to the accuracy of daily food intake.

R E S U L T S

IDENTIFICATION OF OVER-WEIGHT ADULTS (OBJECTIVE 1)

All overweight patients (total 35) who were included in the study were assessed and no medical cause for their being overweight could be identified.

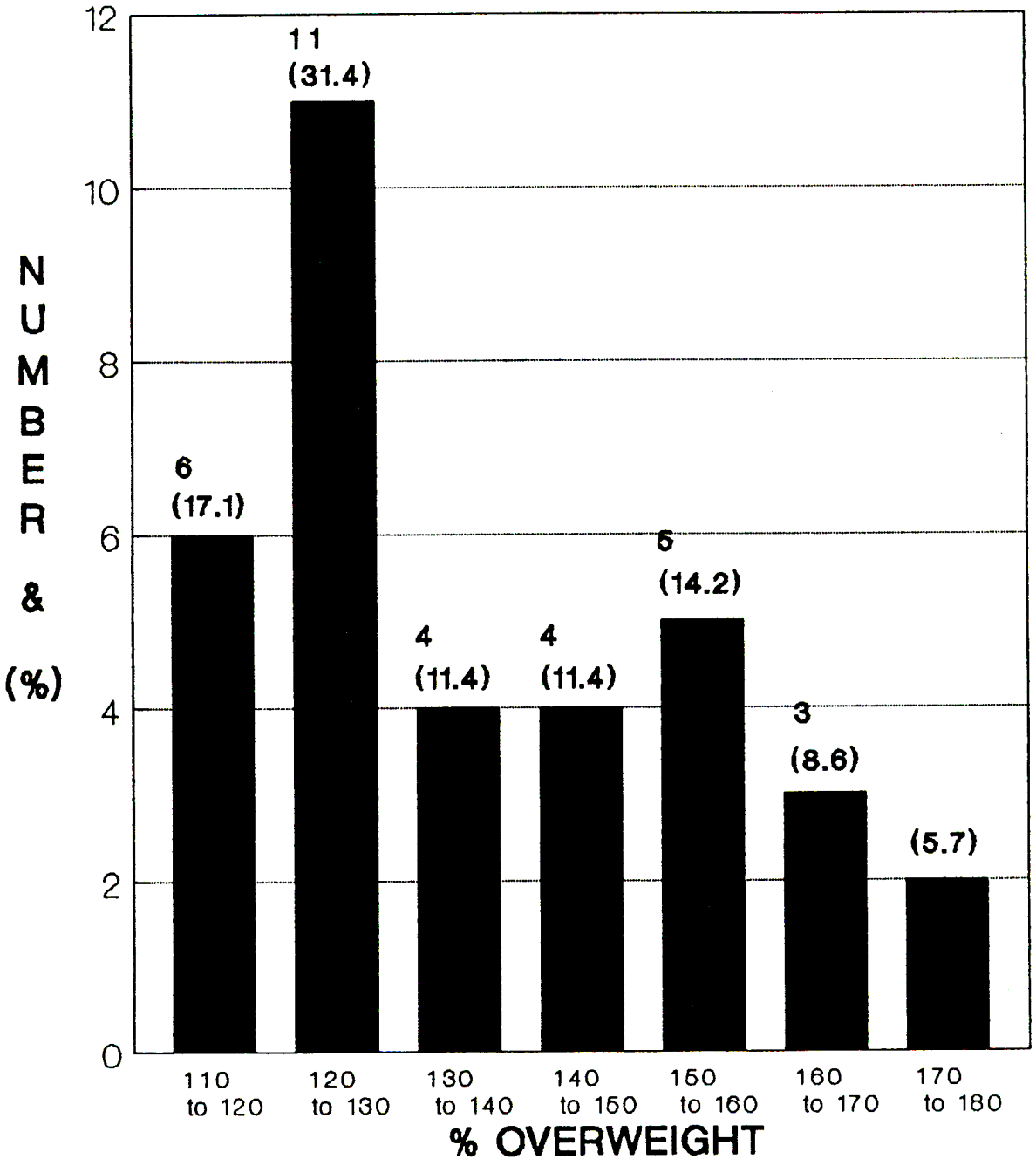
Of the 35 patients there were 26 females (74%) and 9 males (26%). All the males were over the age of 35 years and there were 10 females who were under the age of 35 years (Table 1).

The average age for males was 52.4 years and for females 44.3 years. The average weight for males (104.6 kg) was appreciably higher than that of the females (85.6 kg) but the average percentage overweight for males (136.0) was only slightly less than that for females (137.3). (Table 2).

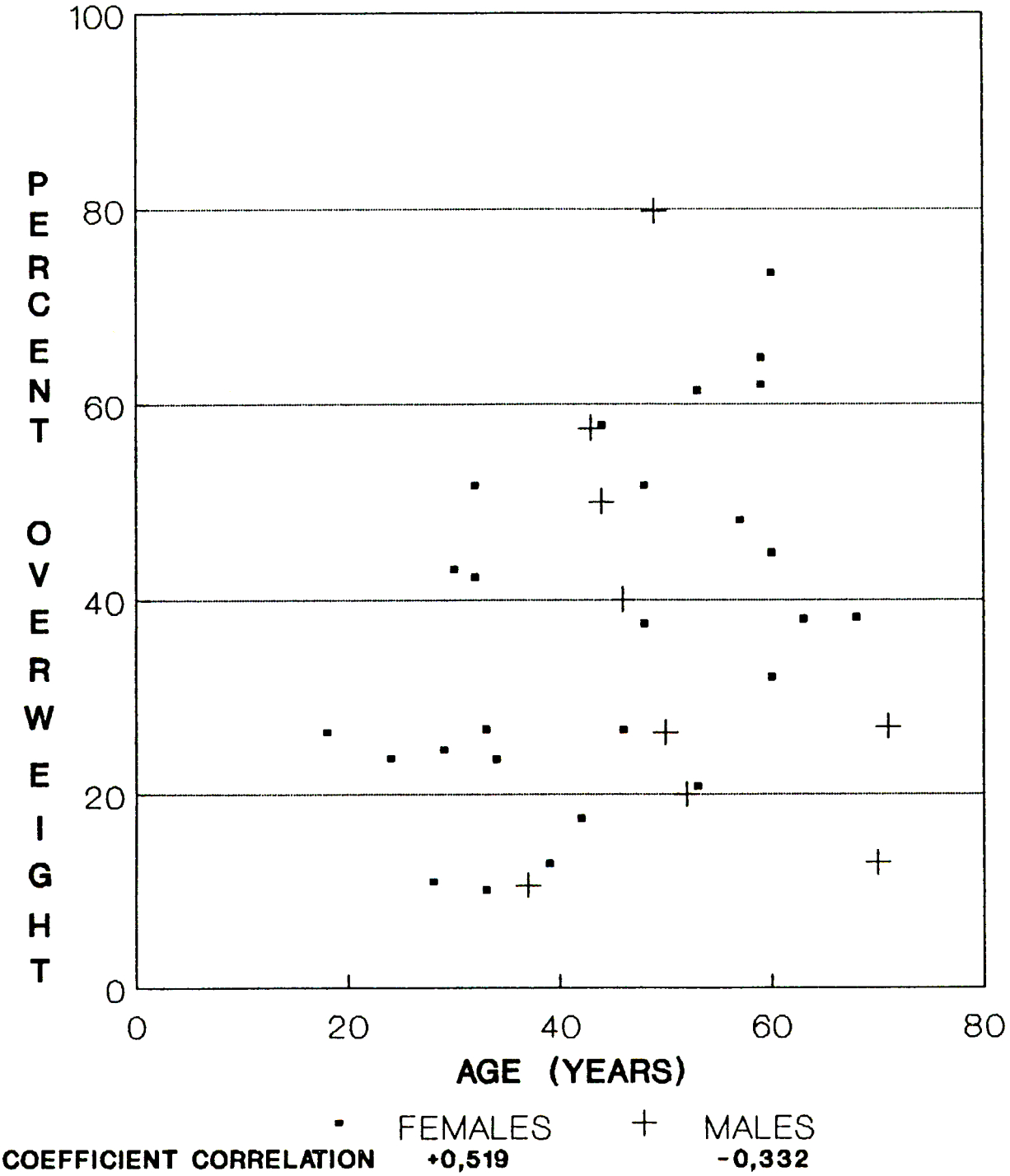
The highest percentage (31.43) of overweight patients were in the percentage overweight range of 120-130. An interesting finding was the unexpected higher percentage (of 14.29) in the 150-160 group (Table 3 and Fig. 1).

From the Graph (Graph 1) of age versus % overweight the correlation coefficient (r) for males was -0.332, and for females was +0.519.

FIGURE 1: BAR DIAGRAM SHOWING DISTRIBUTION OF PATIENTS WITH RESPECT TO % OVERWEIGHT. NUMBER AND PERCENT (%)



GRAPH 1: AGE (YRS) OF ALL THE PATIENTS VERSUS PERCENT OVERWEIGHT (see annexure G/H)



COEFFICIENT CORRELATION **+0,519** **-0,332**

OPINIONS OF OVERWEIGHT PATIENTS REGARDING THE COMPOSITION OF A NORMAL DIET (OBJECTIVE 2a)

Group A -the group (10) of the patients who believe they eat correctly

Group B -the group (25) of the patients who believe they eat incorrectly

GROUP A

Of the patients interviewed, 10 (29%) said that they ate what they considered a normal diet and therefore believed that they ate correctly and not in a manner which should lead to weight gain.

All of these patients, on analysis of their diets showed dietary ignorance and/or dietary indiscretion (Table 4). None of the patients were on diet & daily caloric intake varied from about 400 cals/day to 1500 cals/day. (Table 4).

On analysis of this group of 10 patients it was found that 3 (30%) showed dietary ignorance only, 1 (10%) showed dietary indiscretion only, and 6 (60%) showed both dietary indiscretion and ignorance (Fig.2 and Table 6).

GROUP B

Of the remaining 25 (71%) patients, all said that they ate incorrectly and therefore did not follow a normal diet. The daily caloric intake varied from about 400 to 3000 calories/day. (Table 6).

Of these 25 patients , 3(12%) were on diet (so showed no dietary indiscretion and/or ignorance).Of the remaining 22 patients 4 (16%) showed dietary ignorance only, 1(4%) showed dietary indiscretion only, and 17(68%) showed both dietary ignorance and indiscretion.(figure 2.)

However, when both groups (i.e. all patients) were assessed, 7(20%) showed dietary ignorance only, 2(5,7%) showed dietary indiscretion only and 23(65.7%) dietary ignorance and indiscretion (Table 6, Fig. 3).

It was also found that 30(85.7%) of the patients had some degree of dietary ignorance and 25(71.4%) of patients exhibit some degree of dietary indiscretion (Fig. 4).

FIGURE 2: PIE DIAGRAM SHOWING DEGREES OF DIETARY IGNORANCE AND DIETARY INDISCRETION WITH RESPECT TO PATIENTS WHO BELIEVE THEY ARE EATING CORRECTLY AND INCORRECTLY.

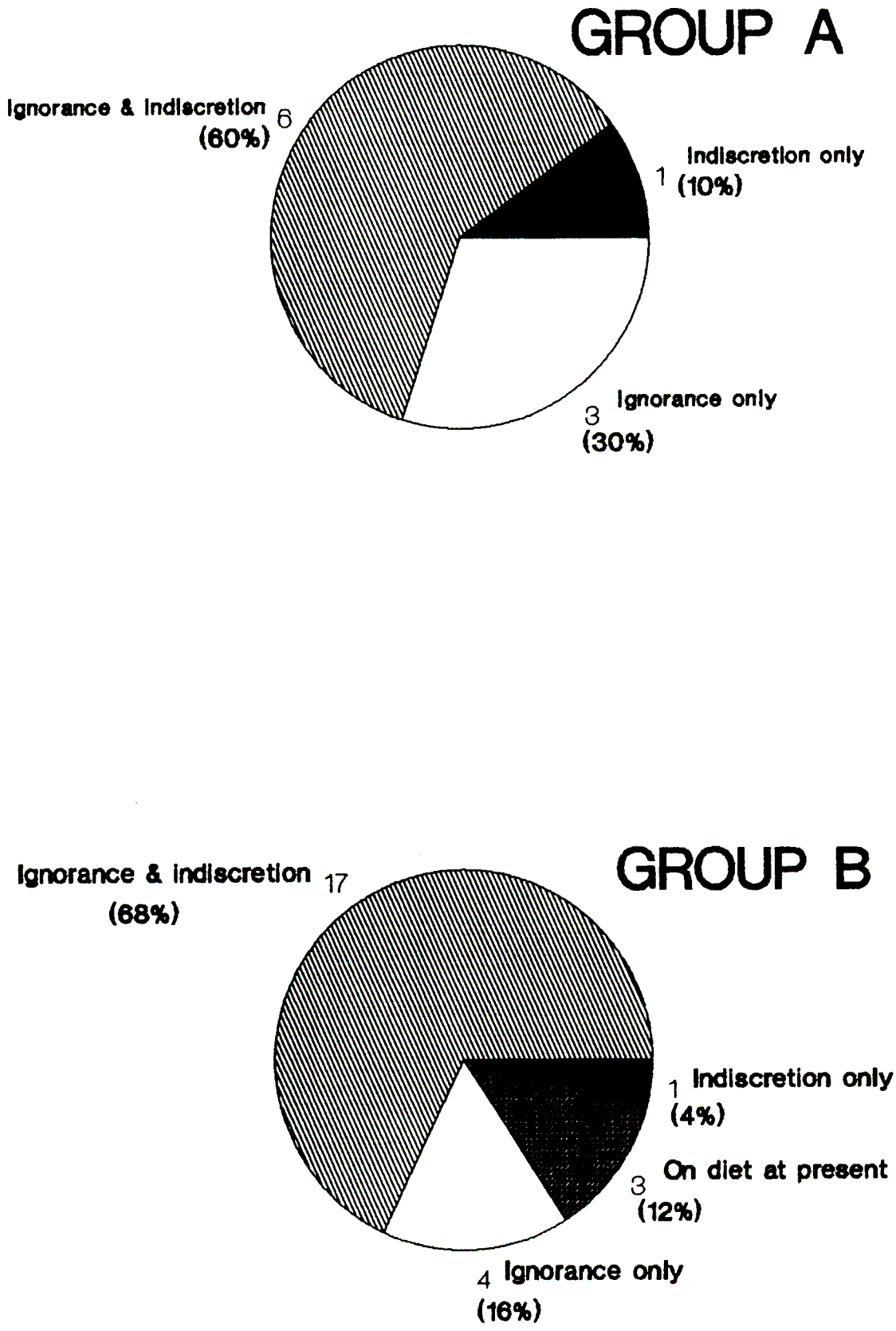


FIGURE 3: PIE DIAGRAM SHOWING DEGREES OF DIETARY IGNORANCE AND DIETARY INDISCRETION IN ALL PATIENTS.

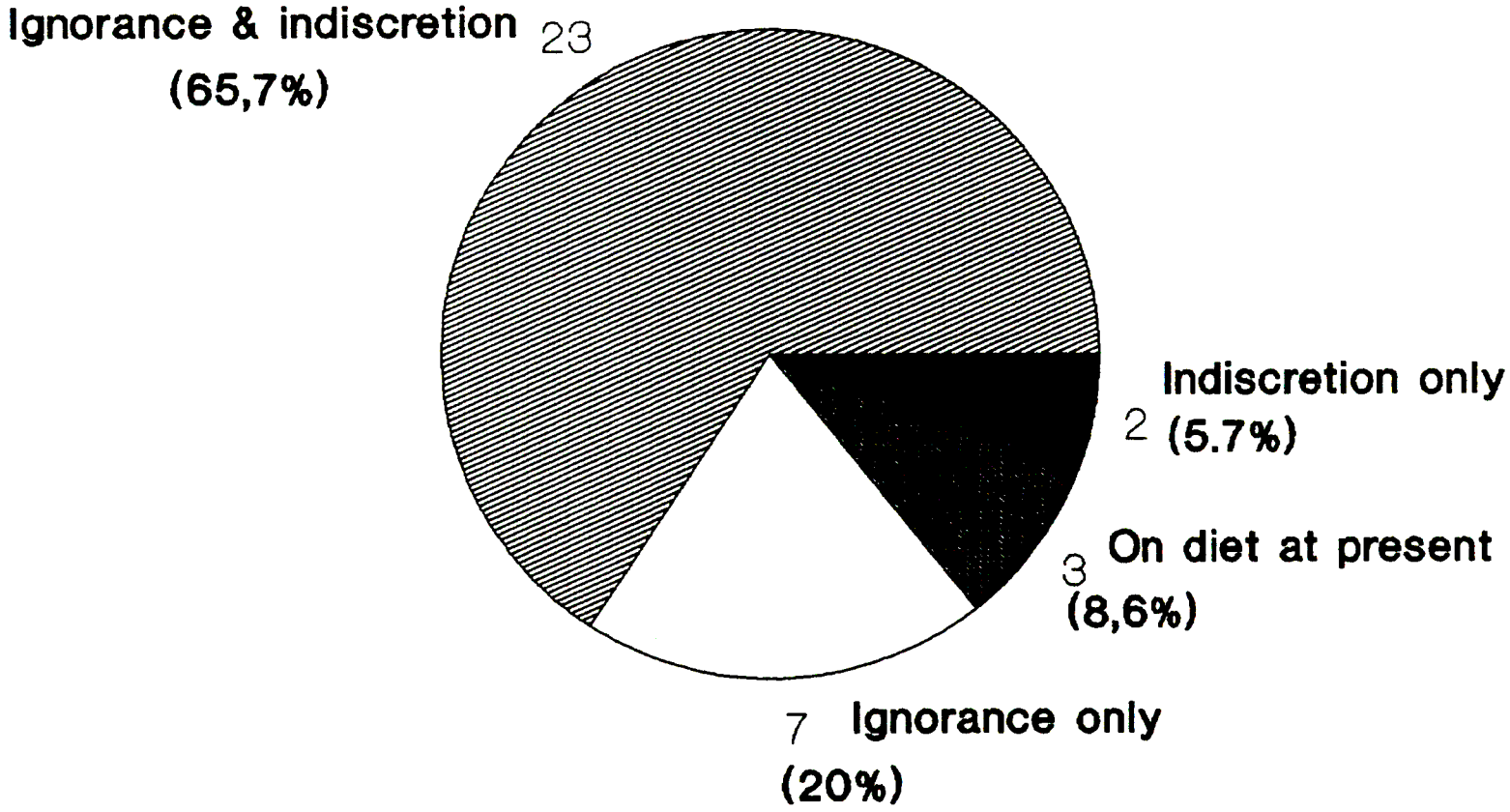
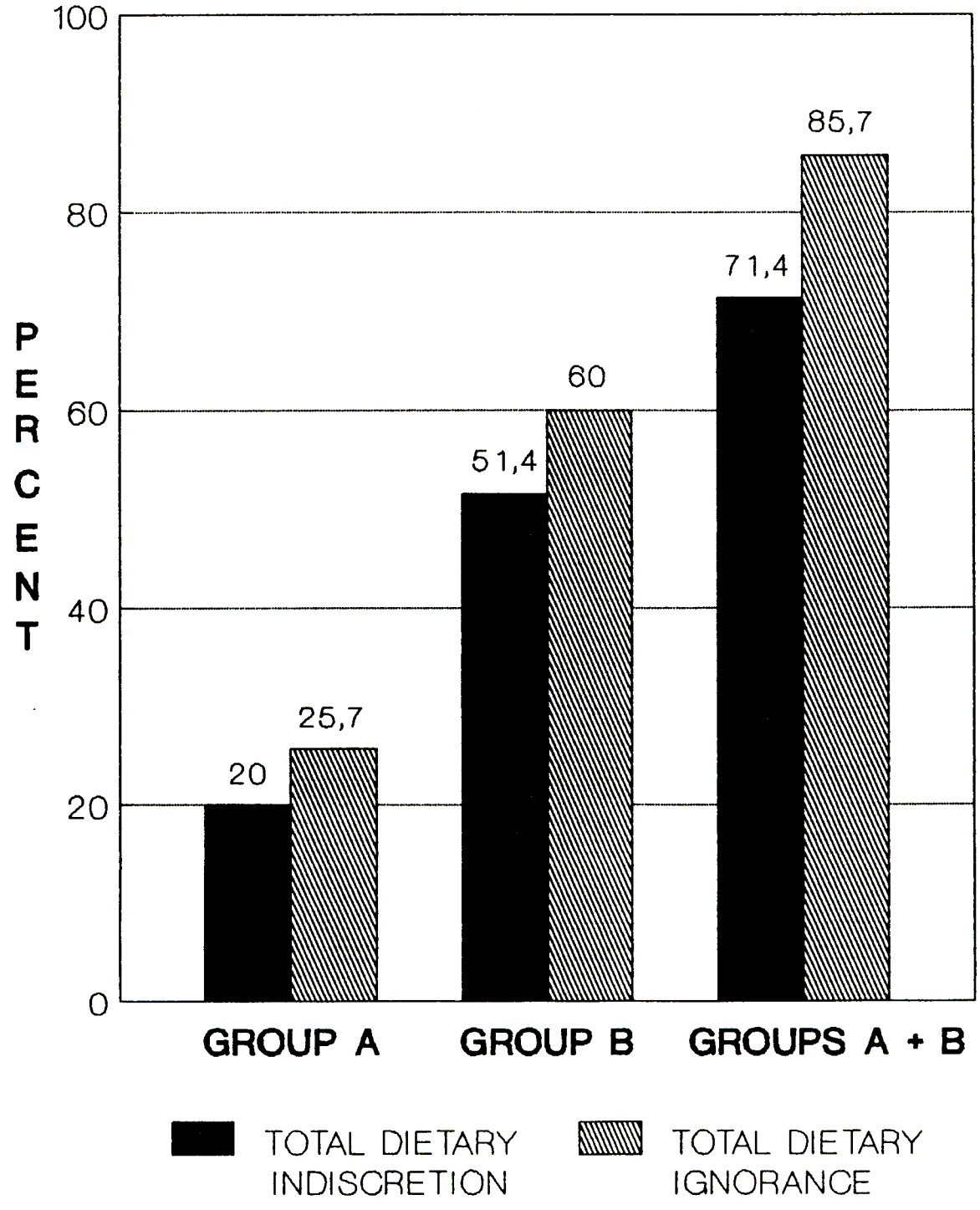


FIGURE 4: BAR DIAGRAM SHOWING PERCENTAGE OF DIETARY IGNORANCE AND INDISCRETION IN PATIENTS WHO BELIEVE THEY ARE EATING CORRECTLY (GROUP A) AND WHO BELIEVE THEY ARE EATING INCORRECTLY (GROUP B)

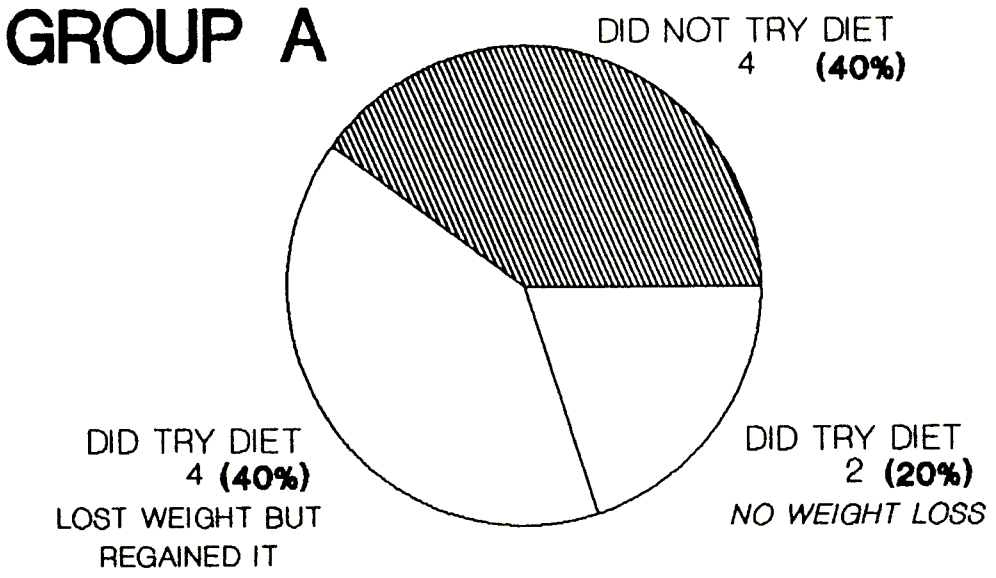


OPINIONS OF OVERWEIGHT PATIENTS REGARDING THE COMPOSITION OF A REDUCING DIET (OBJECTIVE 2b)

The study showed that at some stage or another, a total of 24 (68.57%)patients had tried to diet but that all had failed in their efforts (Table 9, Fig. 6 and 7). Of the 24 patients, 5 (14.28%) did not lose any weight and 19 (54.29%) lost some weight but soon regained it. Eleven (31.43%) did not try to diet.

They all believed that a reducing diet required the reduction of the amount of food eaten, but on dietary analysis of the degree of knowledge with respect to food content (i.e. whether it is fattening or non-fattening) it was found that the knowledge was poor or not applied (Tables 4 and 5). Thus a reducing diet in most cases was actually a diet which would result in an increase in weight.

FIGURE 6: PIE DIAGRAM SHOWING THE PERCENTAGE DIFFERENCES IN DIETING AND NON-DIETING IN PATIENTS IN GROUP A AND GROUP B.



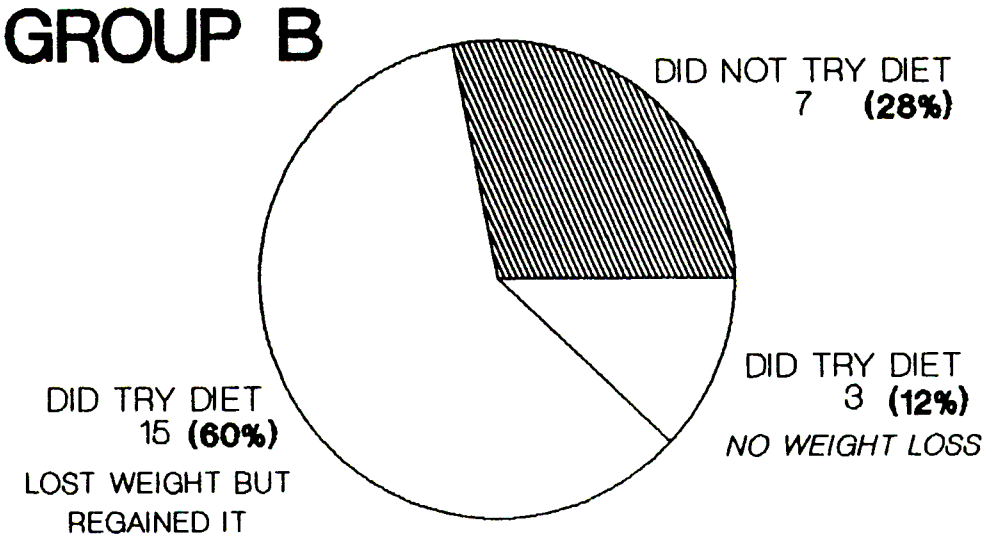
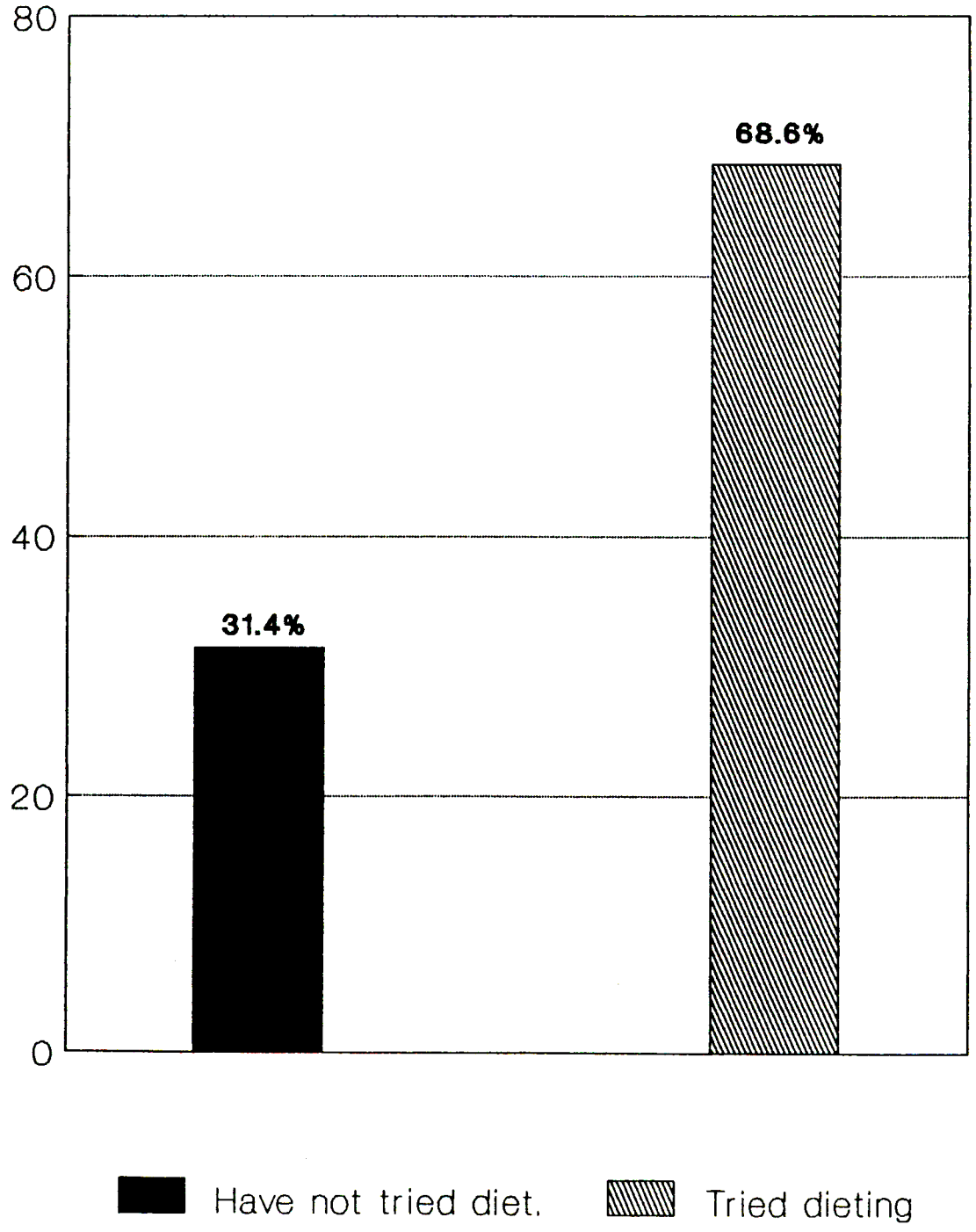


FIGURE 7: BAR DIAGRAM SHOWING THE PERCENTAGE OF ALL PATIENTS WHO DIETED AND THOSE WHO HAVE NOT TRIED DIETING.



OPINIONS OF OVERWEIGHT PATIENTS REGARDING FATTENING AND NON-FATTENING FOODS (OBJECTIVE 2c)

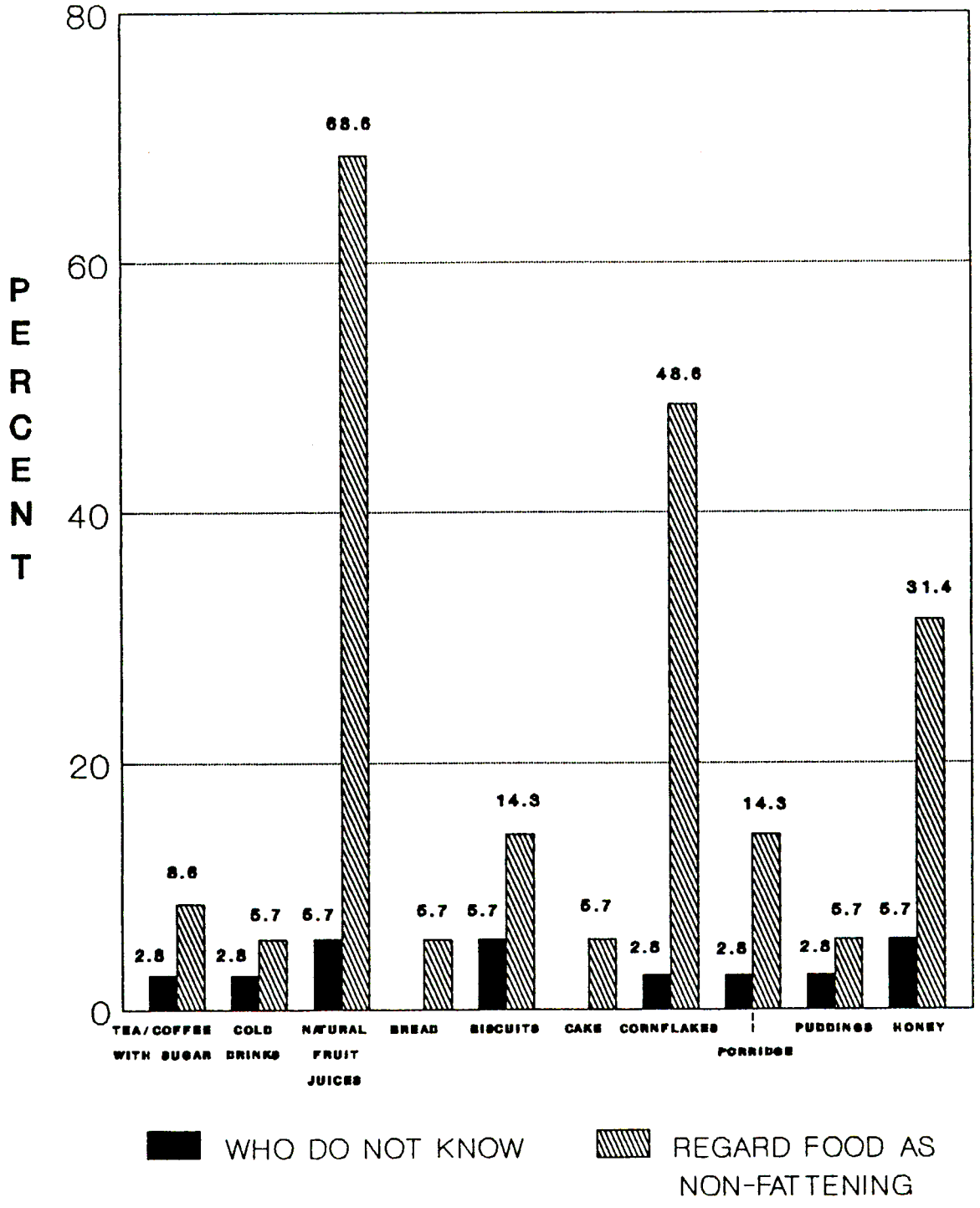
In response to the questionnaire (Annex. D) the answers show a wide range of opinions (Table 7) and to simplify matters 10 of the common foods which may cause problems in weight control were analysed (Table 8 and Fig. 5.).

A high percentage of patients regarded various foods as non-fattening e.g., natural fruit juice (74.3%) biscuits (20%) honey (37.1%) porridge (17.1%) and cornflakes (51.4%).(Table 8)

The patients also showed a surprising degree of ignorance towards the more obvious "villians" in diet control i.e., tea/coffee with sugar (11.4%) cold drinks (8.5%) bread (5.7%) cake (5.7%) puddings (8.5%) and potatoes (5.6%). The relatively high percentage of "don't know" found under wine, beer and alcohol is partially due to ignorance resulting from some patients being teetotallers (Table 8).

With respect to the rest of the foods in the questionnaire (Annex. D) these consisted mainly of the vegetables and fruits and as these are not usually a problem in weight gain (and the good general knowledge shown by patients to these foods) it was decided not to carry out a detailed dietary analysis on them.

FIGURE 5: BAR DIAGRAM SHOWING PERCENTAGES OF PATIENTS WHO ARE IGNORANT OF WHETHER CERTAIN FOODS ARE FATTENING OR NON-FATTENING.

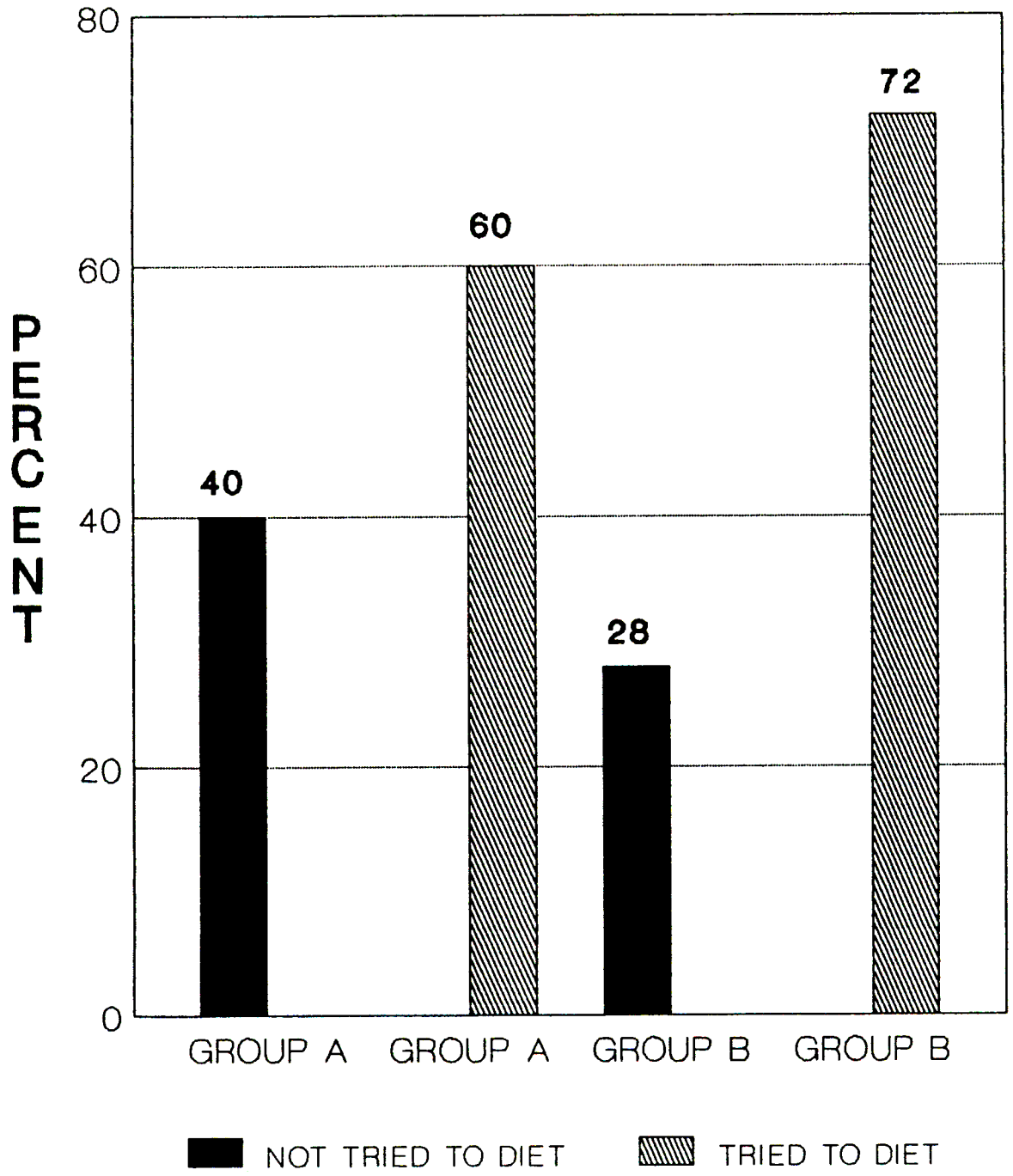


BELIEFS CONCERNING DIETS WHICH MAY LEAD TO AN INCREASE IN WEIGHT OR INABILITY TO LOSE WEIGHT (OBJECTIVE 3)

In this study 10 (28.6%) patients believed that they ate correctly (group A) and should therefore maintain correct body weight. Of this group 6 (60%) had at some stage tried to diet but all had been unsuccessful, and 4 (40%) had not attempted at any stage to diet. (Table 9, Fig. 6 and 8).

There were 25 (71.4%) patients who believed that they ate incorrectly (group B). In this group 18 (72%) had tried at some stage to diet and all had also been unsuccessful in their attempts to lose weight. There were 7 (28%) patients who had not attempted at any stage to diet. (Table 9, Fig. 6 and 8).

FIG.8 BAR DIAGRAM SHOWING THE PERCENT(%) GROUPS A & B OF PATIENTS WHO BELIEVED THEY NEEDED TO DIET OR NOT



D I S C U S S I O N

INTRODUCTION

It has been stated many times that overweight/obesity is basically a problem of energy expenditure which results from an imbalance between energy intake as food and expenditure of energy for metabolic and physical purposes i.e., when energy intake exceeds energy expenditure (2,4,5,8). This has often lead to a simplistic treatment approach which is merely based on reducing energy intake (i.e., dietary restriction) and the results are often disappointing because the aetiology of imbalance between total energy intake and total energy expenditure is multifactoral (1,2,12).

Thus, attempts to lose weight simply by reduction of energy intake (i.e., reduced food intake) is guaranteed to fail unless due attention is given to psycho-social aspects and behavioural modification (1,2,12).

The correct approach to weight reduction is therefore multifactoral and will involve :-

(a) correct dietary habits

(b) motivation

(c) attention to any psycho-social aspects

(d) some degree of mild to moderate regular physical activity

The cornerstone to weight reduction is the permanent changing of the eating behaviour of the patient so as to bring about the gradual permanent loss of excess fat (2,4,7).

IDENTIFICATION OF OVERWEIGHT ADULTS (OBJECTIVE 1)

Of the 35 patients in the study 26(74.3%) were females and 9 (25.7%) were males, and this difference maybe explained on the basis that more females visit the practice than do males each month.

Although both males and females had approximately the same average % overweight (i.e., 137.3 and 136.0 respectively : Table 2) it was surprising to note that the majority of patients could be classified as obese and what was more disturbing was that 10(38.5%) of the females were under the age of 35 years.

The results also showed a coefficient correlation (r) of -0.332 for males and +0.519 for females with respect to age and % overweight and this has also been seen in other studies. (1,4).

The average age for males was 52.4 years and for females 44.3 years. No comparison was made because it was felt that the total male ages were higher because of the higher attendance by male pensioners and the younger males were at work and who attended family practices near their place of work.

OPINIONS OF OVERWEIGHT PATIENTS REGARDING THE COMPOSITION OF A NORMAL AND A REDUCING DIET (OBJECTIVES 2a,b)

Of all the patients, 10(28.57%) said that they believed that they ate correctly (Group A) and 25(71.43%) said that they believed that they ate incorrectly (Group B).

FOOD ANALYSIS OF GROUP A

It is important to note at the outset that the study of food intake in man is difficult because of the complex nature of human eating behaviour (12). The simplest way to find out what people have eaten is via a 24-hour dietary recall (Annex. C) but it has been shown that data so collected is unreliable but useful when used in relation to dietary check lists (Annex. D) and food list (Annex. E). This technique has been used in many large surveys (4).

The daily calorie intake varied from 400 to 1500 cals./day. One patient indicated that she only consumes about 400 cals/day and although her 24 hour food recall and one day food record shows about 400 cals/day there is some doubt as to the accuracy of the daily food intake. Thus doubt arises due to various contradictory facts such as

(a) high level of ignorance with respect to fattening and non-fattening foods

(b) age 32½ years, plays squash, eats about 400 cals/day and is 142% overweight

Within this group, there was a relatively high percentage of dietary ignorance (30%) only, and also dietary ignorance mixed with dietary indiscretion (60%) (Fig. 2). Bearing in mind that all of these patients are overweight (and none at present on diet) it

could be concluded from the above that although these patients believed that they are eating correctly they are in fact making mistakes in their eating habits (many of which they are unaware of).

FOOD ANALYSIS OF GROUP B

The daily calorie intake varied from about 400 to 3000 cals/day, the majority of these patients consuming greater than 1200 cals/day. One patient who is 126.6% overweight gives a daily calorie intake of about 400cals/day and shows a good dietary knowledge with regular physical activities such as walking . It is therefore difficult to explain the reason for being overweight but the food recall and record shows so little food consumed daily that it casts doubt on the accuracy of the food recall and food record. Amongst this group , 16% showed dietary ignorance only, 4% dietary indiscretion only and 68% showed both dietary ignorance and indiscretion. Again it could be concluded that many patients are making dietary mistakes without being aware of it.

OPINIONS OF OVERWEIGHT PATIENTS REGARDING FATTENING AND NON-FATTENING FOODS (OBJECTIVE 2c)

The check list (Annex D.) which contains all the foods under test is a relatively straightforward test of a persons knowledge with respect to which food may be regarded as fattening (high calorie content) and which may be regarded as non-fattening (low calorie content). If the patient was not sure of the answer then they put an X in the column marked "dont know". This test can give a fairly good and accurate assessment of the patient's dietary knowledge.

As seen from the results, patients showed varying degrees of dietary ignorance with respect to foods which are high in calorie content. For example, ice-cream and sweets were identified by all (100%) as being fattening but cold drinks (8.5%), cakes (5.7%), puddings (8.5%), bread (5.7%), rice (8.6%) and potatoes (5.6%) were identified as being fattening by only a small percent of the patients.

The unexpected high degree of dietary ignorance shown towards natural fruit juices (74.3%) can only be explained by the fact that people regard it as a "natural" product and therefore should not be fattening, plus the label says "no added sugar", thus creating the impression that there is little or no sugar (and therefore not fattening) in the product.

From Figure 5, marked dietary ignorance was showen in respect of biscuits (14.3%), cornflakes (48.6%), porridge (14.3%) and honey (31.4%).

IDENTIFICATION OF BELIEFS CONCERNING DIETS IN OVERWEIGHT PATIENTS (OBJECTIVES 3)

It is apparent from the discussion above and from the fact that in the total group of patients, 85.7% showed dietary ignorance and 71.4% show dietary indiscretion, and that there is sufficient reason for many of these patients to make mistakes in their eating habits and thus result in no improvement in weight control.

It can be argued that other factors play a role in weight control, such as

(a) the metabolic rate being lower in some patients (1,15,8)

(b) the fact that some people have a good knowledge of dietary control but calorie-counting diets often fail because energy values of foods are estimated incorrectly and individuals incorrectly estimating their calorie intake (1)

(c) socio-psychological factors (1,2,12)

(d) the majority of patients (and doctors) do not treat over-weight problems seriously (4)

(e) endocrinological factors (1)

But from this study it is obvious that dietary ignorance and indiscretion play a major role in overweight people who cannot understand why their weight either increases or remains static whilst they are eating "so little." This conclusion can be borne out by the fact that all of the patients in the study 68.57% failed (Fig. 6 and 7).

It is therefore also apparent that many of the dietary beliefs such as :-

(a) many people eat correctly

(b) many people have a good knowledge of which foods are fattening and which are not

(c) simply by reducing the dietary intake weight loss will result and be maintained

are not correct. Dietary education of overweight patients is therefore important.

CONCLUSIONS

1. Overweight/obesity is a common problem which is often multifactoral in aetiology (1,2,8,9) and is a difficult problem for the busy doctor to treat as the treatment makes considerable demands on professional skill and time.
2. There is an urgent need for treating overweight people because :-
   (a) of the association with a high mortality rate and with many diseases (1,3)
   (b) doctors (and patients) do not take seriously the need to treat the condition (4)
3. The study shows a high level of dietary ignorance and indiscretion in overweight people and this despite the fact that many of the patients have previously been on diet.
4. The high percent(%) of overweight patients who had been on diet previously and were not successful in their efforts indicates that their dietary approach to weight control is inadequate. This could be due to many reasons and would be the subject for further investigations.
5. The correct approach to weight control appears to be multifaceted :-
   (a) team involvement (i.e. Doctor/Dietician, patient, family)
   (b) dietary education (1,4,9)
   (c) dietary behaviour modification (1,2,5,11,14)
   (d) draw up an agreeable diet (together with patient) so that diet is palatable (2,4)

(e) encouragement and motivation play a key role (1,2,4) and repeated visits to doctor to assess progress (14)

(f) mild to moderate physical activity should be encouraged because although the overall energy expenditure is small this can have a long term effect plus the increased physical activity does increase the metabolic rate and this is an important advantage to counteract the decline in basal metabolic rate following dietary energy restriction (1,2,8,9,10)

(g) the use of limited quantities of appetite suppressants and then only for certain cases (e.g., when hunger is such a problem that it is interfering with therapy) and only for a limited time after which behavioural modification must take over and regulate the diet (1,7,9).

6. The very large number of overweight adults (and children) makes it imperative that the whole population should be encouraged to adjust its dietary pattern (by good dietary education) thereby leading to a change in the national diet which should be beneficial to all. Such changes would obviously require the involvement of all community health physicians, the government and industry (1)

7. The prevention of overweight/obesity has been sadly neglected in this and many other countries with respect to adults and children, and very little work has been undertaken to identify the best methods for preventing weight gain within the population.

RECOMMENDATIONS

1. An urgent investigation is required to identify the best methods for preventing weight gain within the population (adults and children). In this regard the following recommendations are made.

   (a) all health workers (doctors, nurses, public health officials etc) should be thoroughly educated with respect to the problem and its control. This should start at medical school level, and should include a comprehensive course of dietetics.

   (b) the mass media should be used to educate the public (e.g., heart week as advertised on television)

   (c) government should be appropriately involved (e.g., for financial assistance, legislation).

   (d) Adults and children should be encouraged to participate in regular physical activity throughout life and where necessary more community facilities should be provided

   (f) various organisations should help in the weight control and to aid in this, trained health workers should monitor these organisations to ensure that good dietary principles are taught and practiced, e.g., in schools, in work canteens, hospitals. This should also apply to hotels and restaurants who should ensure that a choice of dishes that contain less fat and sugar is available.

2. More studies of this nature need to be carried out to confirm

or repudiate the findings and to emphasise the problem.

3. A practical approach to weight control is needed for busy health workers (see Protocol for Management of Weight Control)

4. Further investigations into the multifactoral aetiology of weight gain is required as much is still not known. Further elucidation of various aetiological causes could lead to improved weight control and therefore more researchers should be encouraged to enter this field by supplying research facilities and finance.

A C K N O W L E D G E M E N T S

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LIST OF TABLES

TABLE 1: AGE BY SEX DISTRIBUTION OF OVERWEIGHT PATIENTS ATTENDING THE RESEARCHERS PRACTICE (NUMBER AND PERCENT (%))

AGE (YRS)	MALE	FEMALE	TOTAL (%)
Under 35	0 (0) (0)	10 (100) (38)	10 (100) (29)
Above 35	9 (36) (100)	16 (64) (62)	25 (100) (71)
Total	9 (26) (100)	26 (74) (100)	35 (100) (100)

TABLE 2: SEX DISTRIBUTION OF PATIENTS WITH DISTRIBUTION ACCORDING TO AVERAGE AGE, AVERAGE WEIGHT AND AVERAGE PERCENT OVERWEIGHT

	AVERAGE AGE	AVERAGE WEIGHT	AVERAGE % OVERWEIGHT
Male	52.4	104.6	136.0
Female	44.3	85.6	137.3

TABLE 3: DISTRIBUTION OF PATIENTS ACCORDING TO SEX AND PERCENT OVERWEIGHT ; NUMBER AND PERCENT(%)

% OVERWEIGHT	MALE	FEMALE	TOTAL
110-	2 (33.3) (5.7)	4 (66.7) (11.5)	6 (100) (17.2)
120-	3 (27.3) (8.5)	8 (72.7) (22.9)	11 (100) (31.4)
130-	0 (0) (0)	4 (100) (11.5)	4 (100) (11.5)
140-	1 (25) (2.9)	3 (75) (8.5)	4 (100) (11.5)
150-	2 (40) (5.7)	3 (60) (8.5)	5 (100) (14.2)
160-	0 (0) (0)	3 (100) (8.5)	3 (100) (8.5)
170-180	1 (50) (2.9)	1 (50) (2.9)	2 (100) (5.8)
TOTAL	9 (25.7)	26 (74.3)	35 (100)

TABLE 4: OPINIONS (DIETARY ANALYSIS) OF GROUP A PATIENTS CONCERNING A NORMAL DIET.

Patient	Approx. daily cal.	Foods regarded as non-fat	Other factors	Assessment
3	800	Fair good dietary knowledge.	Admits tea and sugar is fattening but drinks 8 cups daily	Indis*
6	1100	Natural fruit juice sugar	Uses about 12 ts sugar daily. From questionnaire 23% of questions 'dont know'	Ing & indis
10	1200	Natural fruit juice	Admits jelly & custard are fattening but eats them regularly. Has extra food Saturday & Sunday.	Ing. and Ind.
11	1000	Tea & sugar. Natural fruit juice, bread, cornflakes, porridge, honey.	Says tea with sugar is non-fattening but sugar as such is fattening. Has puddings twice a wk.	Ign & Ind.
18	1500	Natural fruit juice, cornflakes, honey.	Drinks about 6 cups tea with honey daily	Ign.
25	1150	Natural fruit juice, cornflakes, porridge.	Admits wine is fattening and drinks about 2 glasses regularly.	Ign & Ind.
27	400	Natural fruit juice, biscuits cake, potatoes, chips, cornflakes, porridge, custard, pudding		Ing.
28	1250	Tea & sugar, natural fruit juices, honey, jellies	Admits cold drinks are fattening and drinks about 500 ml. daily 3 cups tea with 2 sugar.	Ign. & Indis.

Patient	Approx. daily cal.	Foods regarded as non-fat	Other factors	Assessment
32	900	Natural fruit juices, biscuits, cakes, cornflakes, jellies	Admits tea with sugar fattening but drinks 3 to 4 cups daily with sugar	Ign & Indis.
35	1000		Does not know if natural fruit juices, cornflakes, porridge custard & wine are fattening. Drinks about 250 ml fruit juice daily	Ing.

* Ign = Ignorant (dietary)
Indis. = Indiscretion (dietary)

TABLE 5: OPINIONS (DIETARY ANALYSIS) OF GROUP B PATIENTS CONCERNING A REDUCING DIET

Patient.	Approx. daily cal.	Foods regarded as non-fattening	Other Factors	Assessment
1	1030	Natural fruit juices, alcohol, wholewheat bread rice	On diet at present Has 3-4 glasses fruit juice daily & 2 whiskeys at night	Ign.
2	885	Natural fruit juice, cornflakes rice	Consumes fruit juice cornflakes & rice on a daily basis. Eats 2 rusks at night. On diet at present	Ign.
4	815	Natural fruit juices.	Drinks 3 to 4 glasses fruit juice daily & milkshake daily. On diet now.	Ign. & Indis.
5	940	Cornflakes.	Admits sugar is fattening but uses 6-7 ts daily. Drinks coke daily	Ign. & Indis.
7	800	Cold drinks, biscuits, cornflakes	On diet now and is dieting correctly	Ign.
8	1200	Natural fruit juices, honey	Admits that peanuts and ice cream are fattening but eats them regularly	Ign. & Indis.
9	760	Natural fruit juices, peanuts, cornflakes	Admits that cold-drinks and sugar are fattening but consumes both daily	Ign. & Indis.
12	1800	Natural fruit juices, porridge custard, jellies	Admits that cold drinks sugar, ice-cream and cake are fattening but eats them daily. Also eats porridge.	Ign. & Indis.
13	1800	Natural fruit juice, cornflakes, ?honey, ?biscuits, ? cold drinks.	Admits sugar & fruit cake are fattening & eats them daily. Also eats fair amount bread, wheatbix, and drinks flavoured milk.	Ing. & Indis.

Patient.	Approx. daily cal.	Foods regarded as non-fattening	Other Factors	Assessment
14	1200	Tea & sugar, natural fruit juices, honey	Admits that sugar and peanuts are fattening and eats both daily.	Ign. & Indis.
15	800	Good knowledge of fattening & non-fattening foods	On diet at present	On diet
16	1400	Good knowledge of fattening and non-fattening foods.	Admits sugar, bread, cold drinks are fattening but has daily	On diet
17	750	Cornflakes	On weight watchers diet. Has good knowledge.	On diet
19	1700	Natural fruit juices, cornflakes	Admits sugar and porridge fattening and eats daily	Ign. & Indis.
20	1300	Natural fruit juices, cornflakes, ?puddings	Admits sugar, chips are fattening & eats daily	Ign. & Indis.
21	1650	Honey	Has fairly good dietary knowledge. Admits sugar and bacon fattening & eats them daily	Ig. & Indis.
22	2600	Natural fruit juices, biscuits, honey	Admits sugar, sweets & bread are fattening but has 6 slices bread daily & drinks hot chocolate daily.	Ign. & Indis.
23	850	Cornflakes	Admits fruit juices, sugar, cold drinks, milo are fattening but has them regularly	Ign. & Indis.
24	400	Natural fruit juice	Diet knowledge is good, Appears to eat very little daily. (on diet now).	On diet
26	1500	Cold drinks, cornflakes, rice, jellies	Admits that sugar, ice-cream, natural fruit juices and wine are fattening and has them regularly	Ign. & Indis.
29	1300	Natural fruit juices, bread, biscuits,honey.	Eats fruit juices, wholewheat rolls, cereals	Ign.

Pat-ient.	Approx. daily cal.	Foods regarded as non-fattening	Other Factors	Assess-ment
30	1600	Potato chips, ? roast potatoes	Admits sugar, ice-cream, puddings, bread biscuits, cake and cold drinks are fattening & eats them regularly	Ign. & Indis.
31	1300	Natural fruit juices, honey	Admits that bread, biscuits, cake, cold-drinks and wheatbix are fattening but eats them daily	Ign. & Indis.
33	3000	Natural fruit juice, cornflakes, porridge, ? custard, puddings, honey, ? jam, ? jellies	Admits that ice cream, sugar & potatoes are fattening. Consumes ice-cream daily & sugar 30 ts daily	Ign. & Indis.
34	1200	Natural fruit juices	Admits that bread, cold drinks are fattening and eats them daily	Ign. & Indis.

TABLE 6 : THE DISTRIBUTION OF DIETARY IGNORANCE AND INDISCRETION OF OVERWEIGHT PATIENTS ACCORDING TO EATING HABITS : NUMBER AND PERCENT (%)

GROUP	* Ign.	* Indis.	Ign.& Indis.	On diet at present	Total
GROUP A	3 (30) (43)	1 (10) (50)	6 (60) (26)	0 (0) (0)	10 (100) (29)
GROUP B	4 (16) (57)	1 (4) (50)	17 (68) (74)	3 (12) (100)	25 (100) (71)
TOTAL	7 (20) (100)	2 (5.7) (100)	23 (65.7) (100)	3 (8.6) (100)	35 (100) (100)

*
Ign. = Ignorance
Indis = Indiscretion

TABLE 7 :OPINIONS OF OVERWEIGHT PATIENTS CONCERNING FATTENING AND NON-FATTENING FOODS. NUMBERS.

	Fattening			Non-fattening			Don't know		
	* M	* F	* T	M	F	T	M	F	T
Milk - whole	8	23	31	1	1	2	0	2	2
- skimmed	0	1	1	7	24	31	2	1	3
- condensed	8	23	31	1	0	1	0	3	3
Tea - no sugar	1	1	2	8	23	31	0	2	2
- with sugar	8	23	31	1	2	3	0	1	1
Cola drinks	8	24	32	1	1	2	0	1	1
Natural fruit juice	4	5	9	5	19	24	0	2	2
Diet cola	2	1	3	7	21	28	0	4	4
Water	1	0	1	8	25	33	0	1	1
Wine	8	20	28	1	1	2	0	5	5
Beer	9	22	31	0	1	1	0	3	3
Alcohol	9	22	31	0	1	1	0	3	3
Bread	9	24	33	0	2	2	0	0	0
Biscuits-plain	8	21	29	1	4	5	0	1	1
-sweet	9	25	34	0	0	0	0	1	1
Cake - plain	9	25	34	0	1	1	0	0	0
- fruit	9	25	34	0	1	1	0	0	0
Fried eggs	8	22	30	1	2	3	0	2	2
Boiled eggs	1	0	1	8	26	34	0	0	0
Bacon	8	25	33	1	0	1	0	1	1
Steak	3	9	12	4	16	20	2	1	3
Beef	2	9	11	5	17	22	2	0	2
Chicken	1	2	3	8	23	31	0	1	1
Fish	0	0	0	9	26	35	0	0	0
Apple	3	1	4	6	25	31	0	0	0
Grapes	2	17	19	7	8	15	0	1	1
Oranges	0	4	4	9	21	30	0	1	1
Raisins	3	14	17	6	10	16	0	2	2
Peach	2	7	9	6	17	23	1	2	3
Beans	0	4	4	9	21	30	0	1	1
Beetroot	3	9	12	6	15	21	0	2	2
Cabbage	0	0	0	7	25	32	2	1	3
Carrotts	0	4	4	8	22	30	1	0	1
Cauliflower	1	1	2	8	21	29	0	4	4
Lettuce	0	2	2	9	24	33	0	0	0
Mealie	6	21	27	3	2	5	0	3	3
Onion (fried)	5	23	28	3	2	5	1	1	2
Peas	1	10	11	8	16	24	0	0	0
Potatoes - roast	8	25	33	0	1	1	1	0	1
- chips	9	25	34	0	1	1	0	0	0
- crisps	8	25	33	1	1	2	0	0	0
Tomatoes	0	1	1	9	25	34	0	0	0
Peanuts	8	26	34	1	0	1	0	0	0
Other nuts	9	21	30	0	2	2	0	3	3
Cornflakes-others	5	12	17	4	13	17	0	1	1
Porridge	8	21	29	1	4	5	0	1	1
Custard	8	22	30	0	2	2	1	2	3
Puddings (milk)	8	24	32	1	1	2	0	1	1

TABLE 7 :continued

	Fattening			Non-fattening			Don't know		
	* M	* F	* T	M	F	T	M	F	T
Rice	7	25	32	2	1	3	0	0	0
Ryvita (2 pieces)	4	3	7	4	23	27	1	0	1
Honey	6	16	22	3	8	11	0	2	2
Ice-cream	9	26	35	0	0	0	0	0	0
Jam	8	26	34	0	0	0	1	0	1
Jellies	6	23	29	2	2	4	1	1	2
Sugar	9	25	34	0	1	1	0	0	0
Sweets	9	26	35	0	0	0	0	0	0

*
M = Male
F = Female
T = Total

TABLE 8 : DISTRIBUTION OF OVERWEIGHT PATIENTS WHO ARE IGNORANT OF WHETHER CERTAIN FOODS ARE FATTENING OR NON-FATTENING. NUMBER AND PERCENT(%)

Food	% who state the food is non-fattening				% who don't know	Total % ignorant
	* M	* F	* T	%		
Tea\coffee with sugar	1	2	3	8.6	2.8	11.4
cold drinks	1	1	2	5.7	2.8	8.5
Natural fruit juices	5	19	24	68.6	5.7	74.3
Bread	0	2	2	5.7	0	5.7
Biscuits	1	4	5	14.3	5.7	20
Cake	0	2	2	5.7	0	5.7
Cornflakes etc	4	13	17	48.6	2.8	51.4
Porridge	1	4	5	14.3	2.8	17.1
Puddings	1	1	2	5.7	2.8	8.5
Honey	3	8	11	31.4	5.7	37.1
Wine	1	1	2	5.7	14.3	20
Beer	0	1	1	2.8	8.6	11.4
Alcohol	0	1	1	2.8	8.6	11.4
Potato-roast	0	1	1	2.8	2.8	5.6
-chips	0	1	1	2.8	0	2.8
-crisps	1	1	2	5.7	0	5.7
Peanuts		0	1	2.8	0	2.8
Rice	2	1	3	8.6	0	8.6
Ice-cream	0	0	0	0	0	0
Sugar	0	1	1	2.8	0	2.8
Sweets	0	0	0	0	0	0

*
M = Male
F = Female
T = Total

TABLE 9: BELIEFS OF OVERWEIGHT PATIENTS CONCERNING DIETS WHICH MAY LEAD TO AN INCREASE OR INABILITY TO LOSE WEIGHT. NUMBER AND PERCENT (%)

	Tried to diet		Did not try to diet	Total
	No wt. loss	wt. loss but regained		
GROUP A	2 (20) (40)	4 (40) (27)	4 (40) (36)	10 (100) (29)
GROUP B	3 (12) (60)	15 (60) (73)	7 (28) (64)	25 (100) (71)
TOTAL	5 (14) (100)	19 (54) (100)	11 (32) (100)	35 (100) (100)

PROTOCOL FOR MANAGEMENT OF WEIGHT CONTROL

1. Need to establish the % overweight. This is done by recording the height and weight of the patient. Then using the tables (Annexure A) the upper limit of acceptable weight is found for the patient's height, using the formula ;-

$$\frac{\text{Patient's wt}}{\text{acceptable wt}} \times 100 = \% \text{ overweight}$$

2. eliminate any medical cause for the overweight problem (e.g. hypothyroid etc).
3. the patient should then complete questionnaires and food check list (Annexure B,C, and D) with the guidance of the Doctor or Sister. These Questionnaires may be modified to suit individual needs, but are necessary aids in the establishing of the patients knowledge and beliefs with respect to dietary habits and mistakes.
4. The patient is then sent home with a guideline format (see Annex. E) so as to record all food consumed during one week day. This is returned to the doctor.
5. Problem areas can then be assessed and when the patient returns to the doctor these problems can be shown to the patient and the relevant advice/ remedy given. It is very important to motivate the patients from this stage and from experience the "carrot and the stick" still seems to work well.
6. Some of the more important points to stress are :

(i) drugs are not the answer because on cessation of drug use, the problem returns

(ii) strict dietary means are usually not successful as the patient is usually not able to maintain the regime and reverts back to the same bad dietary habits as before.

(iii) a gradual, sustained weight loss is more beneficial and is usually obtained by correction of dietary "mistakes"/ ignorance and the use of a diet (see later) which can be worked out by the patient and doctor/sister or dietitian.

(iv) in many people, the initial weight loss is good and very encouraging but then weight loss ceases or tapers off. This aspect needs to be emphasised so that the patient will not be discouraged and at this stage the patient's diet may need to be reviewed and "tightened up", i.e., reduce caloric content slightly and at this stage (and even before) the aspect of exercise must be emphasised. Explanation as to the role of exercise in weight control is important and if the point can be brought home that mild regular exercise goes hand in hand with dietary control and enables the weight

loss to be sustained.

7. Exercise should take the form of constant physical exertion (not less than twenty minutes per session) and for not less than three sessions per week.It must be emphasised that the physical effort must be maintained constantly i.e., no stopping during the exercise which must be a continuous twenty minutes or longer session. The physical effort can take any form e.g., walking, aerobics, jogging etc., and obviously the advice given to the patient depends on the individual circumstances.

8. The patient should initially be seen at regular intervals (1 month apart) for a few (2-4) sessions - to monitor progress, to correct any problems, to answer queries and to further motivate and educate the patient in the dietary control of their situation.

9. The emphasis must be to impress upon the patient that the object is not just to lose weight but to learn correct eating habits (i.e. dietary education) so that once weight control is achieved it will be maintained by the continuation of correct eating habits.

10. The diet should be worked out together with the patient (i.e., patient involvement and education) so that the diet is palatable and acceptable by the patient for long term use. Guidelines to working out the diet are given in detail in the article by Prof. E. Nel (2) and should be used.

11. It should be appreciated that the management of weight control is time consuming and initially requires frequent

visits by the patient to the doctor. To help in this situation use can be made of the Doctor's staff or Dietition for much of the educational aspects but the doctor is essential (7 above).

RESEARCH PROTOCOL

DIETARY FACTORS IN OVERWEIGHT ADULTS

I. PROBLEM

The stated inability of some overweight patients to lose weight or maintain any weight reduction.

II. OBJECTIVES

(1) to identify overweight adults and ascertain the presence or otherwise of a medical cause for such overweight.

(2) to determine in persons included in the study, their opinion concerning :-

  (a) a normal diet

  (b) a reducing diet

  (c) fattening and non-fattening foods.

(3) to identify beliefs concerning diets which may lead to an increase in weight or inability to lose weight.

(4) to advance hypotheses in respect of dietary habits beliefs which may lead to increase in weight or inability to lose weight.

(5) to prepare a protocol of procedure for the management of overweight patients.

III. COLLECTION OF DATA

(a) Definition of Criteria

(i) Overweight: when body weight exceeds the upper limit of acceptable weight range.

(ii) Acceptable weight range: as indicated in guidelines for body weight. Journal of the Royal College of Physicians, London 1983 6 - 65 (Annex. A).

(iii) Normal diet : an adequate supply of all the nutrients needed to promote a state of well being (health) for each individual.

(iv) Reducing diet : where nutrients are prescribed in amounts that are regulated as to amount and type of nutrients in the diet.

(v) Fattening and non-fattening food : refers to food which the patient regards as being able to cause an increase or decrease in body weight.

(vi) Medical cause : a known pathological condition can be attributed as the cause of overweight.

(vii) Dietary habits : may be regarded as the regular daily pattern of food intake, including quantity and quality of foodstuffs.

(viii) The Practice : The family general practice of the researcher situated in Sarnia Road, Durban.

(b) Selection of Sample Group

All overweight patients attending the practice between 1st June 1985 and 31st May 1986, or the first 50 consecutive overweight patients attending the practice during that period, and who have no attributable medical cause for being overweight, will be included in the study.

No control group will be drawn for the purpose of this descriptive study.

(c) Method of data collection

All prospective overweight patients will be weighed and measured for height. Using the guideline for body weights (see Annex. A) all consecutive patients who are overweight according to the table will be included in the study providing no medical cause for being overweight is found.

In respect of all patients included in the study:

(i) a questionnaire will be administered by the interviewer (see Annex. B)

(ii) an additional questionnaire directed to a 24 hour food recall will be administered by the interviewer (see Annex. C)

(iii) opinion will be solicited regarding the various foods included on a check list (Annex. D) which are considered to be fattening or non-fattening.

At the end of the interview the patient will be requested to record all food consumed during one week day and to return this to the researcher. A guideline format will be issued to each patient for this purpose (Annex. E)

(d) Reduction of Bias

By the use of Standardised Questionnaires, a single interviewer , and the inclusion of consecutive overweight patients.

(e) Time Barriers

Completion of Protocol and Questionnaires 31/5/85

Collection of Data from 31/5/86

Collation of Analysis of Data by 31/7/86

Submission of Dissertation by 30/9/86

(f) Appraisal of Literature - will be ongoing throughout the study.

IV. COLLATION AND ANALYSIS OF DATA

V. EVALUATION OF DATA

VI. ADVANCEMENT OF HYPOTHESIS

VII. PREPARATION OF A PROTOCOL OF PROCEDURE FOR THE MANAGEMENT OF OVERWEIGHT PATIENTS

GUIDELINES FOR BODY WEIGHT
(ANNEXURE A)

Height (m)	Men (kg)			Women (kg)		
	Acceptable average	Acceptable wt. range	Obese	Acceptable average	Acceptable wt. range	Obese
1.45				46.0	42-53	64
1.48				46.5	42-54	65
1.50				47.0	43-55	66
1.52				48.5	44-57	68
1.54				49.5	44-58	70
1.56				50.4	45-58	70
1.58	55.8	51-64	77	51.3	46-59	71
1.60	57.6	52-65	78	52.6	48-61	73
1.62	58.6	53-66	79	54.0	49-62	74
1.64	59.6	54-67	80	55.4	50-64	77
1.66	60.6	55-69	83	56.8	51-65	78
1.68	61.7	56-71	85	58.1	52-66	79
1.70	63.5	58-73	88	60.0	53-67	80
1.72	65.0	59-74	89	61.3	55-69	83
1.74	66.5	60-75	90	62.6	56-70	84
1.76	68.0	62-77	92	64.0	58-72	86
1.78	69.4	64-79	95	65.3	59-74	89
1.80	71.0	65-80	96			
1.82	72.6	66-82	98			
1.84	74.2	67-84	101			
1.86	75.8	69-86	103			
1.90	79.3	73-90	108			
1.92	81.0	75-93	112			

GUIDELINE QUESTIONNAIRE FOR DIETARY HISTORY
(ANNEXURE B)

Name

Age Sex Occupation

Height (m) Weight (kg)

Acceptable weight range (kg)

% Overweight = $\frac{\text{weight}}{\text{acceptable weight}} \times 100$

Estimated weight loss required.

Approximate period of being overweight.

Any other family members overweight.

Any previous attempts to reduce weight (e.g., diets, drugs gym classes)

Any successful reduction in weight -

How much weight loss / was weight loss sustained

How many meals a day. Which is main meal

Any tea/coffee breaks/number

Any form of exercise/hobby/degree of physical activity.

Patient's reason for being overweight.

Does patient think that they are eating correctly and if not where is the mistake.

What "remedy" does patient feel should be applied to achieve weight reduction.

24 HOUR FOOD RECALL.
(ANNEXURE C)

Patient to recall all food eaten for the past day, starting from previous day on awakening to next morning. Where possible estimates of quantities to be included.

On awakening - any beverage/food.

Breakfast:- any of the following,

- Cereal (milk/sugar/sweetners)
- fruit/fruit juices (includes Cola drinks)
- Eggs/bacon/bread (toast)
- Vegetables/meat/fish
- Beverages/toast/jam/butter
- (milk/sugar)
- Any in between beverages/food (e.g., cake, biscuits)

Lunch:-

- Beverages (includes : fruit juices
  : cola drinks)
  any sugar/milk
- Soup
- Meat/fish/poultry/eggs
- Vegetables
- Fruits
- Bread/biscuits
- Jam/cheese
- Any in between snacks/beverages

Supper:-

Beverages (as above)

Soup

Meat/fish/poultry/eggs

Vegetables/fruits

Bread/biscuits/jam/cheese

Any TV snacks or bedtime drinks/snacks.

FOOD LIST
(What is regarded as fattening and non-fattening foods)
(ANNEXURE D)

Please mark with an X in the appropriate column which of the following you regard as fattening or non-fattening or don't know.

	Fattening	Non-Fattening	Don't know
Milk - whole			
- skimmed/low fat			
- condensed			
Tea or Coffee/no sugar			
" " " /with sugar			
Cola drinks			
Natural fruit juices			
Diet cola drinks			
Water			
Wine			
Beer			
Alcohol			
Bread			
Biscuits - plain			
- sweet			
Cake - plain			
- fruit			
Egg - fried			
- boiled			
Bacon			
Steak			
Beef			
Chicken			
Fish			
Apple			
Grapes			
Orange			
Raisins			
Peach			

ANNEXURE D: continued

	Fattening	Non-Fattening	Don't know
Beans			
Beetroot			
Cabbage			
Carrots			
Cauliflower			
Lettuce			
Mealie			
Onions (fried)			
Peas			
Potatoes - roast			
- chips			
- crisps			
Tomatoes			
Peanuts			
Other nuts			
Cornflakes/others			
Porridge			
Custard			
Puddings (milk)			
Rice			
Ryvita (2 pieces)			
Honey			
Ice cream			
Jam			
Jellies			
Sugar			
Sweets			

GUIDELINES FOR ONE DAY FOOD RECORD.
(ANNEXURE E)

All Food/drink which is eaten during a 24 hour period is to be recorded, and quantities recorded (using estimates i.e., per cup/or by weight) where possible.

On awakening - any beverage/snacks
(included any added milk/sugar)

Breakfast - any beverage/fruit juices
- eggs/cereal/bacon/toast

Tea time - Beverages/biscuits/snack

Lunch - bread/sandwiches - number
- contents
- beverages

Tea Time - Beverages/biscuits/snacks

Supper - beverages
- soup
- fish/poultry/meats
- vegetable/fruits
- bread
- puddings

Evening/going to bed - beverages/snacks/biscuits